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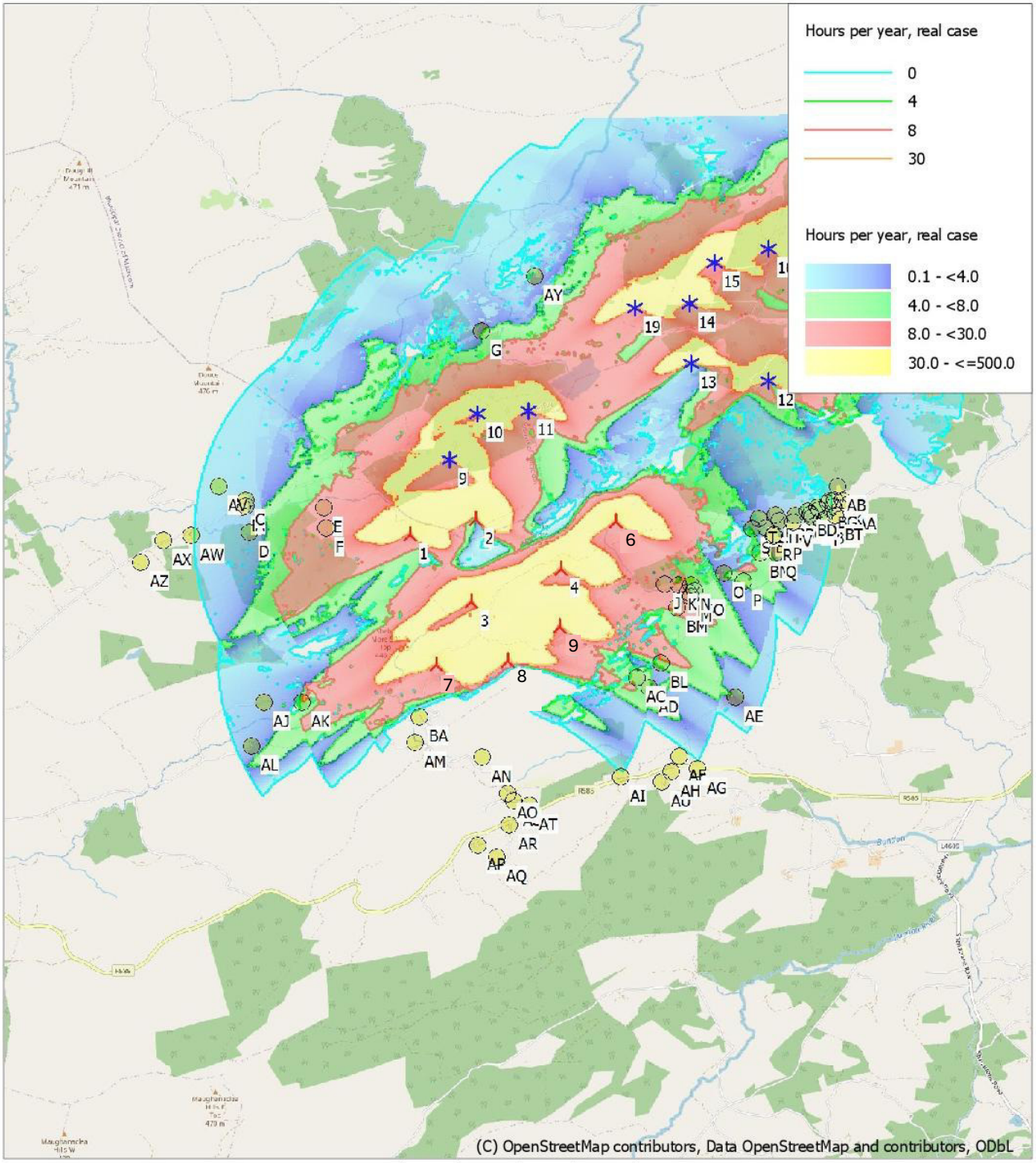
Calculated:
10/09/2024 09:51/4.0.552

## SHADOW - Map

**Calculation:** 6460 Gortloughra WF cumulative RC




0 500 1000 1500 2000 m

Map: EMD OpenStreetMap , Print scale 1:50,000, Map center Irish ITM-IRENET95 (IE), geocentric, GRS80 East: 514,950 North: 559,570

New WTG Existing WTG Shadow receptor

Flicker map level: Height Contours: CONTOURLINE_6460 Gortloughra WF_1.wpo (1)

Time step: 2 minutes, Day step: 3 days, Map resolution: 10 m, Visibility resolution: 5 m, Eye height: 1.5 m

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Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Main Result

**Calculation:** 6460 Gortloughra WF cumulative WC

## Assumptions for shadow calculations

Maximum distance for influence
Calculate only when more than 20 % of sun is covered by the blade
Please look in WTG table

| | |
|---|---|
| Minimum sun height over horizon for influence | 3 ° |
| Day step for calculation | 1 days |
| Time step for calculation | 1 minutes |

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

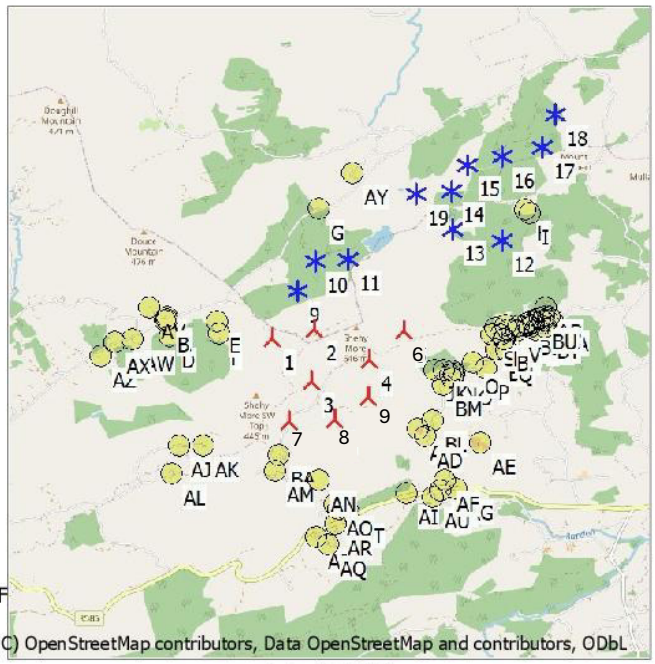
Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 |

| W | WNW | NW | NNW | Sum |
|---|---|---|---|---|
| 456 | 331 | 428 | 630 | 8,760 |

Monthly aggregation of real case reduction
A ZVI (Zones of Visual Influence) calculation is performed before flicker calculation so non visible WTG do not contribute to calculated flicker values. A WTG will be visible if it is visible from any part of the receiver window. The ZVI calculation is based on the following assumptions:
Height contours used: Height Contours: CONTOURLINE_6460 Gortloughra WF
Receptor grid resolution: 1.0 m

All coordinates are in
Irish ITM-IRENET95 (IE), geocentric, GRS80




## WTGs

| | Easting | Northing | Z | Row data/Description | WTG type Valid | Manufact. | Type-generator | Power, rated | Rotor diameter | Hub height | Shadow data Calculation distance | RPM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | [m] | | | | | [kW] | [m] | [m] | [m] | [RPM] |
| 1 | 514,007 | 559,976 | 363.6 | T01 | Yes | VESTAS | V150-6.0-6,000 | 6,000 | 150.0 | 100.0 | 1,902 | - |
| 2 | 514,579 | 560,100 | 445.0 | T02 | Yes | VESTAS | V150-6.0-6,000 | 6,000 | 150.0 | 100.0 | 1,902 | - |
| 3 | 514,530 | 559,377 | 388.0 | T03 | Yes | VESTAS | V150-6.0-6,000 | 6,000 | 150.0 | 100.0 | 1,902 | - |
| 4 | 515,323 | 559,654 | 363.4 | T04 | Yes | VESTAS | V150-6.0-6,000 | 6,000 | 150.0 | 100.0 | 1,902 | - |
| 5 | 515,804 | 560,057 | 339.5 | T06 | Yes | VESTAS | V150-6.0-6,000 | 6,000 | 150.0 | 100.0 | 1,902 | - |
| 6 | 514,219 | 558,839 | 339.8 | T07 | Yes | VESTAS | V150-6.0-6,000 | 6,000 | 150.0 | 100.0 | 1,902 | - |
| 7 | 514,846 | 558,858 | 391.8 | T08 | Yes | VESTAS | V150-6.0-6,000 | 6,000 | 150.0 | 100.0 | 1,902 | - |
| 8 | 515,300 | 559,151 | 345.2 | T09 | Yes | VESTAS | V150-6.0-6,000 | 6,000 | 150.0 | 100.0 | 1,902 | - |
| 9 | 514,364 | 560,624 | 303.0 | Shehy More WF | Yes | NORDEX | N100/2500-2,500 | 2,500 | 99.8 | 81.0 | 1,701 | 14.9 |
| 10 | 514,610 | 561,017 | 294.9 | Shehy More WF | Yes | NORDEX | N100/2500-2,500 | 2,500 | 99.8 | 81.0 | 1,701 | 14.9 |
| 11 | 515,059 | 561,037 | 340.1 | Shehy More WF | Yes | NORDEX | N100/2500-2,500 | 2,500 | 99.8 | 81.0 | 1,701 | 14.9 |
| 12 | 517,161 | 561,263 | 278.5 | Shehy More WF | Yes | NORDEX | N100/2500-2,500 | 2,500 | 99.8 | 81.0 | 1,701 | 14.9 |
| 13 | 516,484 | 561,426 | 318.7 | Shehy More WF | Yes | NORDEX | N100/2500-2,500 | 2,500 | 99.8 | 81.0 | 1,701 | 14.9 |
| 14 | 516,482 | 561,949 | 307.4 | Shehy More WF | Yes | NORDEX | N100/2500-2,500 | 2,500 | 99.8 | 81.0 | 1,701 | 14.9 |
| 15 | 516,703 | 562,299 | 290.0 | Shehy More WF | Yes | NORDEX | N100/2500-2,500 | 2,500 | 99.8 | 81.0 | 1,701 | 14.9 |
| 16 | 517,176 | 562,409 | 242.6 | Shehy More WF | Yes | NORDEX | N100/2500-2,500 | 2,500 | 99.8 | 81.0 | 1,701 | 14.9 |
| 17 | 517,731 | 562,527 | 264.7 | Shehy More WF | Yes | NORDEX | N100/2500-2,500 | 2,500 | 99.8 | 81.0 | 1,701 | 14.9 |
| 18 | 517,919 | 562,954 | 277.7 | Shehy More WF | Yes | NORDEX | N100/2500-2,500 | 2,500 | 99.8 | 81.0 | 1,701 | 14.9 |
| 19 | 516,002 | 561,915 | 308.0 | Shehy More WF | Yes | NORDEX | N100/2500-2,500 | 2,500 | 99.8 | 81.0 | 1,701 | 14.9 |

## Shadow receptor-Input

| No. | Name | Easting | Northing | Z | Width | Height | Elevation a.g.l. | Slope of window | Direction mode | Eye height (ZVI) a.g.l. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | [m] | [m] | [m] | [m] | [°] | | [m] |
| A | H1 | 512,574 | 560,249 | 173.9 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| B | H2 | 512,548 | 560,240 | 173.0 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| C | H3 | 512,576 | 560,296 | 179.9 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| D | H4 | 512,607 | 560,021 | 179.3 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| E | H5 | 513,258 | 560,218 | 201.7 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| F | H6 | 513,280 | 560,045 | 213.9 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| G | H7 | 514,664 | 561,741 | 242.9 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |

*To be continued on next page...*

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Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Main Result

**Calculation:** 6460 Gortloughra WF cumulative WC

*...continued from previous page*

| No. | Name | Easting | Northing | Z | Width | Height | Elevation a.g.l. | Slope of window | Direction mode | Eye height (ZVI) a.g.l. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | [m] | [m] | [m] | [m] | [°] | | [m] |
| H | H8 | 517,491 | 561,675 | 226.3 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| I | H9 | 517,560 | 561,620 | 238.2 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| J | H10 | 516,223 | 559,500 | 202.6 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| K | H11 | 516,345 | 559,495 | 191.8 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| L | H12 | 516,426 | 559,436 | 166.4 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| M | H13 | 516,455 | 559,391 | 159.4 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| N | H14 | 516,453 | 559,491 | 179.7 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| O | H15 | 516,742 | 559,597 | 178.9 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| P | H17 | 516,913 | 559,519 | 155.9 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| Q | H18 | 517,205 | 559,763 | 150.4 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| R | H19 | 517,186 | 559,907 | 166.2 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| S | H20 | 516,995 | 559,974 | 207.7 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| T | H21 | 517,058 | 560,064 | 206.0 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| U | H22 | 517,237 | 560,043 | 189.4 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| V | H23 | 517,355 | 560,026 | 175.4 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| W | H24 | 517,505 | 560,096 | 175.0 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| X | H25 | 517,525 | 560,068 | 166.8 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| Y | H26 | 517,602 | 560,034 | 162.8 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| Z | H27 | 517,766 | 560,044 | 154.3 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| AA | H28 | 517,833 | 560,174 | 162.3 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| AB | H29 | 517,746 | 560,332 | 180.3 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| AC | H30 | 515,967 | 558,698 | 134.2 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| AD | H31 | 516,071 | 558,608 | 133.0 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| AE | H33 | 516,831 | 558,505 | 146.0 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| AF | H34 | 516,331 | 558,002 | 116.0 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| AG | H35 | 516,489 | 557,893 | 121.9 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| AH | H36 | 516,258 | 557,871 | 124.7 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| AI | H37 | 515,815 | 557,831 | 123.5 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| AJ | H38 | 512,706 | 558,535 | 242.6 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| AK | H39 | 513,035 | 558,529 | 262.6 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| AL | H40 | 512,590 | 558,155 | 239.6 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| AM | H41 | 514,019 | 558,165 | 211.4 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| AN | H42 | 514,606 | 558,023 | 147.1 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| AO | H44 | 514,826 | 557,698 | 125.3 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| AP | H45 | 514,556 | 557,258 | 157.5 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| AQ | H46 | 514,715 | 557,154 | 169.4 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| AR | H47 | 514,833 | 557,430 | 137.3 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| AS | H48 | 514,870 | 557,636 | 126.8 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| AT | H49 | 515,012 | 557,597 | 127.6 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| AU | H50 | 516,168 | 557,781 | 135.8 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| AV | H60 | 512,339 | 560,424 | 168.9 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| AW | H61 | 512,089 | 560,001 | 161.6 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| AX | H62 | 511,856 | 559,964 | 174.1 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| AY | H63 | 515,138 | 562,209 | 216.9 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| AZ | H64 | 511,651 | 559,779 | 202.9 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| BA | H67 | 514,062 | 558,379 | 240.8 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| BB | H68 | 517,177 | 559,907 | 167.5 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| BC | H69 | 517,375 | 560,081 | 186.4 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| BD | H70 | 517,485 | 560,120 | 183.0 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| BE | H71 | 517,582 | 560,131 | 176.2 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| BF | H72 | 517,565 | 560,150 | 179.8 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| BG | H73 | 517,665 | 560,186 | 178.5 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| BH | H74 | 517,712 | 560,152 | 174.7 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| BI | H75 | 517,770 | 560,146 | 168.0 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| BJ | H76 | 517,793 | 560,211 | 170.9 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| BK | H77 | 517,724 | 560,209 | 177.4 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| BL | H78 | 516,185 | 558,817 | 149.3 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| BM | H79 | 516,326 | 559,301 | 160.4 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| BN | H80 | 517,061 | 559,769 | 165.6 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| BO | H81 | 516,482 | 559,447 | 165.7 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| BP | H82 | 517,190 | 559,916 | 168.1 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| BQ | H83 | 517,202 | 560,097 | 199.9 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| BR | H84 | 517,121 | 559,978 | 187.1 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| BS | H85 | 517,638 | 560,049 | 163.4 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |

*To be continued on next page...*

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Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Main Result

**Calculation:** 6460 Gortloughra WF cumulative WC

*...continued from previous page*

| No. | Name | Easting | Northing | Z | Width | Height | Elevation a.g.l. | Slope of window | Direction mode | Eye height (ZVI) a.g.l. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | [m] | [m] | [m] | [m] | [°] | | [m] |
| BT | H86 | 517,727 | 560,072 | 162.1 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| BU | H87 | 517,677 | 560,204 | 178.5 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |

## Calculation Results

Shadow receptor

| | | **Shadow, worst case** | | | **Shadow, expected values** |
|---|---|---|---|---|---|
| No. | Name | Shadow hours per year [h/year] | Shadow days per year [days/year] | Max shadow hours per day [h/day] | Shadow hours per year [h/year] |
| A | H1 | 9:08 | 30 | 0:24 | 1:30 |
| B | H2 | 8:52 | 30 | 0:23 | 1:29 |
| C | H3 | 9:02 | 30 | 0:24 | 1:25 |
| D | H4 | 10:36 | 32 | 0:24 | 2:12 |
| E | H5 | 63:04 | 148 | 0:56 | 11:17 |
| F | H6 | 76:45 | 148 | 1:11 | 15:06 |
| G | H7 | 39:23 | 107 | 0:31 | 4:05 |
| H | H8 | 69:06 | 167 | 0:45 | 10:35 |
| I | H9 | 59:08 | 148 | 0:44 | 9:32 |
| J | H10 | 70:02 | 164 | 0:39 | 13:11 |
| K | H11 | 54:00 | 138 | 0:34 | 10:14 |
| L | H12 | 45:31 | 121 | 0:32 | 8:33 |
| M | H13 | 46:32 | 129 | 0:31 | 8:45 |
| N | H14 | 39:28 | 105 | 0:31 | 7:29 |
| O | H15 | 19:26 | 63 | 0:25 | 3:44 |
| P | H17 | 29:27 | 100 | 0:24 | 5:17 |
| Q | H18 | 13:11 | 41 | 0:25 | 2:36 |
| R | H19 | 17:29 | 60 | 0:25 | 3:25 |
| S | H20 | 21:42 | 65 | 0:29 | 4:09 |
| T | H21 | 13:15 | 37 | 0:28 | 2:45 |
| U | H22 | 10:09 | 33 | 0:24 | 2:06 |
| V | H23 | 8:42 | 30 | 0:22 | 1:48 |
| W | H24 | 7:08 | 28 | 0:21 | 1:26 |
| X | H25 | 6:58 | 28 | 0:20 | 1:25 |
| Y | H26 | 6:30 | 26 | 0:20 | 1:20 |
| Z | H27 | 0:00 | 0 | 0:00 | 0:00 |
| AA | H28 | 0:00 | 0 | 0:00 | 0:00 |
| AB | H29 | 0:00 | 0 | 0:00 | 0:00 |
| AC | H30 | 30:42 | 88 | 0:31 | 6:12 |
| AD | H31 | 28:21 | 87 | 0:28 | 5:33 |
| AE | H33 | 22:16 | 74 | 0:22 | 3:50 |
| AF | H34 | 0:00 | 0 | 0:00 | 0:00 |
| AG | H35 | 0:00 | 0 | 0:00 | 0:00 |
| AH | H36 | 0:00 | 0 | 0:00 | 0:00 |
| AI | H37 | 0:00 | 0 | 0:00 | 0:00 |
| AJ | H38 | 10:26 | 34 | 0:24 | 2:18 |
| AK | H39 | 36:46 | 107 | 0:31 | 7:58 |
| AL | H40 | 12:54 | 48 | 0:21 | 2:52 |
| AM | H41 | 0:00 | 0 | 0:00 | 0:00 |
| AN | H42 | 0:00 | 0 | 0:00 | 0:00 |
| AO | H44 | 0:00 | 0 | 0:00 | 0:00 |
| AP | H45 | 0:00 | 0 | 0:00 | 0:00 |
| AQ | H46 | 0:00 | 0 | 0:00 | 0:00 |
| AR | H47 | 0:00 | 0 | 0:00 | 0:00 |
| AS | H48 | 0:00 | 0 | 0:00 | 0:00 |
| AT | H49 | 0:00 | 0 | 0:00 | 0:00 |
| AU | H50 | 0:00 | 0 | 0:00 | 0:00 |
| AV | H60 | 6:32 | 26 | 0:20 | 1:01 |
| AW | H61 | 0:00 | 0 | 0:00 | 0:00 |
| AX | H62 | 0:00 | 0 | 0:00 | 0:00 |
| AY | H63 | 19:17 | 57 | 0:40 | 3:09 |
| AZ | H64 | 0:00 | 0 | 0:00 | 0:00 |
| BA | H67 | 0:00 | 0 | 0:00 | 0:00 |
| BB | H68 | 17:52 | 61 | 0:26 | 3:29 |

*To be continued on next page...*

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Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Main Result

**Calculation:** 6460 Gortloughra WF cumulative WC

*...continued from previous page*

| | | Shadow, worst case | | | Shadow, expected values |
|---|---|---|---|---|---|
| No. | Name | Shadow hours per year [h/year] | Shadow days per year [days/year] | Max shadow hours per day [h/day] | Shadow hours per year [h/year] |
| BC | H69 | 8:26 | 30 | 0:22 | 1:43 |
| BD | H70 | 7:08 | 26 | 0:21 | 1:24 |
| BE | H71 | 6:29 | 26 | 0:19 | 1:15 |
| BF | H72 | 6:35 | 26 | 0:20 | 1:15 |
| BG | H73 | 5:49 | 24 | 0:19 | 1:03 |
| BH | H74 | 0:00 | 0 | 0:00 | 0:00 |
| BI | H75 | 0:00 | 0 | 0:00 | 0:00 |
| BJ | H76 | 0:00 | 0 | 0:00 | 0:00 |
| BK | H77 | 0:00 | 0 | 0:00 | 0:00 |
| BL | H78 | 34:49 | 87 | 0:33 | 6:24 |
| BM | H79 | 58:00 | 136 | 0:34 | 10:43 |
| BN | H80 | 29:49 | 99 | 0:28 | 5:40 |
| BO | H81 | 39:39 | 109 | 0:30 | 7:28 |
| BP | H82 | 11:50 | 36 | 0:25 | 2:25 |
| BQ | H83 | 10:28 | 33 | 0:25 | 2:07 |
| BR | H84 | 12:36 | 37 | 0:26 | 2:36 |
| BS | H85 | 6:07 | 24 | 0:19 | 1:15 |
| BT | H86 | 0:00 | 0 | 0:00 | 0:00 |
| BU | H87 | 5:44 | 24 | 0:19 | 1:01 |

Total amount of flickering on the shadow receptors caused by each WTG

| No. | Name | Worst case [h/year] | Expected [h/year] |
|---|---|---|---|
| 1 | T01 | 95:54 | 17:57 |
| 2 | T02 | 25:16 | 5:18 |
| 3 | T03 | 38:12 | 6:09 |
| 4 | T04 | 106:10 | 20:05 |
| 5 | T06 | 68:53 | 13:18 |
| 6 | T07 | 49:06 | 10:44 |
| 7 | T08 | 80:14 | 15:25 |
| 8 | T09 | 110:38 | 19:40 |
| 9 | Shehy More WF | 26:48 | 5:41 |
| 10 | Shehy More WF | 0:00 | 0:00 |
| 11 | Shehy More WF | 33:42 | 2:51 |
| 12 | Shehy More WF | 80:30 | 11:10 |
| 13 | Shehy More WF | 14:06 | 2:28 |
| 14 | Shehy More WF | 20:40 | 3:50 |
| 15 | Shehy More WF | 3:56 | 0:49 |
| 16 | Shehy More WF | 0:00 | 0:00 |
| 17 | Shehy More WF | 0:00 | 0:00 |
| 18 | Shehy More WF | 0:00 | 0:00 |
| 19 | Shehy More WF | 22:51 | 4:06 |

*Total times in Receptor wise and WTG wise tables can differ, as a WTG can lead to flicker at 2 or more receptors simultaneously and/or receptors may receive flicker from 2 or more WTGs simultaneously.*

*The calculation of the total expected values for a given receptor assumes a weighted average directional reduction for all WTGs contributing to shadow flicker within the same day. In the case where shadow flicker from different WTGs is not concurrent within the day, the total expected time at a given receptor may deviate marginally from the individual flicker time caused by each turbine separately.*

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**Jennings O'Donovan**
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Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** A - H1

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | | April | | May | June | July | August | September | | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | | 07:15 | 08:29 (1) | 06:10 | 05:25 | 05:22 | 05:59 | 06:48 | | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | | 20:10 | 19 08:48 (1) | 21:00 | 21:46 | 22:00 | 21:28 | 20:26 | | 19:17 | 17:11 | 16:31 |
| 2 | 08:45 | 08:17 | 07:23 | | 07:12 | 08:31 (1) | 06:08 | 05:25 | 05:23 | 06:00 | 06:50 | | 07:39 | 07:32 | 08:22 |
| | 16:38 | 17:27 | 18:18 | | 20:11 | 15 08:46 (1) | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | | 19:15 | 17:10 | 16:31 |
| 3 | 08:45 | 08:15 | 07:21 | | 07:10 | 08:33 (1) | 06:06 | 05:24 | 05:24 | 06:02 | 06:51 | | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:20 | | 20:13 | 11 08:44 (1) | 21:04 | 21:48 | 21:59 | 21:25 | 20:22 | | 19:13 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:19 | | 07:08 | 08:37 (1) | 06:05 | 05:23 | 05:25 | 06:03 | 06:53 | | 07:42 | 07:36 | 08:25 |
| | 16:40 | 17:30 | 18:21 | | 20:15 | 3 08:40 (1) | 21:05 | 21:49 | 21:59 | 21:23 | 20:20 | | 19:10 | 17:06 | 16:30 |
| 5 | 08:44 | 08:12 | 07:16 | | 07:06 | | 06:03 | 05:22 | 05:25 | 06:05 | 06:55 | | 07:44 | 07:38 | 08:27 |
| | 16:42 | 17:32 | 18:23 | | 20:17 | | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | | 07:03 | | 06:01 | 05:22 | 05:26 | 06:06 | 06:56 | | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | | 20:18 | | 21:09 | 21:51 | 21:58 | 21:20 | 20:15 | | 19:06 | 17:02 | 16:29 |
| 7 | 08:43 | 08:08 | 07:12 | | 07:01 | | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | | 20:20 | | 21:10 | 21:52 | 21:57 | 21:18 | 20:13 | | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:07 | 07:10 | | 06:59 | | 05:57 | 05:21 | 05:28 | 06:10 | 07:00 | | 07:49 | 07:43 | 08:30 |
| | 16:45 | 17:38 | 18:29 | | 20:22 | | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | | 19:01 | 16:59 | 16:28 |
| 9 | 08:43 | 08:05 | 07:07 | | 06:57 | | 05:56 | 05:20 | 05:29 | 06:11 | 07:01 | 08:27 (1) | 07:50 | 07:45 | 08:31 |
| | 16:47 | 17:40 | 18:30 | | 20:23 | | 21:14 | 21:54 | 21:56 | 21:14 | 20:08 | 11 08:38 (1) | 18:59 | 16:57 | 16:28 |
| 10 | 08:42 | 08:03 | 07:05 | | 06:54 | | 05:54 | 05:20 | 05:30 | 06:13 | 07:03 | 08:24 (1) | 07:52 | 07:46 | 08:33 |
| | 16:48 | 17:41 | 18:32 | | 20:25 | | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 16 08:40 (1) | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | | 06:52 | | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 08:23 (1) | 07:54 | 07:48 | 08:34 |
| | 16:50 | 17:43 | 18:34 | | 20:27 | | 21:17 | 21:55 | 21:54 | 21:10 | 20:04 | 18 08:41 (1) | 18:55 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:01 | | 06:50 | | 05:51 | 05:19 | 05:32 | 06:16 | 07:06 | 08:21 (1) | 07:55 | 07:50 | 08:35 |
| | 16:51 | 17:45 | 18:36 | | 20:28 | | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 20 08:41 (1) | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:58 | 06:58 | | 06:48 | | 05:49 | 05:19 | 05:33 | 06:18 | 07:08 | 08:20 (1) | 07:57 | 07:52 | 08:36 |
| | 16:53 | 17:47 | 18:37 | | 20:30 | | 21:20 | 21:57 | 21:53 | 21:06 | 19:59 | 22 08:42 (1) | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:56 | 06:56 | | 06:46 | | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 08:19 (1) | 07:59 | 07:53 | 08:37 |
| | 16:54 | 17:49 | 18:39 | | 20:32 | | 21:21 | 21:57 | 21:52 | 21:05 | 19:57 | 23 08:42 (1) | 18:48 | 16:50 | 16:27 |
| 15 | 08:39 | 07:54 | 06:54 | | 06:43 | | 05:46 | 05:18 | 05:35 | 06:21 | 07:11 | 08:19 (1) | 08:00 | 07:55 | 08:38 |
| | 16:56 | 17:51 | 18:41 | | 20:33 | | 21:23 | 21:58 | 21:51 | 21:03 | 19:54 | 23 08:42 (1) | 18:46 | 16:48 | 16:27 |
| 16 | 08:38 | 07:52 | 06:52 | | 06:41 | | 05:44 | 05:18 | 05:37 | 06:22 | 07:12 | 08:19 (1) | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | | 20:35 | | 21:24 | 21:58 | 21:50 | 21:01 | 19:52 | 23 08:42 (1) | 18:44 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | | 06:39 | | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:18 (1) | 08:04 | 07:59 | 08:39 |
| | 16:59 | 17:54 | 18:44 | | 20:37 | | 21:26 | 21:59 | 21:49 | 20:59 | 19:50 | 23 08:41 (1) | 18:41 | 16:46 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | | 06:37 | | 05:41 | 05:18 | 05:39 | 06:26 | 07:16 | 08:18 (1) | 08:06 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | | 20:39 | | 21:27 | 21:59 | 21:48 | 20:56 | 19:47 | 23 08:41 (1) | 18:39 | 16:44 | 16:28 |
| 19 | 08:35 | 07:46 | 06:45 | | 06:35 | | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:18 (1) | 08:07 | 08:02 | 08:41 |
| | 17:02 | 17:58 | 18:48 | | 20:40 | | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 21 08:39 (1) | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | | 06:33 | | 05:39 | 05:18 | 05:42 | 06:29 | 07:19 | 08:19 (1) | 08:09 | 08:04 | 08:41 |
| | 17:04 | 18:00 | 18:49 | | 20:42 | | 21:30 | 22:00 | 21:45 | 20:52 | 19:43 | 19 08:38 (1) | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 07:38 (1) | 06:30 | | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:19 (1) | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:02 | 18:51 | 11 07:49 (1) | 20:44 | | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | 17 08:36 (1) | 18:33 | 16:41 | 16:29 |
| 22 | 08:32 | 07:40 | 06:38 | 07:34 (1) | 06:28 | | 05:36 | 05:19 | 05:44 | 06:32 | 07:22 | 08:21 (1) | 08:13 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 16 07:50 (1) | 20:45 | | 21:33 | 22:00 | 21:43 | 20:48 | 19:38 | 13 08:34 (1) | 18:31 | 16:40 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 07:33 (1) | 06:26 | | 05:35 | 05:19 | 05:46 | 06:34 | 07:24 | 08:25 (1) | 08:14 | 08:09 | 08:43 |
| | 17:09 | 18:05 | 18:54 | 18 07:51 (1) | 20:47 | | 21:35 | 22:00 | 21:41 | 20:46 | 19:36 | 5 08:30 (1) | 18:29 | 16:38 | 16:30 |
| 24 | 08:29 | 07:36 | 06:33 | 07:32 (1) | 06:24 | | 05:34 | 05:19 | 05:47 | 06:35 | 07:25 | | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20 07:52 (1) | 20:49 | | 21:36 | 22:01 | 21:40 | 20:44 | 19:33 | | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:34 | 06:31 | 07:30 (1) | 06:22 | | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | | 07:18 | 08:12 | 08:44 |
| | 17:12 | 18:09 | 18:58 | 22 07:52 (1) | 20:50 | | 21:37 | 22:01 | 21:39 | 20:42 | 19:31 | | 17:25 | 16:36 | 16:31 |
| 26 | 08:27 | 07:31 | 06:29 | 07:30 (1) | 06:20 | | 05:31 | 05:20 | 05:50 | 06:38 | 07:29 | | 07:20 | 08:14 | 08:44 |
| | 17:14 | 18:11 | 19:00 | 22 07:52 (1) | 20:52 | | 21:39 | 22:01 | 21:37 | 20:40 | 19:29 | | 17:23 | 16:35 | 16:32 |
| 27 | 08:25 | 07:29 | 06:26 | 07:29 (1) | 06:18 | | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:13 | 19:01 | 24 07:53 (1) | 20:54 | | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 07:29 (1) | 06:16 | | 05:29 | 05:21 | 05:53 | 06:42 | 07:32 | | 07:23 | 08:17 | 08:45 |
| | 17:18 | 18:14 | 19:03 | 24 07:53 (1) | 20:55 | | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | | 17:19 | 16:34 | 16:33 |
| 29 | 08:23 | | 07:22 | 08:28 (1) | 06:14 | | 05:28 | 05:21 | 05:54 | 06:43 | 07:34 | | 07:25 | 08:18 | 08:45 |
| | 17:19 | | 20:05 | 23 08:51 (1) | 20:57 | | 21:42 | 22:00 | 21:33 | 20:33 | 19:22 | | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 08:29 (1) | 06:12 | | 05:27 | 05:22 | 05:56 | 06:45 | 07:35 | | 07:27 | 08:20 | 08:45 |
| | 17:21 | | 20:06 | 22 08:51 (1) | 20:59 | | 21:44 | 22:00 | 21:31 | 20:31 | 19:19 | | 17:15 | 16:32 | 16:35 |
| 31 | 08:20 | | 07:17 | 08:29 (1) | | | 05:26 | | 05:57 | 06:47 | | | 07:29 | | 08:45 |
| | 17:23 | | 20:08 | 21 08:50 (1) | | | 21:45 | | 21:30 | 20:29 | | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | | 416 | | 485 | 498 | 501 | 453 | 381 | | 332 | 267 | 244 |
| Total, worst case | | | 223 | | 48 | | | | | | 277 | | | | |
| Sun reduction | | | 0.24 | | 0.35 | | | | | | 0.28 | | | | |
| Oper. time red. | | | 1.00 | | 1.00 | | | | | | 1.00 | | | | |
| Wind dir. red. | | | 0.60 | | 0.60 | | | | | | 0.60 | | | | |
| Total reduction | | | 0.15 | | 0.21 | | | | | | 0.17 | | | | |
| Total, real | | | 33 | | 10 | | | | | | 48 | | | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
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+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** B - H2

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | | April | | May | June | July | August | September | | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | | 07:15 | | 08:27 (1) | 06:10 | 05:25 | 05:22 | 05:59 | 06:48 | | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | | 20:10 | 19 | 08:46 (1) | 21:00 | 21:46 | 22:00 | 21:28 | 20:26 | | 19:17 | 17:11 | 16:31 |
| 2 | 08:45 | 08:17 | 07:23 | | 07:12 | | 08:28 (1) | 06:08 | 05:25 | 05:23 | 06:00 | 06:50 | | 07:39 | 07:32 | 08:22 |
| | 16:38 | 17:27 | 18:18 | | 20:11 | 17 | 08:45 (1) | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | | 19:15 | 17:10 | 16:31 |
| 3 | 08:45 | 08:15 | 07:21 | | 07:10 | | 08:30 (1) | 06:06 | 05:24 | 05:24 | 06:02 | 06:51 | | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:20 | | 20:13 | 13 | 08:43 (1) | 21:04 | 21:48 | 21:59 | 21:25 | 20:22 | | 19:13 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:19 | | 07:08 | | 08:32 (1) | 06:05 | 05:23 | 05:25 | 06:03 | 06:53 | | 07:42 | 07:36 | 08:25 |
| | 16:40 | 17:30 | 18:21 | | 20:15 | 8 | 08:40 (1) | 21:05 | 21:49 | 21:59 | 21:23 | 20:20 | | 19:10 | 17:06 | 16:30 |
| 5 | 08:44 | 08:12 | 07:16 | | 07:06 | | | 06:03 | 05:22 | 05:25 | 06:05 | 06:55 | | 07:44 | 07:38 | 08:27 |
| | 16:42 | 17:32 | 18:23 | | 20:17 | | | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | | 07:03 | | | 06:01 | 05:22 | 05:26 | 06:06 | 06:56 | | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | | 20:18 | | | 21:09 | 21:51 | 21:58 | 21:20 | 20:15 | | 19:06 | 17:02 | 16:29 |
| 7 | 08:43 | 08:08 | 07:12 | | 07:01 | | | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | | 20:20 | | | 21:10 | 21:52 | 21:57 | 21:18 | 20:13 | | 19:04 | 17:01 | 16:28 |
| 8 | 08:43 | 08:07 | 07:10 | | 06:59 | | | 05:57 | 05:21 | 05:28 | 06:10 | 07:00 | 08:27 (1) | 07:49 | 07:43 | 08:30 |
| | 16:45 | 17:38 | 18:29 | | 20:22 | | | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 7 08:34 (1) | 19:01 | 16:59 | 16:28 |
| 9 | 08:43 | 08:05 | 07:07 | | 06:57 | | | 05:56 | 05:20 | 05:29 | 06:11 | 07:01 | 08:24 (1) | 07:50 | 07:45 | 08:31 |
| | 16:47 | 17:40 | 18:30 | | 20:23 | | | 21:14 | 21:54 | 21:56 | 21:14 | 20:08 | 13 08:37 (1) | 18:59 | 16:57 | 16:28 |
| 10 | 08:42 | 08:03 | 07:05 | | 06:54 | | | 05:54 | 05:20 | 05:30 | 06:13 | 07:03 | 08:21 (1) | 07:52 | 07:46 | 08:33 |
| | 16:48 | 17:41 | 18:32 | | 20:25 | | | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 17 08:38 (1) | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | | 06:52 | | | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 08:20 (1) | 07:54 | 07:48 | 08:34 |
| | 16:50 | 17:43 | 18:34 | | 20:27 | | | 21:17 | 21:55 | 21:54 | 21:10 | 20:04 | 19 08:39 (1) | 18:55 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:01 | | 06:50 | | | 05:51 | 05:19 | 05:32 | 06:16 | 07:06 | 08:19 (1) | 07:55 | 07:50 | 08:35 |
| | 16:51 | 17:45 | 18:36 | | 20:28 | | | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 20 08:39 (1) | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:58 | 06:58 | | 06:48 | | | 05:49 | 05:19 | 05:33 | 06:18 | 07:08 | 08:18 (1) | 07:57 | 07:52 | 08:36 |
| | 16:53 | 17:47 | 18:37 | | 20:30 | | | 21:20 | 21:57 | 21:53 | 21:06 | 19:59 | 22 08:40 (1) | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:56 | 06:56 | | 06:46 | | | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 08:17 (1) | 07:59 | 07:53 | 08:37 |
| | 16:54 | 17:49 | 18:39 | | 20:32 | | | 21:21 | 21:57 | 21:52 | 21:05 | 19:57 | 23 08:40 (1) | 18:48 | 16:50 | 16:27 |
| 15 | 08:39 | 07:54 | 06:54 | | 06:43 | | | 05:46 | 05:18 | 05:35 | 06:21 | 07:11 | 08:17 (1) | 08:00 | 07:55 | 08:38 |
| | 16:56 | 17:51 | 18:41 | | 20:33 | | | 21:23 | 21:58 | 21:51 | 21:03 | 19:54 | 23 08:40 (1) | 18:46 | 16:48 | 16:27 |
| 16 | 08:38 | 07:52 | 06:52 | | 06:41 | | | 05:44 | 05:18 | 05:37 | 06:22 | 07:12 | 08:17 (1) | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | | 20:35 | | | 21:24 | 21:58 | 21:50 | 21:01 | 19:52 | 23 08:40 (1) | 18:44 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | | 06:39 | | | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:16 (1) | 08:04 | 07:59 | 08:39 |
| | 16:59 | 17:54 | 18:44 | | 20:37 | | | 21:26 | 21:59 | 21:49 | 20:59 | 19:50 | 23 08:39 (1) | 18:41 | 16:46 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | | 06:37 | | | 05:41 | 05:18 | 05:39 | 06:26 | 07:16 | 08:17 (1) | 08:06 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | | 20:39 | | | 21:27 | 21:59 | 21:48 | 20:56 | 19:47 | 21 08:38 (1) | 18:39 | 16:44 | 16:28 |
| 19 | 08:35 | 07:46 | 06:45 | | 06:35 | | | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:17 (1) | 08:07 | 08:02 | 08:41 |
| | 17:02 | 17:58 | 18:48 | | 20:40 | | | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 19 08:36 (1) | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | | 06:33 | | | 05:39 | 05:18 | 05:42 | 06:29 | 07:19 | 08:18 (1) | 08:09 | 08:04 | 08:41 |
| | 17:04 | 18:00 | 18:49 | | 20:42 | | | 21:30 | 22:00 | 21:45 | 20:52 | 19:43 | 17 08:35 (1) | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 07:38 (1) | 06:30 | | | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:19 (1) | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:02 | 18:51 | 6 07:44 (1) | 20:44 | | | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | 13 08:32 (1) | 18:33 | 16:41 | 16:29 |
| 22 | 08:32 | 07:40 | 06:38 | 07:34 (1) | 06:28 | | | 05:36 | 05:19 | 05:44 | 06:32 | 07:22 | 08:22 (1) | 08:13 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 12 07:46 (1) | 20:45 | | | 21:33 | 22:00 | 21:43 | 20:48 | 19:38 | 8 08:30 (1) | 18:31 | 16:40 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 07:32 (1) | 06:26 | | | 05:35 | 05:19 | 05:46 | 06:34 | 07:24 | | 08:14 | 08:09 | 08:43 |
| | 17:09 | 18:05 | 18:54 | 16 07:48 (1) | 20:47 | | | 21:35 | 22:00 | 21:41 | 20:46 | 19:36 | | 18:29 | 16:38 | 16:30 |
| 24 | 08:29 | 07:36 | 06:33 | 07:30 (1) | 06:24 | | | 05:34 | 05:19 | 05:47 | 06:35 | 07:25 | | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20 07:50 (1) | 20:49 | | | 21:36 | 22:01 | 21:40 | 20:44 | 19:33 | | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:34 | 06:31 | 07:29 (1) | 06:22 | | | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | | 07:18 | 08:12 | 08:44 |
| | 17:12 | 18:09 | 18:58 | 20 07:49 (1) | 20:50 | | | 21:37 | 22:01 | 21:39 | 20:42 | 19:31 | | 17:25 | 16:36 | 16:31 |
| 26 | 08:27 | 07:31 | 06:29 | 07:28 (1) | 06:20 | | | 05:31 | 05:20 | 05:50 | 06:38 | 07:29 | | 07:20 | 08:14 | 08:44 |
| | 17:14 | 18:11 | 19:00 | 22 07:50 (1) | 20:52 | | | 21:39 | 22:01 | 21:37 | 20:40 | 19:29 | | 17:23 | 16:35 | 16:32 |
| 27 | 08:25 | 07:29 | 06:26 | 07:28 (1) | 06:18 | | | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:13 | 19:01 | 22 07:50 (1) | 20:54 | | | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 07:27 (1) | 06:16 | | | 05:29 | 05:21 | 05:53 | 06:42 | 07:32 | | 07:23 | 08:17 | 08:45 |
| | 17:18 | 18:14 | 19:03 | 23 07:50 (1) | 20:55 | | | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | | 17:19 | 16:34 | 16:33 |
| 29 | 08:23 | | 07:22 | 08:26 (1) | 06:14 | | | 05:28 | 05:21 | 05:54 | 06:43 | 07:34 | | 07:25 | 08:18 | 08:45 |
| | 17:19 | | 20:05 | 23 08:49 (1) | 20:57 | | | 21:42 | 22:00 | 21:33 | 20:33 | 19:22 | | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 08:27 (1) | 06:12 | | | 05:27 | 05:22 | 05:56 | 06:45 | 07:35 | | 07:27 | 08:20 | 08:45 |
| | 17:21 | | 20:06 | 22 08:49 (1) | 20:59 | | | 21:44 | 22:00 | 21:31 | 20:31 | 19:19 | | 17:15 | 16:32 | 16:35 |
| 31 | 08:20 | | 07:17 | 08:27 (1) | | | | 05:26 | | 05:57 | 06:47 | | | 07:29 | | 08:45 |
| | 17:23 | | 20:08 | 21 08:48 (1) | | | | 21:45 | | 21:30 | 20:29 | | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | | 416 | | | 485 | 498 | 501 | 453 | 381 | | 332 | 267 | 244 |
| Total, worst case | | | | 207 | | 57 | | | | | | | 268 | | | |
| Sun reduction | | | | 0.24 | | 0.35 | | | | | | | 0.28 | | | |
| Oper. time red. | | | | 1.00 | | 1.00 | | | | | | | 1.00 | | | |
| Wind dir. red. | | | | 0.61 | | 0.61 | | | | | | | 0.61 | | | |
| Total reduction | | | | 0.15 | | 0.22 | | | | | | | 0.17 | | | |
| Total, real | | | | 31 | | 12 | | | | | | | 46 | | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** C - H3

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | | April | May | June | July | August | September | | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | | 07:15 | 06:10 | 05:25 | 05:22 | 05:59 | 06:48 | | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | | 20:10 | 21:00 | 21:46 | 22:00 | 21:28 | 20:26 | | 19:17 | 17:11 | 16:31 |
| 2 | 08:45 | 08:17 | 07:23 | | 07:12 | 06:08 | 05:25 | 05:23 | 06:00 | 06:50 | | 07:39 | 07:32 | 08:22 |
| | 16:38 | 17:27 | 18:18 | | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | | 19:15 | 17:10 | 16:31 |
| 3 | 08:45 | 08:15 | 07:21 | | 07:10 | 06:06 | 05:24 | 05:24 | 06:02 | 06:51 | | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:20 | | 20:13 | 21:04 | 21:48 | 21:59 | 21:25 | 20:22 | | 19:13 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:19 | | 07:08 | 06:05 | 05:23 | 05:25 | 06:03 | 06:53 | | 07:42 | 07:36 | 08:25 |
| | 16:40 | 17:30 | 18:21 | | 20:15 | 21:05 | 21:49 | 21:59 | 21:23 | 20:20 | | 19:10 | 17:06 | 16:30 |
| 5 | 08:44 | 08:12 | 07:16 | | 07:06 | 06:03 | 05:22 | 05:25 | 06:05 | 06:55 | | 07:44 | 07:38 | 08:27 |
| | 16:42 | 17:32 | 18:23 | | 20:17 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | | 07:03 | 06:01 | 05:22 | 05:26 | 06:06 | 06:56 | | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | | 20:18 | 21:09 | 21:51 | 21:58 | 21:20 | 20:15 | | 19:06 | 17:02 | 16:29 |
| 7 | 08:43 | 08:08 | 07:12 | | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | | 20:20 | 21:10 | 21:52 | 21:57 | 21:18 | 20:13 | | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:07 | 07:10 | | 06:59 | 05:57 | 05:21 | 05:28 | 06:10 | 07:00 | | 07:49 | 07:43 | 08:30 |
| | 16:45 | 17:38 | 18:29 | | 20:22 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | | 19:01 | 16:59 | 16:28 |
| 9 | 08:43 | 08:05 | 07:07 | | 06:57 | 05:56 | 05:20 | 05:29 | 06:11 | 07:01 | | 07:50 | 07:45 | 08:31 |
| | 16:47 | 17:40 | 18:30 | | 20:23 | 21:14 | 21:54 | 21:56 | 21:14 | 20:08 | | 18:59 | 16:57 | 16:28 |
| 10 | 08:42 | 08:03 | 07:05 | | 06:54 | 05:54 | 05:20 | 05:30 | 06:13 | 07:03 | | 07:52 | 07:46 | 08:33 |
| | 16:48 | 17:41 | 18:32 | | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | | 07:54 | 07:48 | 08:34 |
| | 16:50 | 17:43 | 18:34 | | 20:27 | 21:17 | 21:55 | 21:54 | 21:10 | 20:04 | | 18:55 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:01 | | 06:50 | 05:51 | 05:19 | 05:32 | 06:16 | 07:06 | 08:32 (1) | 07:55 | 07:50 | 08:35 |
| | 16:51 | 17:45 | 18:36 | | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 8 08:40 (1) | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:58 | 06:58 | | 06:48 | 05:49 | 05:19 | 05:33 | 06:18 | 07:08 | 08:29 (1) | 07:57 | 07:52 | 08:36 |
| | 16:53 | 17:47 | 18:37 | | 20:30 | 21:20 | 21:57 | 21:53 | 21:06 | 19:59 | 14 08:43 (1) | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:56 | 06:56 | | 06:46 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 08:26 (1) | 07:59 | 07:53 | 08:37 |
| | 16:54 | 17:49 | 18:39 | | 20:32 | 21:21 | 21:57 | 21:52 | 21:05 | 19:57 | 18 08:44 (1) | 18:48 | 16:50 | 16:27 |
| 15 | 08:39 | 07:54 | 06:54 | | 06:43 | 05:46 | 05:18 | 05:35 | 06:21 | 07:11 | 08:25 (1) | 08:00 | 07:55 | 08:38 |
| | 16:56 | 17:51 | 18:41 | | 20:33 | 21:23 | 21:58 | 21:51 | 21:03 | 19:54 | 20 08:45 (1) | 18:46 | 16:48 | 16:27 |
| 16 | 08:38 | 07:52 | 06:52 | | 06:41 | 05:44 | 05:18 | 05:37 | 06:22 | 07:12 | 08:25 (1) | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | | 20:35 | 21:24 | 21:58 | 21:50 | 21:01 | 19:52 | 21 08:46 (1) | 18:44 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 07:47 (1) | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:23 (1) | 08:04 | 07:59 | 08:39 |
| | 16:59 | 17:54 | 18:44 | 4 07:51 (1) | 20:37 | 21:26 | 21:59 | 21:49 | 20:59 | 19:50 | 22 08:45 (1) | 18:41 | 16:46 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 07:43 (1) | 06:37 | 05:41 | 05:18 | 05:39 | 06:26 | 07:16 | 08:23 (1) | 08:06 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 12 07:55 (1) | 20:39 | 21:27 | 21:59 | 21:48 | 20:56 | 19:47 | 23 08:46 (1) | 18:39 | 16:44 | 16:28 |
| 19 | 08:35 | 07:46 | 06:45 | 07:40 (1) | 06:35 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:22 (1) | 08:07 | 08:02 | 08:41 |
| | 17:02 | 17:58 | 18:48 | 16 07:56 (1) | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 23 08:45 (1) | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 07:38 (1) | 06:33 | 05:39 | 05:18 | 05:42 | 06:29 | 07:19 | 08:22 (1) | 08:09 | 08:04 | 08:41 |
| | 17:04 | 18:00 | 18:49 | 19 07:57 (1) | 20:42 | 21:30 | 22:00 | 21:45 | 20:52 | 19:43 | 23 08:45 (1) | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 07:37 (1) | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:21 (1) | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:02 | 18:51 | 21 07:58 (1) | 20:44 | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | 23 08:44 (1) | 18:33 | 16:41 | 16:29 |
| 22 | 08:32 | 07:40 | 06:38 | 07:36 (1) | 06:28 | 05:36 | 05:19 | 05:44 | 06:32 | 07:22 | 08:22 (1) | 08:13 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 22 07:58 (1) | 20:45 | 21:33 | 22:00 | 21:43 | 20:48 | 19:38 | 21 08:43 (1) | 18:31 | 16:40 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 07:35 (1) | 06:26 | 05:35 | 05:19 | 05:46 | 06:34 | 07:24 | 08:23 (1) | 08:14 | 08:09 | 08:43 |
| | 17:09 | 18:05 | 18:54 | 23 07:58 (1) | 20:47 | 21:35 | 22:00 | 21:41 | 20:46 | 19:36 | 19 08:42 (1) | 18:29 | 16:38 | 16:30 |
| 24 | 08:29 | 07:36 | 06:33 | 07:35 (1) | 06:24 | 05:34 | 05:19 | 05:47 | 06:35 | 07:25 | 08:23 (1) | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 24 07:59 (1) | 20:49 | 21:36 | 22:01 | 21:40 | 20:44 | 19:33 | 17 08:40 (1) | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:34 | 06:31 | 07:34 (1) | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | 08:25 (1) | 07:18 | 08:12 | 08:44 |
| | 17:12 | 18:09 | 18:58 | 23 07:57 (1) | 20:50 | 21:37 | 22:01 | 21:39 | 20:42 | 19:31 | 13 08:38 (1) | 17:25 | 16:36 | 16:31 |
| 26 | 08:27 | 07:31 | 06:29 | 07:35 (1) | 06:20 | 05:31 | 05:20 | 05:50 | 06:38 | 07:29 | 08:28 (1) | 07:20 | 08:14 | 08:44 |
| | 17:14 | 18:11 | 19:00 | 22 07:57 (1) | 20:52 | 21:39 | 22:01 | 21:37 | 20:40 | 19:29 | 8 08:36 (1) | 17:23 | 16:35 | 16:32 |
| 27 | 08:25 | 07:29 | 06:26 | 07:35 (1) | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:13 | 19:01 | 22 07:57 (1) | 20:54 | 21:40 | 22:01 | 21:36 | 20:37 | 19:26 | | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 07:36 (1) | 06:16 | 05:29 | 05:21 | 05:53 | 06:42 | 07:32 | | 07:23 | 08:17 | 08:45 |
| | 17:18 | 18:14 | 19:03 | 20 07:56 (1) | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | | 17:19 | 16:34 | 16:33 |
| 29 | 08:23 | | 07:22 | 08:36 (1) | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:34 | | 07:25 | 08:18 | 08:45 |
| | 17:19 | | 20:05 | 17 08:53 (1) | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:22 | | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 08:37 (1) | 06:12 | 05:27 | 05:22 | 05:56 | 06:45 | 07:35 | | 07:27 | 08:20 | 08:45 |
| | 17:21 | | 20:06 | 15 08:52 (1) | 20:59 | 21:44 | 22:00 | 21:31 | 20:31 | 19:19 | | 17:15 | 16:32 | 16:35 |
| 31 | 08:20 | | 07:17 | 08:40 (1) | | 05:26 | | 05:57 | 06:47 | | | 07:29 | | 08:45 |
| | 17:23 | | 20:08 | 9 08:49 (1) | | 21:45 | | 21:30 | 20:29 | | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | | 416 | 485 | 498 | 501 | 453 | 381 | | 332 | 267 | 244 |
| Total, worst case | | | | 269 | | | | | | | 273 | | | |
| Sun reduction | | | | 0.24 | | | | | | | 0.28 | | | |
| Oper. time red. | | | | 1.00 | | | | | | | 1.00 | | | |
| Wind dir. red. | | | | 0.60 | | | | | | | 0.60 | | | |
| Total reduction | | | | 0.15 | | | | | | | 0.17 | | | |
| Total, real | | | | 39 | | | | | | | 46 | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** D - H4

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | | May | June | July | August | | September | | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:15 | | 06:10 | 05:25 | 05:22 | 05:59 | | 06:48 | | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | | 21:00 | 21:46 | 22:00 | 21:28 | | 20:26 | 24 | 19:17 | 17:11 | 16:31 |
| 2 | 08:45 | 08:17 | 07:23 | 07:12 | | 06:08 | 05:25 | 05:23 | 06:00 | | 06:50 | | 07:39 | 07:32 | 08:22 |
| | 16:38 | 17:27 | 18:18 | 20:11 | | 21:02 | 21:47 | 21:59 | 21:26 | | 20:24 | 24 | 19:15 | 17:10 | 16:31 |
| 3 | 08:45 | 08:15 | 07:21 | 07:10 | | 06:06 | 05:24 | 05:24 | 06:02 | | 06:51 | | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:20 | 20:13 | | 21:04 | 21:48 | 21:59 | 21:25 | | 20:22 | 24 | 19:13 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:19 | 07:08 | 08:06 (1) | 06:05 | 05:23 | 05:25 | 06:03 | | 06:53 | | 07:42 | 07:36 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 11 08:17 (1) | 21:05 | 21:49 | 21:59 | 21:23 | | 20:20 | 23 | 19:10 | 17:06 | 16:30 |
| 5 | 08:44 | 08:12 | 07:16 | 07:06 | 08:03 (1) | 06:03 | 05:22 | 05:25 | 06:05 | | 06:55 | | 07:44 | 07:38 | 08:27 |
| | 16:42 | 17:32 | 18:23 | 20:17 | 15 08:18 (1) | 21:07 | 21:50 | 21:58 | 21:21 | | 20:17 | 21 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 08:01 (1) | 06:01 | 05:22 | 05:26 | 06:06 | | 06:56 | | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 19 08:20 (1) | 21:09 | 21:51 | 21:58 | 21:20 | | 20:15 | 19 | 19:06 | 17:02 | 16:29 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 08:00 (1) | 05:59 | 05:21 | 05:27 | 06:08 | | 06:58 | | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 21 08:21 (1) | 21:10 | 21:52 | 21:57 | 21:18 | | 20:13 | 16 | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:07 | 07:10 | 06:59 | 07:59 (1) | 05:57 | 05:21 | 05:28 | 06:10 | | 07:00 | | 07:49 | 07:43 | 08:30 |
| | 16:45 | 17:38 | 18:29 | 20:22 | 23 08:22 (1) | 21:12 | 21:53 | 21:56 | 21:16 | | 20:10 | 11 | 19:01 | 16:59 | 16:28 |
| 9 | 08:43 | 08:05 | 07:07 | 06:57 | 07:57 (1) | 05:56 | 05:20 | 05:29 | 06:11 | | 07:01 | | 07:50 | 07:45 | 08:31 |
| | 16:47 | 17:40 | 18:30 | 20:23 | 24 08:21 (1) | 21:13 | 21:54 | 21:56 | 21:14 | | 20:08 | | 18:59 | 16:57 | 16:28 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 07:57 (1) | 05:54 | 05:20 | 05:30 | 06:13 | | 07:03 | | 07:52 | 07:46 | 08:33 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 24 08:21 (1) | 21:15 | 21:54 | 21:55 | 21:12 | | 20:06 | | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 07:57 (1) | 05:52 | 05:19 | 05:31 | 06:14 | | 07:04 | | 07:54 | 07:48 | 08:34 |
| | 16:50 | 17:43 | 18:34 | 20:27 | 24 08:21 (1) | 21:17 | 21:55 | 21:54 | 21:10 | | 20:04 | | 18:55 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:01 | 06:50 | 07:57 (1) | 05:51 | 05:19 | 05:32 | 06:16 | | 07:06 | | 07:55 | 07:50 | 08:35 |
| | 16:51 | 17:45 | 18:36 | 20:28 | 24 08:21 (1) | 21:18 | 21:56 | 21:53 | 21:08 | | 20:01 | | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:58 | 06:58 | 06:48 | 07:57 (1) | 05:49 | 05:19 | 05:33 | 06:18 | | 07:08 | | 07:57 | 07:52 | 08:36 |
| | 16:53 | 17:47 | 18:37 | 20:30 | 24 08:21 (1) | 21:20 | 21:57 | 21:53 | 21:06 | | 19:59 | | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:56 | 06:56 | 06:46 | 07:56 (1) | 05:47 | 05:18 | 05:34 | 06:19 | | 07:09 | | 07:59 | 07:53 | 08:37 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 23 08:19 (1) | 21:21 | 21:57 | 21:52 | 21:05 | | 19:57 | | 18:48 | 16:50 | 16:27 |
| 15 | 08:39 | 07:54 | 06:54 | 06:43 | 07:56 (1) | 05:46 | 05:18 | 05:35 | 06:21 | | 07:11 | | 08:00 | 07:55 | 08:38 |
| | 16:56 | 17:51 | 18:41 | 20:33 | 22 08:18 (1) | 21:23 | 21:58 | 21:51 | 21:03 | | 19:54 | | 18:46 | 16:48 | 16:27 |
| 16 | 08:38 | 07:52 | 06:52 | 06:41 | 07:57 (1) | 05:44 | 05:18 | 05:37 | 06:22 | | 07:12 | | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 20 08:17 (1) | 21:24 | 21:58 | 21:50 | 21:01 | | 19:52 | | 18:44 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 07:58 (1) | 05:43 | 05:18 | 05:38 | 06:24 | | 07:14 | | 08:04 | 07:59 | 08:39 |
| | 16:59 | 17:54 | 18:44 | 20:37 | 18 08:16 (1) | 21:26 | 21:59 | 21:49 | 20:59 | | 19:50 | | 18:41 | 16:46 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 07:59 (1) | 05:41 | 05:18 | 05:39 | 06:26 | | 07:16 | | 08:06 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:39 | 15 08:14 (1) | 21:27 | 21:59 | 21:48 | 20:56 | | 19:47 | | 18:39 | 16:44 | 16:28 |
| 19 | 08:35 | 07:46 | 06:45 | 06:35 | 08:02 (1) | 05:40 | 05:18 | 05:40 | 06:27 | | 07:17 | | 08:07 | 08:02 | 08:41 |
| | 17:02 | 17:58 | 18:48 | 20:40 | 10 08:12 (1) | 21:29 | 21:59 | 21:46 | 20:54 | | 19:45 | | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:33 | | 05:39 | 05:18 | 05:42 | 06:29 | | 07:19 | | 08:09 | 08:04 | 08:41 |
| | 17:04 | 18:00 | 18:49 | 20:42 | | 21:30 | 22:00 | 21:45 | 20:52 | | 19:43 | | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | | 05:37 | 05:18 | 05:43 | 06:30 | | 07:20 | | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:02 | 18:51 | 20:44 | | 21:32 | 22:00 | 21:44 | 20:50 | | 19:40 | | 18:33 | 16:41 | 16:29 |
| 22 | 08:32 | 07:40 | 06:38 | 06:28 | | 05:36 | 05:19 | 05:44 | 06:32 | | 07:22 | | 08:13 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | | 21:33 | 22:00 | 21:43 | 20:48 | | 19:38 | | 18:31 | 16:40 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | | 05:35 | 05:19 | 05:46 | 06:34 | | 07:24 | | 08:14 | 08:09 | 08:43 |
| | 17:09 | 18:05 | 18:54 | 20:47 | | 21:35 | 22:00 | 21:41 | 20:46 | | 19:36 | | 18:29 | 16:38 | 16:30 |
| 24 | 08:29 | 07:36 | 06:33 | 06:24 | | 05:34 | 05:19 | 05:47 | 06:35 | 08:05 (1) | 07:25 | | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:49 | | 21:36 | 22:00 | 21:40 | 20:44 | 11 08:16 (1) | 19:33 | | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:34 | 06:31 | 06:22 | | 05:32 | 05:19 | 05:49 | 06:37 | 08:02 (1) | 07:27 | | 07:18 | 08:12 | 08:44 |
| | 17:12 | 18:09 | 18:58 | 20:50 | | 21:37 | 22:01 | 21:39 | 20:42 | 15 08:17 (1) | 19:31 | | 17:25 | 16:36 | 16:31 |
| 26 | 08:27 | 07:31 | 06:29 | 06:20 | | 05:31 | 05:20 | 05:50 | 06:38 | 08:01 (1) | 07:29 | | 07:20 | 08:14 | 08:44 |
| | 17:14 | 18:11 | 19:00 | 20:52 | | 21:39 | 22:01 | 21:37 | 20:40 | 18 08:19 (1) | 19:29 | | 17:23 | 16:35 | 16:32 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | | 05:30 | 05:20 | 05:51 | 06:40 | 07:59 (1) | 07:30 | | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:13 | 19:01 | 20:54 | | 21:40 | 22:00 | 21:36 | 20:37 | 20 08:19 (1) | 19:26 | | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | | 05:29 | 05:21 | 05:53 | 06:42 | 07:58 (1) | 07:32 | | 07:23 | 08:17 | 08:45 |
| | 17:18 | 18:14 | 19:03 | 20:55 | | 21:41 | 22:00 | 21:34 | 20:35 | 22 08:20 (1) | 19:24 | | 17:19 | 16:34 | 16:33 |
| 29 | 08:23 | | 07:22 | 06:14 | | 05:28 | 05:21 | 05:54 | 06:43 | 07:57 (1) | 07:34 | | 07:25 | 08:18 | 08:45 |
| | 17:19 | | 20:05 | 20:57 | | 21:42 | 22:00 | 21:33 | 20:33 | 23 08:20 (1) | 19:22 | | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | | 05:27 | 05:22 | 05:56 | 06:45 | 07:57 (1) | 07:35 | | 07:27 | 08:20 | 08:45 |
| | 17:21 | | 20:06 | 20:59 | | 21:44 | 22:00 | 21:31 | 20:31 | 24 08:21 (1) | 19:19 | | 17:15 | 16:32 | 16:35 |
| 31 | 08:20 | | 07:17 | | | 05:26 | | 05:57 | 06:47 | 07:57 (1) | | | 07:29 | | 08:45 |
| | 17:23 | | 20:08 | | | 21:45 | | 21:30 | 20:29 | 24 08:21 (1) | | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | | 485 | 498 | 501 | 453 | | 381 | | 332 | 267 | 244 |
| Total, worst case | | | | | 317 | | | | | 157 | | 162 | | | |
| Sun reduction | | | | | 0.35 | | | | | 0.30 | | 0.28 | | | |
| Oper. time red. | | | | | 1.00 | | | | | 1.00 | | 1.00 | | | |
| Wind dir. red. | | | | | 0.64 | | | | | 0.64 | | 0.64 | | | |
| Total reduction | | | | | 0.23 | | | | | 0.19 | | 0.18 | | | |
| Total, real | | | | | 72 | | | | | 30 | | 30 | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** E - H5

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | | February | | | March | | | April | | | May | | | June | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | | | 07:25 | | | 07:15 | | 08:57 (1) | 06:10 | | | 05:25 | | 06:44 (9) |
| | 16:37 | 17:25 | | | 18:16 | | | 20:10 | 42 | 09:39 (1) | 21:00 | | | 21:46 | 9 | 06:53 (9) |
| 2 | 08:45 | 08:17 | | | 07:23 | | | 07:12 | | 08:57 (1) | 06:08 | | | 05:24 | | 06:45 (9) |
| | 16:38 | 17:27 | | | 18:18 | | | 20:11 | 41 | 09:38 (1) | 21:02 | | | 21:47 | 6 | 06:51 (9) |
| 3 | 08:45 | 08:15 | | | 07:21 | | | 07:10 | | 08:57 (1) | 06:06 | | | 05:24 | | |
| | 16:39 | 17:28 | | | 18:20 | | | 20:13 | 41 | 09:38 (1) | 21:04 | | | 21:48 | | |
| 4 | 08:44 | 08:13 | | | 07:18 | | | 07:08 | | 08:28 (2) | 06:05 | | | 05:23 | | |
| | 16:40 | 17:30 | | | 18:21 | | | 20:15 | 43 | 09:37 (1) | 21:05 | | | 21:49 | | |
| 5 | 08:44 | 08:12 | | | 07:16 | | | 07:06 | | 08:22 (2) | 06:03 | | | 05:22 | | |
| | 16:42 | 17:32 | | | 18:23 | | | 20:17 | 52 | 09:36 (1) | 21:07 | | | 21:50 | | |
| 6 | 08:44 | 08:10 | | | 07:14 | | | 07:03 | | 08:20 (2) | 06:01 | | | 05:22 | | |
| | 16:43 | 17:34 | | | 18:25 | | | 20:18 | 55 | 09:35 (1) | 21:09 | | | 21:51 | | |
| 7 | 08:43 | 08:08 | | | 07:12 | | | 07:01 | | 08:18 (2) | 05:59 | | | 05:21 | | |
| | 16:44 | 17:36 | | | 18:27 | | | 20:20 | 56 | 09:34 (1) | 21:10 | | | 21:52 | | |
| 8 | 08:43 | 08:07 | | | 07:10 | | | 06:59 | | 08:17 (2) | 05:57 | | | 05:21 | | |
| | 16:45 | 17:38 | | | 18:29 | | | 20:22 | 56 | 09:33 (1) | 21:12 | | | 21:53 | | |
| 9 | 08:43 | 08:05 | | | 07:07 | | | 06:57 | | 08:15 (2) | 05:56 | | | 05:20 | | |
| | 16:47 | 17:39 | | | 18:30 | | | 20:23 | 55 | 09:30 (1) | 21:13 | | | 21:54 | | |
| 10 | 08:42 | 08:03 | | | 07:05 | | | 06:54 | | 08:15 (2) | 05:54 | | 06:43 (9) | 05:20 | | |
| | 16:48 | 17:41 | | | 18:32 | | | 20:25 | 53 | 09:29 (1) | 21:15 | 8 | 06:51 (9) | 21:54 | | |
| 11 | 08:41 | 08:01 | | | 07:03 | | | 06:52 | | 08:14 (2) | 05:52 | | 06:41 (9) | 05:19 | | |
| | 16:50 | 17:43 | | | 18:34 | | | 20:27 | 51 | 09:27 (1) | 21:17 | 12 | 06:53 (9) | 21:55 | | |
| 12 | 08:41 | 07:59 | | | 07:01 | | | 06:50 | | 08:14 (2) | 05:51 | | 06:39 (9) | 05:19 | | |
| | 16:51 | 17:45 | | | 18:36 | | | 20:28 | 46 | 09:24 (1) | 21:18 | 15 | 06:54 (9) | 21:56 | | |
| 13 | 08:40 | 07:58 | | | 06:58 | | | 06:48 | | 08:14 (2) | 05:49 | | 06:39 (9) | 05:19 | | |
| | 16:52 | 17:47 | | | 18:37 | | | 20:30 | 40 | 09:21 (1) | 21:20 | 16 | 06:55 (9) | 21:57 | | |
| 14 | 08:39 | 07:56 | | 08:56 (3) | 06:56 | | | 06:45 | | 08:13 (2) | 05:47 | | 06:38 (9) | 05:18 | | |
| | 16:54 | 17:49 | 9 | 09:05 (3) | 18:39 | | | 20:32 | 27 | 09:13 (1) | 21:21 | 17 | 06:55 (9) | 21:57 | | |
| 15 | 08:39 | 07:54 | | 08:53 (3) | 06:54 | | | 06:43 | | 08:13 (2) | 05:46 | | 06:37 (9) | 05:18 | | |
| | 16:56 | 17:51 | 15 | 09:08 (3) | 18:41 | | | 20:33 | 24 | 08:37 (2) | 21:23 | 19 | 06:56 (9) | 21:58 | | |
| 16 | 08:38 | 07:52 | | 08:52 (3) | 06:51 | | | 06:41 | | 08:13 (2) | 05:44 | | 06:37 (9) | 05:18 | | |
| | 16:57 | 17:52 | 17 | 09:09 (3) | 18:42 | | | 20:35 | 23 | 08:36 (2) | 21:24 | 20 | 06:57 (9) | 21:58 | | |
| 17 | 08:37 | 07:50 | | 08:51 (3) | 06:49 | | | 06:39 | | 08:14 (2) | 05:43 | | 06:36 (9) | 05:18 | | |
| | 16:59 | 17:54 | 19 | 09:10 (3) | 18:44 | | | 20:37 | 21 | 08:35 (2) | 21:26 | 21 | 06:57 (9) | 21:59 | | |
| 18 | 08:36 | 07:48 | | 08:50 (3) | 06:47 | | | 06:37 | | 08:15 (2) | 05:41 | | 06:37 (9) | 05:18 | | |
| | 17:00 | 17:56 | 21 | 09:11 (3) | 18:46 | | | 20:39 | 19 | 08:34 (2) | 21:27 | 20 | 06:57 (9) | 21:59 | | |
| 19 | 08:35 | 07:46 | | 08:50 (3) | 06:45 | | 08:16 (1) | 06:35 | | 08:16 (2) | 05:40 | | 06:37 (9) | 05:18 | | |
| | 17:02 | 17:58 | 22 | 09:12 (3) | 18:48 | 13 | 08:29 (1) | 20:40 | 16 | 08:32 (2) | 21:29 | 21 | 06:58 (9) | 21:59 | | |
| 20 | 08:34 | 07:44 | | 08:49 (3) | 06:42 | | 08:12 (1) | 06:33 | | 08:18 (2) | 05:39 | | 06:36 (9) | 05:18 | | |
| | 17:04 | 18:00 | 23 | 09:12 (3) | 18:49 | 21 | 08:33 (1) | 20:42 | 12 | 08:30 (2) | 21:30 | 21 | 06:57 (9) | 22:00 | | |
| 21 | 08:33 | 07:42 | | 08:49 (3) | 06:40 | | 08:10 (1) | 06:30 | | 08:21 (2) | 05:37 | | 06:36 (9) | 05:18 | | |
| | 17:05 | 18:02 | 23 | 09:12 (3) | 18:51 | 25 | 08:35 (1) | 20:44 | 6 | 08:27 (2) | 21:32 | 21 | 06:57 (9) | 22:00 | | |
| 22 | 08:32 | 07:40 | | 08:49 (3) | 06:38 | | 08:07 (1) | 06:28 | | | 05:36 | | 06:37 (9) | 05:18 | | |
| | 17:07 | 18:03 | 23 | 09:12 (3) | 18:53 | 29 | 08:36 (1) | 20:45 | | | 21:33 | 20 | 06:57 (9) | 22:00 | | |
| 23 | 08:30 | 07:38 | | 08:50 (3) | 06:35 | | 08:06 (1) | 06:26 | | | 05:35 | | 06:37 (9) | 05:19 | | |
| | 17:09 | 18:05 | 22 | 09:12 (3) | 18:54 | 31 | 08:37 (1) | 20:47 | | | 21:35 | 20 | 06:57 (9) | 22:00 | | |
| 24 | 08:29 | 07:36 | | 08:49 (3) | 06:33 | | 08:04 (1) | 06:24 | | | 05:34 | | 06:38 (9) | 05:19 | | |
| | 17:10 | 18:07 | 21 | 09:10 (3) | 18:56 | 35 | 08:39 (1) | 20:49 | | | 21:36 | 19 | 06:57 (9) | 22:00 | | |
| 25 | 08:28 | 07:34 | | 08:50 (3) | 06:31 | | 08:02 (1) | 06:22 | | | 05:32 | | 06:38 (9) | 05:19 | | |
| | 17:12 | 18:09 | 19 | 09:09 (3) | 18:58 | 37 | 08:39 (1) | 20:50 | | | 21:37 | 19 | 06:57 (9) | 22:01 | | |
| 26 | 08:27 | 07:31 | | 08:51 (3) | 06:28 | | 08:01 (1) | 06:20 | | | 05:31 | | 06:39 (9) | 05:20 | | |
| | 17:14 | 18:11 | 17 | 09:08 (3) | 19:00 | 38 | 08:39 (1) | 20:52 | | | 21:39 | 17 | 06:56 (9) | 22:01 | | |
| 27 | 08:25 | 07:29 | | 08:52 (3) | 06:26 | | 08:01 (1) | 06:18 | | | 05:30 | | 06:39 (9) | 05:20 | | |
| | 17:16 | 18:12 | 15 | 09:07 (3) | 19:01 | 39 | 08:40 (1) | 20:54 | | | 21:40 | 17 | 06:56 (9) | 22:00 | | |
| 28 | 08:24 | 07:27 | | 08:55 (3) | 06:24 | | 07:59 (1) | 06:16 | | | 05:29 | | 06:40 (9) | 05:21 | | |
| | 17:17 | 18:14 | 9 | 09:04 (3) | 19:03 | 40 | 08:39 (1) | 20:55 | | | 21:41 | 15 | 06:55 (9) | 22:00 | | |
| 29 | 08:23 | | | | 07:22 | | 08:59 (1) | 06:14 | | | 05:28 | | 06:40 (9) | 05:21 | | |
| | 17:19 | | | | 20:05 | 41 | 09:40 (1) | 20:57 | | | 21:42 | 15 | 06:55 (9) | 22:00 | | |
| 30 | 08:21 | | | | 07:19 | | 08:58 (1) | 06:12 | | | 05:27 | | 06:41 (9) | 05:22 | | |
| | 17:21 | | | | 20:06 | 42 | 09:40 (1) | 20:59 | | | 21:44 | 13 | 06:54 (9) | 22:00 | | |
| 31 | 08:20 | | | | 07:17 | | 08:58 (1) | | | | 05:26 | | 06:43 (9) | | | |
| | 17:23 | | | | 20:08 | 42 | 09:40 (1) | | | | 21:45 | 11 | 06:54 (9) | | | |
| Potential sun hours | 260 | 278 | | | 367 | | | 416 | | | 485 | | | 498 | | |
| Total, worst case | | | 275 | | | 433 | | | 779 | | | 377 | | | 15 | |
| Sun reduction | | | 0.21 | | | 0.24 | | | 0.35 | | | 0.37 | | | 0.30 | |
| Oper. time red. | | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Wind dir. red. | | | 0.52 | | | 0.58 | | | 0.61 | | | 0.69 | | | 0.69 | |
| Total reduction | | | 0.11 | | | 0.14 | | | 0.21 | | | 0.26 | | | 0.21 | |
| Total, real | | | 29 | | | 62 | | | 167 | | | 97 | | | 3 | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** E - H5

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | July | | August | | September | | October | | November | December |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 05:22 | | 05:59 | | 06:50 (9) | 06:48 | 08:13 (2) | 07:37 | | 07:30 | 08:21 |
| | 22:00 | | 21:28 | 14 | 07:04 (9) | 20:26 51 | 09:26 (1) | 19:17 | | 17:11 | 16:31 |
| 2 | 05:23 | | 06:00 | | 06:52 (9) | 06:50 | 08:14 (2) | 07:39 | | 07:32 | 08:22 |
| | 21:59 | | 21:26 | 11 | 07:03 (9) | 20:24 53 | 09:28 (1) | 19:15 | | 17:09 | 16:31 |
| 3 | 05:24 | | 06:02 | | 06:54 (9) | 06:51 | 08:13 (2) | 07:40 | | 07:34 | 08:24 |
| | 21:59 | | 21:25 | 6 | 07:00 (9) | 20:22 55 | 09:28 (1) | 19:13 | | 17:08 | 16:30 |
| 4 | 05:25 | | 06:03 | | | 06:53 | 08:14 (2) | 07:42 | | 07:36 | 08:25 |
| | 21:59 | | 21:23 | | | 20:20 56 | 09:30 (1) | 19:10 | | 17:06 | 16:29 |
| 5 | 05:25 | | 06:05 | | | 06:55 | 08:14 (2) | 07:43 | | 07:37 | 08:27 |
| | 21:58 | | 21:21 | | | 20:17 56 | 09:30 (1) | 19:08 | | 17:04 | 16:29 |
| 6 | 05:26 | | 06:06 | | | 06:56 | 08:16 (2) | 07:45 | | 07:39 | 08:28 |
| | 21:58 | | 21:20 | | | 20:15 55 | 09:31 (1) | 19:06 | | 17:02 | 16:29 |
| 7 | 05:27 | | 06:08 | | | 06:58 | 08:17 (2) | 07:47 | | 07:41 | 08:29 |
| | 21:57 | | 21:18 | | | 20:13 52 | 09:31 (1) | 19:03 | | 17:01 | 16:28 |
| 8 | 05:28 | | 06:10 | | | 06:59 | 08:22 (2) | 07:49 | | 07:43 | 08:30 |
| | 21:56 | | 21:16 | | | 20:10 44 | 09:32 (1) | 19:01 | | 16:59 | 16:28 |
| 9 | 05:29 | | 06:11 | | | 07:01 | 08:50 (1) | 07:50 | | 07:45 | 08:31 |
| | 21:56 | | 21:14 | | | 20:08 41 | 09:31 (1) | 18:59 | | 16:57 | 16:28 |
| 10 | 05:30 | | 06:53 (9) | 06:13 | | 07:03 | 08:50 (1) | 07:52 | | 07:46 | 08:33 |
| | 21:55 | 5 | 06:58 (9) | 21:12 | | 20:06 42 | 09:32 (1) | 18:57 | | 16:56 | 16:27 |
| 11 | 05:31 | | 06:52 (9) | 06:14 | | 07:04 | 08:50 (1) | 07:54 | | 07:48 | 08:34 |
| | 21:54 | 8 | 07:00 (9) | 21:10 | | 20:04 42 | 09:32 (1) | 18:55 | | 16:54 | 16:27 |
| 12 | 05:32 | | 06:51 (9) | 06:16 | | 07:06 | 08:49 (1) | 07:55 | | 07:50 | 08:35 |
| | 21:53 | 10 | 07:01 (9) | 21:08 | | 20:01 42 | 09:31 (1) | 18:52 | | 16:53 | 16:27 |
| 13 | 05:33 | | 06:50 (9) | 06:18 | | 07:08 | 08:50 (1) | 07:57 | 09:31 (3) | 07:52 | 08:36 |
| | 21:53 | 12 | 07:02 (9) | 21:06 | | 19:59 41 | 09:31 (1) | 18:50 3 | 09:34 (3) | 16:51 | 16:27 |
| 14 | 05:34 | | 06:49 (9) | 06:19 | | 07:09 | 08:49 (1) | 07:59 | 09:26 (3) | 07:53 | 08:37 |
| | 21:52 | 14 | 07:03 (9) | 21:04 | | 19:57 41 | 09:30 (1) | 18:48 12 | 09:38 (3) | 16:50 | 16:27 |
| 15 | 05:35 | | 06:49 (9) | 06:21 | | 07:11 | 08:49 (1) | 08:00 | 09:24 (3) | 07:55 | 08:38 |
| | 21:51 | 15 | 07:04 (9) | 21:03 | | 19:54 41 | 09:30 (1) | 18:46 16 | 09:40 (3) | 16:48 | 16:27 |
| 16 | 05:37 | | 06:49 (9) | 06:22 | | 07:12 | 08:49 (1) | 08:02 | 09:23 (3) | 07:57 | 08:38 |
| | 21:50 | 16 | 07:05 (9) | 21:01 | | 19:52 39 | 09:28 (1) | 18:44 18 | 09:41 (3) | 16:47 | 16:27 |
| 17 | 05:38 | | 06:48 (9) | 06:24 | | 07:14 | 08:50 (1) | 08:04 | 09:22 (3) | 07:59 | 08:39 |
| | 21:49 | 18 | 07:06 (9) | 20:58 | | 19:50 38 | 09:28 (1) | 18:41 20 | 09:42 (3) | 16:46 | 16:27 |
| 18 | 05:39 | | 06:48 (9) | 06:26 | | 07:16 | 08:50 (1) | 08:06 | 09:21 (3) | 08:00 | 08:40 |
| | 21:48 | 18 | 07:06 (9) | 20:56 | | 19:47 37 | 09:27 (1) | 18:39 22 | 09:43 (3) | 16:44 | 16:28 |
| 19 | 05:40 | | 06:47 (9) | 06:27 | | 07:17 | 08:50 (1) | 08:07 | 09:20 (3) | 08:02 | 08:41 |
| | 21:46 | 19 | 07:06 (9) | 20:54 | | 19:45 35 | 09:25 (1) | 18:37 22 | 09:42 (3) | 16:43 | 16:28 |
| 20 | 05:42 | | 06:47 (9) | 06:29 | | 07:19 | 08:52 (1) | 08:09 | 09:20 (3) | 08:04 | 08:41 |
| | 21:45 | 20 | 07:07 (9) | 20:52 | | 19:43 32 | 09:24 (1) | 18:35 22 | 09:42 (3) | 16:42 | 16:28 |
| 21 | 05:43 | | 06:48 (9) | 06:30 | | 07:20 | 08:52 (1) | 08:11 | 09:20 (3) | 08:05 | 08:42 |
| | 21:44 | 20 | 07:08 (9) | 20:50 | | 19:40 30 | 09:22 (1) | 18:33 22 | 09:42 (3) | 16:41 | 16:29 |
| 22 | 05:44 | | 06:47 (9) | 06:32 | 08:25 (2) | 07:22 | 08:54 (1) | 08:13 | 09:20 (3) | 08:07 | 08:42 |
| | 21:43 | 21 | 07:08 (9) | 20:48 | 7 08:32 (2) | 19:38 26 | 09:20 (1) | 18:31 22 | 09:42 (3) | 16:39 | 16:29 |
| 23 | 05:46 | | 06:47 (9) | 06:34 | 08:21 (2) | 07:24 | 08:56 (1) | 08:14 | 09:20 (3) | 08:09 | 08:43 |
| | 21:41 | 21 | 07:08 (9) | 20:46 | 13 08:34 (2) | 19:36 22 | 09:18 (1) | 18:29 22 | 09:42 (3) | 16:38 | 16:30 |
| 24 | 05:47 | | 06:47 (9) | 06:35 | 08:19 (2) | 07:25 | 08:58 (1) | 08:16 | 09:21 (3) | 08:10 | 08:43 |
| | 21:40 | 20 | 07:07 (9) | 20:44 | 17 08:36 (2) | 19:33 16 | 09:14 (1) | 18:27 20 | 09:41 (3) | 16:37 | 16:30 |
| 25 | 05:48 | | 06:47 (9) | 06:37 | 08:17 (2) | 07:27 | | 07:18 | 08:22 (3) | 08:12 | 08:44 |
| | 21:39 | 21 | 07:08 (9) | 20:42 | 20 08:37 (2) | 19:31 | | 17:25 18 | 08:40 (3) | 16:36 | 16:31 |
| 26 | 05:50 | | 06:47 (9) | 06:38 | 08:17 (2) | 07:29 | | 07:20 | 08:22 (3) | 08:13 | 08:44 |
| | 21:37 | 21 | 07:08 (9) | 20:40 | 21 08:38 (2) | 19:29 | | 17:23 16 | 08:38 (3) | 16:35 | 16:32 |
| 27 | 05:51 | | 06:47 (9) | 06:40 | 08:15 (2) | 07:30 | | 07:21 | 08:23 (3) | 08:15 | 08:44 |
| | 21:36 | 20 | 07:07 (9) | 20:37 | 23 08:38 (2) | 19:26 | | 17:21 14 | 08:37 (3) | 16:34 | 16:32 |
| 28 | 05:53 | | 06:48 (9) | 06:42 | 08:15 (2) | 07:32 | | 07:23 | 08:26 (3) | 08:17 | 08:45 |
| | 21:34 | 19 | 07:07 (9) | 20:35 | 24 08:39 (2) | 19:24 | | 17:19 8 | 08:34 (3) | 16:34 | 16:33 |
| 29 | 05:54 | | 06:48 (9) | 06:43 | 08:14 (2) | 07:34 | | 07:25 | | 08:18 | 08:45 |
| | 21:33 | 19 | 07:07 (9) | 20:33 | 29 09:15 (1) | 19:22 | | 17:17 | | 16:33 | 16:34 |
| 30 | 05:56 | | 06:48 (9) | 06:45 | 08:14 (2) | 07:35 | | 07:27 | | 08:20 | 08:45 |
| | 21:31 | 18 | 07:06 (9) | 20:31 | 40 09:21 (1) | 19:19 | | 17:15 | | 16:32 | 16:35 |
| 31 | 05:57 | | 06:50 (9) | 06:47 | 08:14 (2) | | | 07:29 | | | 08:45 |
| | 21:30 | 15 | 07:05 (9) | 20:29 | 46 09:24 (1) | | | 17:13 | | | 16:36 |
| Potential sun hours | 501 | | 453 | | 381 | | 332 | | 267 | 244 | |
| Total, worst case | | 370 | | 271 | | 987 | | 277 | | | |
| Sun reduction | | 0.27 | | 0.30 | | 0.28 | | 0.24 | | | |
| Oper. time red. | | 1.00 | | 1.00 | | 1.00 | | 1.00 | | | |
| Wind dir. red. | | 0.69 | | 0.63 | | 0.59 | | 0.52 | | | |
| Total reduction | | 0.19 | | 0.19 | | 0.17 | | 0.12 | | | |
| Total, real | | 68 | | 51 | | 166 | | 34 | | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** F - H6

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | | March | | April | | May | | June | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | | 07:25 | | 08:30 (3) | 07:15 | | 06:10 | | 07:48 (2) | 05:25 | | 06:13 (9) |
| | 16:37 | 17:25 | | 18:16 | 24 | 08:54 (3) | 20:10 | | 21:00 | 58 | 08:52 (1) | 21:46 | 12 | 06:25 (9) |
| 2 | 08:45 | 08:17 | | 07:23 | | 08:30 (3) | 07:12 | | 06:08 | | 07:49 (2) | 05:24 | | 06:12 (9) |
| | 16:38 | 17:27 | | 18:18 | 24 | 08:54 (3) | 20:11 | | 21:02 | 54 | 08:51 (1) | 21:47 | 14 | 06:26 (9) |
| 3 | 08:45 | 08:15 | | 07:21 | | 08:30 (3) | 07:10 | | 06:06 | | 07:49 (2) | 05:24 | | 06:11 (9) |
| | 16:39 | 17:28 | | 18:20 | 24 | 08:54 (3) | 20:13 | | 21:04 | 50 | 08:49 (1) | 21:48 | 15 | 06:26 (9) |
| 4 | 08:44 | 08:13 | | 07:18 | | 08:30 (3) | 07:08 | | 06:05 | | 07:51 (2) | 05:23 | | 06:11 (9) |
| | 16:40 | 17:30 | | 18:21 | 23 | 08:53 (3) | 20:15 | | 21:05 | 43 | 08:47 (1) | 21:49 | 17 | 06:28 (9) |
| 5 | 08:44 | 08:12 | | 07:16 | | 08:31 (3) | 07:06 | | 06:03 | | 07:54 (2) | 05:22 | | 06:11 (9) |
| | 16:42 | 17:32 | | 18:23 | 22 | 08:53 (3) | 20:17 | | 21:07 | 35 | 08:46 (1) | 21:50 | 17 | 06:28 (9) |
| 6 | 08:44 | 08:10 | | 07:14 | | 08:31 (3) | 07:03 | 08:38 (1) | 06:01 | | 08:20 (1) | 05:22 | | 06:11 (9) |
| | 16:43 | 17:34 | | 18:25 | 20 | 08:51 (3) | 20:18 | 5 08:43 (1) | 21:09 | 24 | 08:44 (1) | 21:51 | 18 | 06:29 (9) |
| 7 | 08:43 | 08:08 | | 07:12 | | 08:32 (3) | 07:01 | 08:32 (1) | 05:59 | | 08:21 (1) | 05:21 | | 06:10 (9) |
| | 16:44 | 17:36 | | 18:27 | 17 | 08:49 (3) | 20:20 | 17 08:49 (1) | 21:10 | 21 | 08:42 (1) | 21:52 | 19 | 06:29 (9) |
| 8 | 08:43 | 08:07 | | 07:10 | | 08:34 (3) | 06:59 | 08:29 (1) | 05:57 | | 08:24 (1) | 05:21 | | 06:11 (9) |
| | 16:45 | 17:38 | | 18:29 | 13 | 08:47 (3) | 20:22 | 23 08:52 (1) | 21:12 | 16 | 08:40 (1) | 21:53 | 18 | 06:29 (9) |
| 9 | 08:43 | 08:05 | | 07:07 | | 08:37 (3) | 06:57 | 08:26 (1) | 05:56 | | 08:28 (1) | 05:20 | | 06:10 (9) |
| | 16:47 | 17:39 | | 18:30 | 6 | 08:43 (3) | 20:23 | 27 08:53 (1) | 21:13 | 7 | 08:35 (1) | 21:54 | 19 | 06:29 (9) |
| 10 | 08:42 | 08:03 | | 07:05 | | | 06:54 | 08:24 (1) | 05:54 | | | 05:20 | | 06:11 (9) |
| | 16:48 | 17:41 | | 18:32 | | | 20:25 | 31 08:55 (1) | 21:15 | | | 21:54 | 19 | 06:30 (9) |
| 11 | 08:41 | 08:01 | | 07:03 | | | 06:52 | 08:22 (1) | 05:52 | | | 05:19 | | 06:11 (9) |
| | 16:50 | 17:43 | | 18:34 | | | 20:27 | 34 08:56 (1) | 21:17 | | | 21:55 | 19 | 06:30 (9) |
| 12 | 08:41 | 07:59 | | 07:01 | | | 06:50 | 08:21 (1) | 05:51 | | | 05:19 | | 06:11 (9) |
| | 16:51 | 17:45 | | 18:36 | | | 20:28 | 36 08:57 (1) | 21:18 | | | 21:56 | 20 | 06:31 (9) |
| 13 | 08:40 | 07:58 | | 06:58 | | | 06:48 | 08:19 (1) | 05:49 | | | 05:19 | | 06:11 (9) |
| | 16:52 | 17:47 | | 18:37 | | | 20:30 | 39 08:58 (1) | 21:20 | | | 21:57 | 19 | 06:30 (9) |
| 14 | 08:39 | 07:56 | | 06:56 | | | 06:45 | 08:17 (1) | 05:47 | | | 05:18 | | 06:11 (9) |
| | 16:54 | 17:49 | | 18:39 | | | 20:32 | 41 08:58 (1) | 21:21 | | | 21:57 | 20 | 06:31 (9) |
| 15 | 08:39 | 07:54 | | 06:54 | | | 06:43 | 08:17 (1) | 05:46 | | | 05:18 | | 06:11 (9) |
| | 16:56 | 17:51 | | 18:41 | | | 20:33 | 41 08:58 (1) | 21:23 | | | 21:58 | 20 | 06:31 (9) |
| 16 | 08:38 | 07:52 | | 06:51 | | | 06:41 | 07:58 (2) | 05:44 | | | 05:18 | | 06:11 (9) |
| | 16:57 | 17:52 | | 18:42 | | | 20:35 | 50 08:59 (1) | 21:24 | | | 21:58 | 20 | 06:31 (9) |
| 17 | 08:37 | 07:50 | | 06:49 | | | 06:39 | 07:55 (2) | 05:43 | | | 05:18 | | 06:12 (9) |
| | 16:59 | 17:54 | | 18:44 | | | 20:37 | 57 08:59 (1) | 21:26 | | | 21:59 | 20 | 06:32 (9) |
| 18 | 08:36 | 07:48 | | 06:47 | | | 06:37 | 07:53 (2) | 05:41 | | | 05:18 | | 06:12 (9) |
| | 17:00 | 17:56 | | 18:46 | | | 20:39 | 61 08:59 (1) | 21:27 | | | 21:59 | 20 | 06:32 (9) |
| 19 | 08:35 | 07:46 | | 06:45 | | | 06:35 | 07:51 (2) | 05:40 | | | 05:18 | | 06:12 (9) |
| | 17:02 | 17:58 | | 18:48 | | | 20:40 | 65 08:59 (1) | 21:29 | | | 21:59 | 20 | 06:32 (9) |
| 20 | 08:34 | 07:44 | | 06:42 | | | 06:33 | 07:50 (2) | 05:39 | | | 05:18 | | 06:12 (9) |
| | 17:04 | 18:00 | | 18:49 | | | 20:42 | 67 08:59 (1) | 21:30 | | | 22:00 | 20 | 06:32 (9) |
| 21 | 08:33 | 07:42 | | 06:40 | | | 06:30 | 07:49 (2) | 05:37 | | | 05:18 | | 06:13 (9) |
| | 17:05 | 18:02 | | 18:51 | | | 20:44 | 70 08:59 (1) | 21:32 | | | 22:00 | 20 | 06:33 (9) |
| 22 | 08:32 | 07:40 | 08:39 (3) | 06:38 | | | 06:28 | 07:48 (2) | 05:36 | | | 05:18 | | 06:13 (9) |
| | 17:07 | 18:03 | 9 08:48 (3) | 18:53 | | | 20:45 | 71 08:59 (1) | 21:33 | | | 22:00 | 20 | 06:33 (9) |
| 23 | 08:30 | 07:38 | 08:37 (3) | 06:35 | | | 06:26 | 07:47 (2) | 05:35 | | | 05:19 | | 06:13 (9) |
| | 17:09 | 18:05 | 14 08:51 (3) | 18:54 | | | 20:47 | 71 08:58 (1) | 21:35 | | | 22:00 | 20 | 06:33 (9) |
| 24 | 08:29 | 07:36 | 08:34 (3) | 06:33 | | | 06:24 | 07:47 (2) | 05:34 | | | 05:19 | | 06:13 (9) |
| | 17:10 | 18:07 | 17 08:51 (3) | 18:56 | | | 20:49 | 71 08:58 (1) | 21:36 | | | 22:00 | 20 | 06:33 (9) |
| 25 | 08:28 | 07:34 | 08:33 (3) | 06:31 | | | 06:22 | 07:46 (2) | 05:32 | | | 05:19 | | 06:14 (9) |
| | 17:12 | 18:09 | 20 08:53 (3) | 18:58 | | | 20:50 | 71 08:57 (1) | 21:37 | | | 22:01 | 20 | 06:34 (9) |
| 26 | 08:27 | 07:31 | 08:32 (3) | 06:28 | | | 06:20 | 07:46 (2) | 05:31 | | | 05:20 | | 06:13 (9) |
| | 17:14 | 18:11 | 22 08:54 (3) | 19:00 | | | 20:52 | 70 08:56 (1) | 21:39 | | | 22:01 | 21 | 06:34 (9) |
| 27 | 08:25 | 07:29 | 08:31 (3) | 06:26 | | | 06:18 | 07:46 (2) | 05:30 | | | 05:20 | | 06:14 (9) |
| | 17:16 | 18:12 | 23 08:54 (3) | 19:01 | | | 20:54 | 68 08:55 (1) | 21:40 | | | 22:00 | 20 | 06:34 (9) |
| 28 | 08:24 | 07:27 | 08:31 (3) | 06:24 | | | 06:16 | 07:46 (2) | 05:29 | | | 05:21 | | 06:14 (9) |
| | 17:17 | 18:14 | 24 08:55 (3) | 19:03 | | | 20:55 | 67 08:55 (1) | 21:41 | | | 22:00 | 20 | 06:34 (9) |
| 29 | 08:23 | | | 07:22 | | | 06:14 | 07:46 (2) | 05:28 | | 06:15 (9) | 05:21 | | 06:15 (9) |
| | 17:19 | | | 20:05 | | | 20:57 | 65 08:53 (1) | 21:42 | 6 | 06:21 (9) | 22:00 | 20 | 06:35 (9) |
| 30 | 08:21 | | | 07:19 | | | 06:12 | 07:47 (2) | 05:27 | | 06:14 (9) | 05:22 | | 06:14 (9) |
| | 17:21 | | | 20:06 | | | 20:59 | 61 08:52 (1) | 21:44 | 9 | 06:23 (9) | 22:00 | 20 | 06:34 (9) |
| 31 | 08:20 | | | 07:17 | | | | | 05:26 | | 06:14 (9) | | | |
| | 17:23 | | | 20:08 | | | | | 21:45 | 11 | 06:25 (9) | | | |
| Potential sun hours | 260 | 278 | | 367 | | | 416 | | 485 | | | 498 | | |
| Total, worst case | | | 129 | | 173 | | | 1279 | | 334 | | | 567 | |
| Sun reduction | | | 0.21 | | 0.24 | | | 0.35 | | 0.37 | | | 0.30 | |
| Oper. time red. | | | 1.00 | | 1.00 | | | 1.00 | | 1.00 | | | 1.00 | |
| Wind dir. red. | | | 0.55 | | 0.55 | | | 0.64 | | 0.64 | | | 0.69 | |
| Total reduction | | | 0.11 | | 0.13 | | | 0.23 | | 0.24 | | | 0.21 | |
| Total, real | | | 14 | | 23 | | | 289 | | 79 | | | 118 | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** F - H6

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | July | | August | | | September | | October | | | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 05:22 | | 06:15 (9) | 05:59 | | 06:48 | | 08:21 (1) | 07:37 | | 07:30 | 08:21 |
| | 22:00 | 20 | 06:35 (9) | 21:28 | | 20:26 | 34 | 08:55 (1) | 19:17 | | 17:11 | 16:31 |
| 2 | 05:23 | | 06:16 (9) | 06:00 | | 06:50 | | 08:23 (1) | 07:38 | | 07:32 | 08:22 |
| | 21:59 | 19 | 06:35 (9) | 21:26 | | 20:24 | 31 | 08:54 (1) | 19:15 | | 17:09 | 16:31 |
| 3 | 05:24 | | 06:15 (9) | 06:02 | | 06:51 | | 08:24 (1) | 07:40 | | 07:34 | 08:24 |
| | 21:59 | 19 | 06:34 (9) | 21:25 | | 20:22 | 27 | 08:51 (1) | 19:13 | | 17:08 | 16:30 |
| 4 | 05:25 | | 06:16 (9) | 06:03 | | 08:37 (1) | 06:53 | 08:26 (1) | 07:42 | | 07:36 | 08:25 |
| | 21:59 | 19 | 06:35 (9) | 21:23 | 10 | 08:47 (1) | 20:20 | 23 | 08:49 (1) | 19:10 | | 17:06 | 16:29 |
| 5 | 05:25 | | 06:17 (9) | 06:05 | | 08:33 (1) | 06:55 | 08:28 (1) | 07:43 | | 09:12 (3) | 07:37 | 08:26 |
| | 21:58 | 18 | 06:35 (9) | 21:21 | 17 | 08:50 (1) | 20:17 | 17 | 08:45 (1) | 19:08 | 11 | 09:23 (3) | 17:04 | 16:29 |
| 6 | 05:26 | | 06:17 (9) | 06:06 | | 08:31 (1) | 06:56 | 08:34 (1) | 07:45 | | 09:09 (3) | 07:39 | 08:28 |
| | 21:58 | 18 | 06:35 (9) | 21:20 | 22 | 08:53 (1) | 20:15 | 6 | 08:40 (1) | 19:06 | 15 | 09:24 (3) | 17:02 | 16:29 |
| 7 | 05:27 | | 06:17 (9) | 06:08 | | 08:29 (1) | 06:58 | | | 07:47 | | 09:08 (3) | 07:41 | 08:29 |
| | 21:57 | 17 | 06:34 (9) | 21:18 | 25 | 08:54 (1) | 20:13 | | | 19:03 | 18 | 09:26 (3) | 17:01 | 16:28 |
| 8 | 05:28 | | 06:18 (9) | 06:10 | | 08:02 (2) | 06:59 | | | 07:49 | | 09:07 (3) | 07:43 | 08:30 |
| | 21:56 | 16 | 06:34 (9) | 21:16 | 39 | 08:56 (1) | 20:10 | | | 19:01 | 20 | 09:27 (3) | 16:59 | 16:28 |
| 9 | 05:29 | | 06:18 (9) | 06:11 | | 08:00 (2) | 07:01 | | | 07:50 | | 09:05 (3) | 07:45 | 08:31 |
| | 21:56 | 16 | 06:34 (9) | 21:14 | 45 | 08:57 (1) | 20:08 | | | 18:59 | 22 | 09:27 (3) | 16:57 | 16:28 |
| 10 | 05:30 | | 06:19 (9) | 06:13 | | 07:58 (2) | 07:03 | | | 07:52 | | 09:04 (3) | 07:46 | 08:33 |
| | 21:55 | 15 | 06:34 (9) | 21:12 | 50 | 08:58 (1) | 20:06 | | | 18:57 | 24 | 09:28 (3) | 16:56 | 16:27 |
| 11 | 05:31 | | 06:20 (9) | 06:14 | | 07:57 (2) | 07:04 | | | 07:54 | | 09:04 (3) | 07:48 | 08:34 |
| | 21:54 | 13 | 06:33 (9) | 21:10 | 55 | 08:59 (1) | 20:04 | | | 18:55 | 24 | 09:28 (3) | 16:54 | 16:27 |
| 12 | 05:32 | | 06:21 (9) | 06:16 | | 07:55 (2) | 07:06 | | | 07:55 | | 09:04 (3) | 07:50 | 08:35 |
| | 21:53 | 12 | 06:33 (9) | 21:08 | 59 | 09:00 (1) | 20:01 | | | 18:52 | 24 | 09:28 (3) | 16:53 | 16:27 |
| 13 | 05:33 | | 06:22 (9) | 06:18 | | 07:55 (2) | 07:08 | | | 07:57 | | 09:04 (3) | 07:52 | 08:36 |
| | 21:53 | 10 | 06:32 (9) | 21:06 | 62 | 09:01 (1) | 19:59 | | | 18:50 | 24 | 09:28 (3) | 16:51 | 16:27 |
| 14 | 05:34 | | 06:23 (9) | 06:19 | | 07:55 (2) | 07:09 | | | 07:59 | | 09:03 (3) | 07:53 | 08:37 |
| | 21:52 | 8 | 06:31 (9) | 21:04 | 64 | 09:02 (1) | 19:57 | | | 18:48 | 24 | 09:27 (3) | 16:50 | 16:27 |
| 15 | 05:35 | | 06:26 (9) | 06:21 | | 07:54 (2) | 07:11 | | | 08:00 | | 09:04 (3) | 07:55 | 08:37 |
| | 21:51 | 2 | 06:28 (9) | 21:03 | 66 | 09:02 (1) | 19:54 | | | 18:46 | 22 | 09:26 (3) | 16:48 | 16:27 |
| 16 | 05:37 | | | 06:22 | | 07:54 (2) | 07:12 | | | 08:02 | | 09:04 (3) | 07:57 | 08:38 |
| | 21:50 | | | 21:01 | 68 | 09:03 (1) | 19:52 | | | 18:44 | 21 | 09:25 (3) | 16:47 | 16:27 |
| 17 | 05:38 | | | 06:24 | | 07:53 (2) | 07:14 | | | 08:04 | | 09:05 (3) | 07:59 | 08:39 |
| | 21:49 | | | 20:58 | 70 | 09:03 (1) | 19:50 | | | 18:41 | 19 | 09:24 (3) | 16:46 | 16:27 |
| 18 | 05:39 | | | 06:26 | | 07:53 (2) | 07:16 | | | 08:06 | | 09:07 (3) | 08:00 | 08:40 |
| | 21:47 | | | 20:56 | 71 | 09:04 (1) | 19:47 | | | 18:39 | 16 | 09:23 (3) | 16:44 | 16:28 |
| 19 | 05:40 | | | 06:27 | | 07:53 (2) | 07:17 | | | 08:07 | | 09:08 (3) | 08:02 | 08:41 |
| | 21:46 | | | 20:54 | 70 | 09:03 (1) | 19:45 | | | 18:37 | 12 | 09:20 (3) | 16:43 | 16:28 |
| 20 | 05:42 | | | 06:29 | | 07:53 (2) | 07:19 | | | 08:09 | | 09:11 (3) | 08:04 | 08:41 |
| | 21:45 | | | 20:52 | 71 | 09:04 (1) | 19:43 | | | 18:35 | 6 | 09:17 (3) | 16:42 | 16:28 |
| 21 | 05:43 | | | 06:30 | | 07:53 (2) | 07:20 | | | 08:11 | | | 08:05 | 08:42 |
| | 21:44 | | | 20:50 | 70 | 09:03 (1) | 19:40 | | | 18:33 | | | 16:41 | 16:29 |
| 22 | 05:44 | | | 06:32 | | 07:54 (2) | 07:22 | | | 08:13 | | | 08:07 | 08:42 |
| | 21:43 | | | 20:48 | 69 | 09:04 (1) | 19:38 | | | 18:31 | | | 16:39 | 16:29 |
| 23 | 05:46 | | | 06:34 | | 07:54 (2) | 07:24 | | | 08:14 | | | 08:09 | 08:43 |
| | 21:41 | | | 20:46 | 68 | 09:03 (1) | 19:36 | | | 18:29 | | | 16:38 | 16:30 |
| 24 | 05:47 | | | 06:35 | | 07:55 (2) | 07:25 | | | 08:16 | | | 08:10 | 08:43 |
| | 21:40 | | | 20:44 | 65 | 09:03 (1) | 19:33 | | | 18:27 | | | 16:37 | 16:30 |
| 25 | 05:48 | | | 06:37 | | 07:56 (2) | 07:27 | | | 07:18 | | | 08:12 | 08:44 |
| | 21:39 | | | 20:42 | 62 | 09:02 (1) | 19:31 | | | 17:25 | | | 16:36 | 16:31 |
| 26 | 05:50 | | | 06:38 | | 07:58 (2) | 07:29 | | | 07:20 | | | 08:13 | 08:44 |
| | 21:37 | | | 20:40 | 57 | 09:02 (1) | 19:29 | | | 17:23 | | | 16:35 | 16:32 |
| 27 | 05:51 | | | 06:40 | | 08:01 (2) | 07:30 | | | 07:21 | | | 08:15 | 08:44 |
| | 21:36 | | | 20:37 | 48 | 09:01 (1) | 19:26 | | | 17:21 | | | 16:34 | 16:32 |
| 28 | 05:53 | | | 06:42 | | 08:18 (1) | 07:32 | | | 07:23 | | | 08:17 | 08:45 |
| | 21:34 | | | 20:35 | 42 | 09:00 (1) | 19:24 | | | 17:19 | | | 16:34 | 16:33 |
| 29 | 05:54 | | | 06:43 | | 08:18 (1) | 07:34 | | | 07:25 | | | 08:18 | 08:45 |
| | 21:33 | | | 20:33 | 41 | 08:59 (1) | 19:22 | | | 17:17 | | | 16:33 | 16:34 |
| 30 | 05:56 | | | 06:45 | | 08:19 (1) | 07:35 | | | 07:27 | | | 08:20 | 08:45 |
| | 21:31 | | | 20:31 | 39 | 08:58 (1) | 19:19 | | | 17:15 | | | 16:32 | 16:35 |
| 31 | 05:57 | | | 06:47 | | 08:21 (1) | | | | 07:29 | | | | 08:45 |
| | 21:30 | | | 20:29 | 36 | 08:57 (1) | | | | 17:13 | | | | 16:36 |
| Potential sun hours | 501 | | | 453 | | | 381 | | | 332 | | | 267 | 244 |
| Total, worst case | | 222 | | | 1461 | | | 138 | | | 302 | | | |
| Sun reduction | | 0.27 | | | 0.30 | | | 0.28 | | | 0.24 | | | |
| Oper. time red. | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | | | |
| Wind dir. red. | | 0.69 | | | 0.64 | | | 0.63 | | | 0.55 | | | |
| Total reduction | | 0.19 | | | 0.19 | | | 0.18 | | | 0.13 | | | |
| Total, real | | 41 | | | 277 | | | 25 | | | 39 | | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
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+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** G - H7

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | | February | March | April | | May | June |
|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | | 10:21 (11) | 08:18 | 07:25 | | 07:15 | | | 06:10 | 05:25 |
| | 16:37 | 23 | 10:44 (11) | 17:25 | 18:16 | | 20:10 | | | 21:00 | 21:46 |
| 2 | 08:45 | | 10:21 (11) | 08:17 | 07:23 | | 07:12 | | | 06:08 | 05:24 |
| | 16:38 | 24 | 10:45 (11) | 17:26 | 18:18 | | 20:11 | | | 21:02 | 21:47 |
| 3 | 08:45 | | 10:21 (11) | 08:15 | 07:21 | | 07:10 | | | 06:06 | 05:24 |
| | 16:39 | 24 | 10:45 (11) | 17:28 | 18:20 | | 20:13 | | | 21:04 | 21:48 |
| 4 | 08:44 | | 10:21 (11) | 08:13 | 07:18 | | 07:08 | | | 06:04 | 05:23 |
| | 16:40 | 25 | 10:46 (11) | 17:30 | 18:21 | | 20:15 | | | 21:05 | 21:49 |
| 5 | 08:44 | | 10:22 (11) | 08:12 | 07:16 | | 07:05 | | | 06:03 | 05:22 |
| | 16:41 | 25 | 10:47 (11) | 17:32 | 18:23 | | 20:16 | | | 21:07 | 21:50 |
| 6 | 08:44 | | 10:21 (11) | 08:10 | 07:14 | | 07:03 | | | 06:01 | 05:21 |
| | 16:43 | 26 | 10:47 (11) | 17:34 | 18:25 | | 20:18 | | | 21:09 | 21:51 |
| 7 | 08:43 | | 10:22 (11) | 08:08 | 07:12 | | 07:01 | | | 05:59 | 05:21 |
| | 16:44 | 27 | 10:49 (11) | 17:36 | 18:27 | | 20:20 | | | 21:10 | 21:52 |
| 8 | 08:43 | | 10:22 (11) | 08:07 | 07:10 | | 06:59 | | | 05:57 | 05:20 |
| | 16:45 | 27 | 10:49 (11) | 17:38 | 18:28 | | 20:22 | | | 21:12 | 21:53 |
| 9 | 08:43 | | 10:21 (11) | 08:05 | 07:07 | | 06:56 | | | 05:56 | 05:20 |
| | 16:47 | 28 | 10:49 (11) | 17:39 | 18:30 | | 20:23 | | | 21:13 | 21:54 |
| 10 | 08:42 | | 10:22 (11) | 08:03 | 07:05 | | 06:54 | | 07:24 (19) | 05:54 | 05:19 |
| | 16:48 | 29 | 10:51 (11) | 17:41 | 18:32 | | 20:25 | 6 | 07:30 (19) | 21:15 | 21:54 |
| 11 | 08:41 | | 10:22 (11) | 08:01 | 07:03 | | 06:52 | | 07:21 (19) | 05:52 | 05:19 |
| | 16:49 | 29 | 10:51 (11) | 17:43 | 18:34 | | 20:27 | 11 | 07:32 (19) | 21:17 | 21:55 |
| 12 | 08:41 | | 10:22 (11) | 07:59 | 07:01 | | 06:50 | | 07:20 (19) | 05:51 | 05:19 |
| | 16:51 | 29 | 10:51 (11) | 17:45 | 18:35 | | 20:28 | 14 | 07:34 (19) | 21:18 | 21:56 |
| 13 | 08:40 | | 10:22 (11) | 07:58 | 06:58 | | 06:48 | | 07:19 (19) | 05:49 | 05:18 |
| | 16:52 | 30 | 10:52 (11) | 17:47 | 18:37 | | 20:30 | 15 | 07:34 (19) | 21:20 | 21:57 |
| 14 | 08:39 | | 10:22 (11) | 07:56 | 06:56 | | 06:45 | | 07:17 (19) | 05:47 | 05:18 |
| | 16:54 | 30 | 10:52 (11) | 17:49 | 18:39 | | 20:32 | 17 | 07:34 (19) | 21:21 | 21:57 |
| 15 | 08:39 | | 10:23 (11) | 07:54 | 06:54 | | 06:43 | | 07:17 (19) | 05:46 | 05:18 |
| | 16:55 | 30 | 10:53 (11) | 17:50 | 18:41 | | 20:33 | 17 | 07:34 (19) | 21:23 | 21:58 |
| 16 | 08:38 | | 10:23 (11) | 07:52 | 06:51 | | 06:41 | | 07:16 (19) | 05:44 | 05:18 |
| | 16:57 | 30 | 10:53 (11) | 17:52 | 18:42 | | 20:35 | 18 | 07:34 (19) | 21:24 | 21:58 |
| 17 | 08:37 | | 10:23 (11) | 07:50 | 06:49 | | 06:39 | | 07:16 (19) | 05:43 | 05:18 |
| | 16:59 | 31 | 10:54 (11) | 17:54 | 18:44 | | 20:37 | 18 | 07:34 (19) | 21:26 | 21:59 |
| 18 | 08:36 | | 10:24 (11) | 07:48 | 06:47 | | 06:37 | | 07:17 (19) | 05:41 | 05:18 |
| | 17:00 | 30 | 10:54 (11) | 17:56 | 18:46 | | 20:38 | 16 | 07:33 (19) | 21:27 | 21:59 |
| 19 | 08:35 | | 10:24 (11) | 07:46 | 06:45 | | 06:35 | | 07:17 (19) | 05:40 | 05:18 |
| | 17:02 | 30 | 10:54 (11) | 17:58 | 18:48 | | 20:40 | 15 | 07:32 (19) | 21:29 | 21:59 |
| 20 | 08:34 | | 10:25 (11) | 07:44 | 06:42 | | 06:32 | | 07:18 (19) | 05:39 | 05:18 |
| | 17:03 | 30 | 10:55 (11) | 18:00 | 18:49 | | 20:42 | 13 | 07:31 (19) | 21:30 | 22:00 |
| 21 | 08:33 | | 10:26 (11) | 07:42 | 06:40 | | 06:30 | | 07:20 (19) | 05:37 | 05:18 |
| | 17:05 | 29 | 10:55 (11) | 18:01 | 18:51 | | 20:44 | 9 | 07:29 (19) | 21:32 | 22:00 |
| 22 | 08:32 | | 10:26 (11) | 07:40 | 06:38 | | 06:28 | | | 05:36 | 05:18 |
| | 17:07 | 28 | 10:54 (11) | 18:03 | 18:53 | | 20:45 | | | 21:33 | 22:00 |
| 23 | 08:30 | | 10:27 (11) | 07:38 | 06:35 | | 06:26 | | | 05:35 | 05:19 |
| | 17:09 | 28 | 10:55 (11) | 18:05 | 18:54 | | 20:47 | | | 21:35 | 22:00 |
| 24 | 08:29 | | 10:28 (11) | 07:36 | 06:33 | | 06:24 | | | 05:33 | 05:19 |
| | 17:10 | 27 | 10:55 (11) | 18:07 | 18:56 | | 20:49 | | | 21:36 | 22:00 |
| 25 | 08:28 | | 10:28 (11) | 07:34 | 06:31 | | 06:22 | | | 05:32 | 05:19 |
| | 17:12 | 26 | 10:54 (11) | 18:09 | 18:58 | | 20:50 | | | 21:37 | 22:01 |
| 26 | 08:27 | | 10:29 (11) | 07:31 | 06:28 | | 06:20 | | | 05:31 | 05:20 |
| | 17:14 | 25 | 10:54 (11) | 18:11 | 18:59 | | 20:52 | | | 21:39 | 22:01 |
| 27 | 08:25 | | 10:30 (11) | 07:29 | 06:26 | | 06:18 | | | 05:30 | 05:20 |
| | 17:16 | 23 | 10:53 (11) | 18:12 | 19:01 | | 20:54 | | | 21:40 | 22:00 |
| 28 | 08:24 | | 10:32 (11) | 07:27 | 06:24 | | 06:16 | | | 05:29 | 05:21 |
| | 17:17 | 20 | 10:52 (11) | 18:14 | 19:03 | | 20:55 | | | 21:41 | 22:00 |
| 29 | 08:23 | | 10:33 (11) | | 07:22 | | 06:14 | | | 05:28 | 05:21 |
| | 17:19 | 17 | 10:50 (11) | | 20:05 | | 20:57 | | | 21:42 | 22:00 |
| 30 | 08:21 | | 10:35 (11) | | 07:19 | | 06:12 | | | 05:27 | 05:22 |
| | 17:21 | 14 | 10:49 (11) | | 20:06 | | 20:59 | | | 21:44 | 22:00 |
| 31 | 08:20 | | 10:38 (11) | | 07:17 | | | | | 05:26 | |
| | 17:23 | 8 | 10:46 (11) | | 20:08 | | | | | 21:45 | |
| Potential sun hours | 260 | | | 278 | 367 | | 416 | | | 485 | 498 |
| Total, worst case | | 802 | | | | | | 169 | | | |
| Sun reduction | | 0.16 | | | | | | 0.35 | | | |
| Oper. time red. | | 1.00 | | | | | | 1.00 | | | |
| Wind dir. red. | | 0.54 | | | | | | 0.67 | | | |
| Total reduction | | 0.08 | | | | | | 0.24 | | | |
| Total, real | | 68 | | | | | | 40 | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** G - H7

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | July | August | | | September | | | October | November | | | December | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 05:22 | 05:59 | | | 06:48 | | 07:20 (19) | 07:37 | 07:30 | | | 08:21 | | 10:04 (11) |
| | 22:00 | 21:28 | | | 20:26 | 11 | 07:31 (19) | 19:17 | 17:11 | | | 16:31 | 29 | 10:33 (11) |
| 2 | 05:23 | 06:00 | | | 06:50 | | 07:23 (19) | 07:38 | 07:32 | | | 08:22 | | 10:04 (11) |
| | 21:59 | 21:26 | | | 20:24 | 6 | 07:29 (19) | 19:15 | 17:09 | | | 16:30 | 29 | 10:33 (11) |
| 3 | 05:24 | 06:02 | | | 06:51 | | | 07:40 | 07:34 | | | 08:24 | | 10:05 (11) |
| | 21:59 | 21:25 | | | 20:22 | | | 19:12 | 17:08 | | | 16:30 | 28 | 10:33 (11) |
| 4 | 05:24 | 06:03 | | | 06:53 | | | 07:42 | 07:36 | | | 08:25 | | 10:06 (11) |
| | 21:59 | 21:23 | | | 20:19 | | | 19:10 | 17:06 | | | 16:29 | 27 | 10:33 (11) |
| 5 | 05:25 | 06:05 | | | 06:55 | | | 07:43 | 07:37 | | | 08:26 | | 10:07 (11) |
| | 21:58 | 21:21 | | | 20:17 | | | 19:08 | 17:04 | | | 16:29 | 27 | 10:34 (11) |
| 6 | 05:26 | 06:06 | | | 06:56 | | | 07:45 | 07:39 | | | 08:28 | | 10:07 (11) |
| | 21:58 | 21:19 | | | 20:15 | | | 19:06 | 17:02 | | | 16:28 | 27 | 10:34 (11) |
| 7 | 05:27 | 06:08 | | | 06:58 | | | 07:47 | 07:41 | | | 08:29 | | 10:08 (11) |
| | 21:57 | 21:18 | | | 20:13 | | | 19:03 | 17:01 | | | 16:28 | 25 | 10:33 (11) |
| 8 | 05:28 | 06:09 | | | 06:59 | | | 07:48 | 07:43 | | | 08:30 | | 10:09 (11) |
| | 21:56 | 21:16 | | | 20:10 | | | 19:01 | 16:59 | | | 16:28 | 25 | 10:34 (11) |
| 9 | 05:29 | 06:11 | | | 07:01 | | | 07:50 | 07:45 | | | 08:31 | | 10:10 (11) |
| | 21:56 | 21:14 | | | 20:08 | | | 18:59 | 16:57 | | | 16:27 | 24 | 10:34 (11) |
| 10 | 05:30 | 06:13 | | | 07:03 | | | 07:52 | 07:46 | | | 08:33 | | 10:10 (11) |
| | 21:55 | 21:12 | | | 20:06 | | | 18:57 | 16:56 | | | 16:27 | 24 | 10:34 (11) |
| 11 | 05:31 | 06:14 | | | 07:04 | | | 07:54 | 07:48 | | 10:09 (11) | 08:34 | | 10:11 (11) |
| | 21:54 | 21:10 | | | 20:03 | | | 18:54 | 16:54 | 8 | 10:17 (11) | 16:27 | 23 | 10:34 (11) |
| 12 | 05:32 | 06:16 | | | 07:06 | | | 07:55 | 07:50 | | 10:06 (11) | 08:35 | | 10:12 (11) |
| | 21:53 | 21:08 | | | 20:01 | | | 18:52 | 16:53 | 14 | 10:20 (11) | 16:27 | 22 | 10:34 (11) |
| 13 | 05:33 | 06:17 | | | 07:07 | | | 07:57 | 07:52 | | 10:04 (11) | 08:36 | | 10:12 (11) |
| | 21:53 | 21:06 | | | 19:59 | | | 18:50 | 16:51 | 18 | 10:22 (11) | 16:27 | 22 | 10:34 (11) |
| 14 | 05:34 | 06:19 | | | 07:09 | | | 07:59 | 07:53 | | 10:03 (11) | 08:37 | | 10:13 (11) |
| | 21:52 | 21:04 | | | 19:57 | | | 18:48 | 16:50 | 21 | 10:24 (11) | 16:27 | 22 | 10:35 (11) |
| 15 | 05:35 | 06:21 | | | 07:11 | | | 08:00 | 07:55 | | 10:03 (11) | 08:37 | | 10:14 (11) |
| | 21:51 | 21:02 | | | 19:54 | | | 18:46 | 16:48 | 23 | 10:26 (11) | 16:27 | 21 | 10:35 (11) |
| 16 | 05:36 | 06:22 | | | 07:12 | | | 08:02 | 07:57 | | 10:02 (11) | 08:38 | | 10:15 (11) |
| | 21:50 | 21:00 | | | 19:52 | | | 18:43 | 16:47 | 25 | 10:27 (11) | 16:27 | 20 | 10:35 (11) |
| 17 | 05:38 | 06:24 | | | 07:14 | | | 08:04 | 07:59 | | 10:02 (11) | 08:39 | | 10:16 (11) |
| | 21:49 | 20:58 | | | 19:50 | | | 18:41 | 16:45 | 26 | 10:28 (11) | 16:27 | 20 | 10:36 (11) |
| 18 | 05:39 | 06:25 | | | 07:16 | | | 08:06 | 08:00 | | 10:02 (11) | 08:40 | | 10:15 (11) |
| | 21:47 | 20:56 | | | 19:47 | | | 18:39 | 16:44 | 27 | 10:29 (11) | 16:27 | 20 | 10:35 (11) |
| 19 | 05:40 | 06:27 | | | 07:17 | | | 08:07 | 08:02 | | 10:01 (11) | 08:41 | | 10:16 (11) |
| | 21:46 | 20:54 | | | 19:45 | | | 18:37 | 16:43 | 28 | 10:29 (11) | 16:28 | 20 | 10:36 (11) |
| 20 | 05:42 | 06:29 | | | 07:19 | | | 08:09 | 08:04 | | 10:01 (11) | 08:41 | | 10:17 (11) |
| | 21:45 | 20:52 | | | 19:43 | | | 18:35 | 16:42 | 28 | 10:29 (11) | 16:28 | 20 | 10:37 (11) |
| 21 | 05:43 | 06:30 | | 07:28 (19) | 07:20 | | | 08:11 | 08:05 | | 10:01 (11) | 08:42 | | 10:17 (11) |
| | 21:44 | 20:50 | 2 | 07:30 (19) | 19:40 | | | 18:33 | 16:40 | 29 | 10:30 (11) | 16:29 | 20 | 10:37 (11) |
| 22 | 05:44 | 06:32 | | 07:24 (19) | 07:22 | | | 08:13 | 08:07 | | 10:01 (11) | 08:42 | | 10:18 (11) |
| | 21:43 | 20:48 | 10 | 07:34 (19) | 19:38 | | | 18:31 | 16:39 | 30 | 10:31 (11) | 16:29 | 20 | 10:38 (11) |
| 23 | 05:46 | 06:33 | | 07:22 (19) | 07:24 | | | 08:14 | 08:09 | | 10:01 (11) | 08:43 | | 10:18 (11) |
| | 21:41 | 20:46 | 13 | 07:35 (19) | 19:36 | | | 18:29 | 16:38 | 30 | 10:31 (11) | 16:30 | 20 | 10:38 (11) |
| 24 | 05:47 | 06:35 | | 07:21 (19) | 07:25 | | | 08:16 | 08:10 | | 10:01 (11) | 08:43 | | 10:19 (11) |
| | 21:40 | 20:44 | 15 | 07:36 (19) | 19:33 | | | 18:27 | 16:37 | 30 | 10:31 (11) | 16:30 | 20 | 10:39 (11) |
| 25 | 05:48 | 06:37 | | 07:19 (19) | 07:27 | | | 07:18 | 08:12 | | 10:01 (11) | 08:44 | | 10:19 (11) |
| | 21:39 | 20:42 | 17 | 07:36 (19) | 19:31 | | | 17:25 | 16:36 | 31 | 10:32 (11) | 16:31 | 20 | 10:39 (11) |
| 26 | 05:50 | 06:38 | | 07:19 (19) | 07:29 | | | 07:20 | 08:13 | | 10:02 (11) | 08:44 | | 10:20 (11) |
| | 21:37 | 20:39 | 17 | 07:36 (19) | 19:29 | | | 17:23 | 16:35 | 30 | 10:32 (11) | 16:31 | 20 | 10:40 (11) |
| 27 | 05:51 | 06:40 | | 07:18 (19) | 07:30 | | | 07:21 | 08:15 | | 10:03 (11) | 08:44 | | 10:20 (11) |
| | 21:36 | 20:37 | 18 | 07:36 (19) | 19:26 | | | 17:21 | 16:34 | 30 | 10:33 (11) | 16:32 | 20 | 10:40 (11) |
| 28 | 05:53 | 06:42 | | 07:18 (19) | 07:32 | | | 07:23 | 08:17 | | 10:02 (11) | 08:45 | | 10:20 (11) |
| | 21:34 | 20:35 | 18 | 07:36 (19) | 19:24 | | | 17:19 | 16:33 | 30 | 10:32 (11) | 16:33 | 21 | 10:41 (11) |
| 29 | 05:54 | 06:43 | | 07:18 (19) | 07:33 | | | 07:25 | 08:18 | | 10:03 (11) | 08:45 | | 10:20 (11) |
| | 21:33 | 20:33 | 17 | 07:35 (19) | 19:22 | | | 17:17 | 16:33 | 30 | 10:33 (11) | 16:34 | 21 | 10:41 (11) |
| 30 | 05:56 | 06:45 | | 07:19 (19) | 07:35 | | | 07:27 | 08:20 | | 10:03 (11) | 08:45 | | 10:20 (11) |
| | 21:31 | 20:31 | 15 | 07:34 (19) | 19:19 | | | 17:15 | 16:32 | 30 | 10:33 (11) | 16:35 | 22 | 10:42 (11) |
| 31 | 05:57 | 06:46 | | 07:19 (19) | | | | 07:28 | | | | 08:45 | | 10:20 (11) |
| | 21:30 | 20:28 | 13 | 07:32 (19) | | | | 17:13 | | | | 16:36 | 23 | 10:43 (11) |
| Potential sun hours | 501 | 453 | | | 381 | | | 332 | 267 | | | 244 | | |
| Total, worst case | | | 155 | | | 17 | | | | 518 | | | 702 | |
| Sun reduction | | | 0.30 | | | 0.28 | | | | 0.18 | | | 0.13 | |
| Oper. time red. | | | 1.00 | | | 1.00 | | | | 1.00 | | | 1.00 | |
| Wind dir. red. | | | 0.67 | | | 0.67 | | | | 0.54 | | | 0.54 | |
| Total reduction | | | 0.20 | | | 0.19 | | | | 0.10 | | | 0.07 | |
| Total, real | | | 31 | | | 3 | | | | 52 | | | 51 | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** H - H8

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | | | February | | | March | | | April | | | May | | | June |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | | | 08:18 | | 15:00 (12) | 07:25 | | | 07:14 | | | 06:10 | | 19:45 (14) | 05:25 |
| | 16:37 | | | 17:24 | 45 | 15:45 (12) | 18:16 | | | 20:10 | | | 21:00 | 22 | 20:07 (14) | 21:46 |
| 2 | 08:45 | | | 08:16 | | 15:00 (12) | 07:23 | | | 07:12 | | | 06:08 | | 19:45 (14) | 05:24 |
| | 16:38 | | | 17:26 | 45 | 15:45 (12) | 18:18 | | | 20:11 | | | 21:02 | 23 | 20:08 (14) | 21:47 |
| 3 | 08:44 | | | 08:15 | | 15:01 (12) | 07:20 | | | 07:10 | | | 06:06 | | 19:45 (14) | 05:23 |
| | 16:39 | | | 17:28 | 45 | 15:46 (12) | 18:19 | | | 20:13 | | | 21:03 | 23 | 20:08 (14) | 21:48 |
| 4 | 08:44 | | | 08:13 | | 15:01 (12) | 07:18 | | | 07:08 | | | 06:04 | | 19:45 (14) | 05:23 |
| | 16:40 | | | 17:30 | 45 | 15:46 (12) | 18:21 | | | 20:15 | | | 21:05 | 23 | 20:08 (14) | 21:49 |
| 5 | 08:44 | | | 08:12 | | 15:01 (12) | 07:16 | | | 07:05 | | | 06:02 | | 19:45 (14) | 05:22 |
| | 16:41 | | | 17:32 | 44 | 15:45 (12) | 18:23 | | | 20:16 | | | 21:07 | 22 | 20:07 (14) | 21:50 |
| 6 | 08:44 | | | 08:10 | | 15:01 (12) | 07:14 | | | 07:03 | | | 06:01 | | 19:46 (14) | 05:21 |
| | 16:43 | | | 17:34 | 44 | 15:45 (12) | 18:25 | | | 20:18 | | | 21:08 | 21 | 20:07 (14) | 21:51 |
| 7 | 08:43 | | | 08:08 | | 15:02 (12) | 07:12 | | | 07:01 | | | 05:59 | | 19:46 (14) | 05:21 |
| | 16:44 | | | 17:35 | 44 | 15:46 (12) | 18:26 | | | 20:20 | | | 21:10 | 21 | 20:07 (14) | 21:52 |
| 8 | 08:43 | | | 08:06 | | 15:03 (12) | 07:09 | | | 06:59 | | | 05:57 | | 19:46 (14) | 05:20 |
| | 16:45 | | | 17:37 | 42 | 15:45 (12) | 18:28 | | | 20:21 | | | 21:12 | 19 | 20:05 (14) | 21:53 |
| 9 | 08:42 | | | 08:05 | | 15:03 (12) | 07:07 | | | 06:56 | | | 05:55 | | 19:47 (14) | 05:20 |
| | 16:46 | | | 17:39 | 42 | 15:45 (12) | 18:30 | | | 20:23 | | | 21:13 | 18 | 20:05 (14) | 21:53 |
| 10 | 08:42 | | | 08:03 | | 15:04 (12) | 07:05 | | 17:33 (13) | 06:54 | | | 05:54 | | 19:48 (14) | 05:19 |
| | 16:48 | | | 17:41 | 40 | 15:44 (12) | 18:32 | 9 | 17:42 (13) | 20:25 | | | 21:15 | 16 | 20:04 (14) | 21:54 |
| 11 | 08:41 | | 15:14 (12) | 08:01 | | 15:04 (12) | 07:03 | | 17:31 (13) | 06:52 | | 19:44 (19) | 05:52 | | 19:50 (14) | 05:19 |
| | 16:49 | 5 | 15:19 (12) | 17:43 | 39 | 15:43 (12) | 18:34 | 14 | 17:45 (13) | 20:26 | 9 | 19:53 (19) | 21:16 | 13 | 20:03 (14) | 21:55 |
| 12 | 08:41 | | 15:11 (12) | 07:59 | | 15:05 (12) | 07:00 | | 17:28 (13) | 06:50 | | 19:42 (19) | 05:50 | | 19:51 (14) | 05:19 |
| | 16:51 | 12 | 15:23 (12) | 17:45 | 38 | 15:43 (12) | 18:35 | 17 | 17:45 (13) | 20:28 | 13 | 19:55 (19) | 21:18 | 10 | 20:01 (14) | 21:56 |
| 13 | 08:40 | | 15:09 (12) | 07:57 | | 15:06 (12) | 06:58 | | 17:27 (13) | 06:47 | | 19:40 (19) | 05:49 | | 19:55 (14) | 05:18 |
| | 16:52 | 16 | 15:25 (12) | 17:47 | 36 | 15:42 (12) | 18:37 | 19 | 17:46 (13) | 20:30 | 15 | 19:55 (19) | 21:20 | 3 | 19:58 (14) | 21:56 |
| 14 | 08:39 | | 15:07 (12) | 07:55 | | 15:08 (12) | 06:56 | | 17:26 (13) | 06:45 | | 19:40 (19) | 05:47 | | | 05:18 |
| | 16:54 | 20 | 15:27 (12) | 17:48 | 33 | 15:41 (12) | 18:39 | 21 | 17:47 (13) | 20:32 | 15 | 19:55 (19) | 21:21 | | | 21:57 |
| 15 | 08:38 | | 15:06 (12) | 07:54 | | 15:09 (12) | 06:54 | | 17:25 (13) | 06:43 | | 19:39 (19) | 05:46 | | | 05:18 |
| | 16:55 | 23 | 15:29 (12) | 17:50 | 30 | 15:39 (12) | 18:40 | 22 | 17:47 (13) | 20:33 | 16 | 19:55 (19) | 21:23 | | | 21:58 |
| 16 | 08:38 | | 15:05 (12) | 07:52 | | 15:11 (12) | 06:51 | | 17:25 (13) | 06:41 | | 19:39 (19) | 05:44 | | | 05:18 |
| | 16:57 | 26 | 15:31 (12) | 17:52 | 27 | 15:38 (12) | 18:42 | 22 | 17:47 (13) | 20:35 | 16 | 19:55 (19) | 21:24 | | | 21:58 |
| 17 | 08:37 | | 15:05 (12) | 07:50 | | 15:14 (12) | 06:49 | | 17:25 (13) | 06:39 | | 19:39 (19) | 05:43 | | | 05:18 |
| | 16:58 | 27 | 15:32 (12) | 17:54 | 21 | 15:35 (12) | 18:44 | 22 | 17:47 (13) | 20:37 | 15 | 19:54 (19) | 21:26 | | | 21:58 |
| 18 | 08:36 | | 15:04 (12) | 07:48 | | 15:17 (12) | 06:47 | | 17:24 (13) | 06:37 | | 19:40 (19) | 05:41 | | | 05:18 |
| | 17:00 | 30 | 15:34 (12) | 17:56 | 15 | 15:32 (12) | 18:46 | 22 | 17:46 (13) | 20:38 | 14 | 19:54 (19) | 21:27 | | | 21:59 |
| 19 | 08:35 | | 15:04 (12) | 07:46 | | | 06:44 | | 17:25 (13) | 06:34 | | 19:41 (19) | 05:40 | | | 05:18 |
| | 17:02 | 31 | 15:35 (12) | 17:58 | | | 18:47 | 20 | 17:45 (13) | 20:40 | 11 | 19:52 (19) | 21:29 | | | 21:59 |
| 20 | 08:34 | | 15:03 (12) | 07:44 | | | 06:42 | | 17:26 (13) | 06:32 | | 19:42 (19) | 05:38 | | | 05:18 |
| | 17:03 | 34 | 15:37 (12) | 18:00 | | | 18:49 | 19 | 17:45 (13) | 20:42 | 9 | 19:51 (19) | 21:30 | | | 22:00 |
| 21 | 08:33 | | 15:02 (12) | 07:42 | | | 06:40 | | 17:26 (13) | 06:30 | | | 05:37 | | | 05:18 |
| | 17:05 | 35 | 15:37 (12) | 18:01 | | | 18:51 | 16 | 17:42 (13) | 20:43 | | | 21:32 | | | 22:00 |
| 22 | 08:31 | | 15:02 (12) | 07:40 | | | 06:37 | | 17:28 (13) | 06:28 | | | 05:36 | | | 05:18 |
| | 17:07 | 36 | 15:38 (12) | 18:03 | | | 18:52 | 13 | 17:41 (13) | 20:45 | | | 21:33 | | | 22:00 |
| 23 | 08:30 | | 15:02 (12) | 07:38 | | | 06:35 | | 17:31 (13) | 06:26 | | | 05:34 | | | 05:18 |
| | 17:08 | 38 | 15:40 (12) | 18:05 | | | 18:54 | 7 | 17:38 (13) | 20:47 | | | 21:34 | | | 22:00 |
| 24 | 08:29 | | 15:01 (12) | 07:35 | | | 06:33 | | | 06:24 | | | 05:33 | | | 05:19 |
| | 17:10 | 39 | 15:40 (12) | 18:07 | | | 18:56 | | | 20:48 | | | 21:36 | | | 22:00 |
| 25 | 08:28 | | 15:01 (12) | 07:33 | | | 06:31 | | | 06:22 | | 19:53 (14) | 05:32 | | | 05:19 |
| | 17:12 | 40 | 15:41 (12) | 18:09 | | | 18:58 | | | 20:50 | 10 | 20:03 (14) | 21:37 | | | 22:00 |
| 26 | 08:27 | | 15:01 (12) | 07:31 | | | 06:28 | | | 06:20 | | 19:50 (14) | 05:31 | | | 05:19 |
| | 17:14 | 41 | 15:42 (12) | 18:10 | | | 18:59 | | | 20:52 | 15 | 20:05 (14) | 21:38 | | | 22:00 |
| 27 | 08:25 | | 15:01 (12) | 07:29 | | | 06:26 | | | 06:18 | | 19:49 (14) | 05:30 | | | 05:20 |
| | 17:15 | 42 | 15:43 (12) | 18:12 | | | 19:01 | | | 20:53 | 17 | 20:06 (14) | 21:40 | | | 22:00 |
| 28 | 08:24 | | 15:01 (12) | 07:27 | | | 06:24 | | | 06:16 | | 19:48 (14) | 05:29 | | | 05:20 |
| | 17:17 | 43 | 15:44 (12) | 18:14 | | | 19:03 | | | 20:55 | 19 | 20:07 (14) | 21:41 | | | 22:00 |
| 29 | 08:22 | | 15:00 (12) | | | | 07:21 | | | 06:14 | | 19:47 (14) | 05:28 | | | 05:21 |
| | 17:19 | 44 | 15:44 (12) | | | | 20:04 | | | 20:57 | 20 | 20:07 (14) | 21:42 | | | 22:00 |
| 30 | 08:21 | | 15:00 (12) | | | | 07:19 | | | 06:12 | | 19:46 (14) | 05:27 | | | 05:21 |
| | 17:21 | 44 | 15:44 (12) | | | | 20:06 | | | 20:58 | 21 | 20:07 (14) | 21:43 | | | 22:00 |
| 31 | 08:19 | | 15:00 (12) | | | | 07:17 | | | | | | 05:26 | | | |
| | 17:23 | 45 | 15:45 (12) | | | | 20:08 | | | | | | 21:45 | | | |
| Potential sun hours | 260 | | | 278 | | | 367 | | | 416 | | | 485 | | | 498 |
| Total, worst case | | 671 | | | 675 | | | 243 | | | 235 | | | 234 | | |
| Sun reduction | | 0.16 | | | 0.21 | | | 0.24 | | | 0.35 | | | 0.37 | | |
| Oper. time red. | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | | |
| Wind dir. red. | | 0.71 | | | 0.71 | | | 0.68 | | | 0.60 | | | 0.59 | | |
| Total reduction | | 0.11 | | | 0.15 | | | 0.17 | | | 0.21 | | | 0.22 | | |
| Total, real | | 74 | | | 99 | | | 40 | | | 50 | | | 51 | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** H - H8

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | July | | August | | September | | October | | November | | December | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 05:22 | | 05:58 | | 20:00 (14) | 06:48 | 19:43 (19) | 07:37 | | 18:07 (13) | 07:30 | 14:33 (12) | 08:21 | 14:55 (12) |
| | 22:00 | | 21:28 | 12 | 20:12 (14) | 20:26 | 9 | 19:52 (19) | 19:17 | 19 | 18:26 (13) | 17:11 | 41 | 15:14 (12) | 16:31 | 7 | 15:02 (12) |
| 2 | 05:23 | | 06:00 | | 19:59 (14) | 06:50 | | | 07:38 | | 18:08 (13) | 07:32 | | 14:33 (12) | 08:22 | | |
| | 21:59 | | 21:26 | 14 | 20:13 (14) | 20:24 | | | 19:15 | 15 | 18:23 (13) | 17:09 | 41 | 15:14 (12) | 16:30 | | |
| 3 | 05:23 | | 06:01 | | 19:58 (14) | 06:51 | | | 07:40 | | 18:10 (13) | 07:34 | | 14:32 (12) | 08:24 | | |
| | 21:59 | | 21:25 | 17 | 20:15 (14) | 20:22 | | | 19:12 | 11 | 18:21 (13) | 17:07 | 43 | 15:15 (12) | 16:30 | | |
| 4 | 05:24 | | 06:03 | | 19:56 (14) | 06:53 | | | 07:42 | | 18:14 (13) | 07:35 | | 14:32 (12) | 08:25 | | |
| | 21:58 | | 21:23 | 19 | 20:15 (14) | 20:19 | | | 19:10 | 3 | 18:17 (13) | 17:06 | 43 | 15:15 (12) | 16:29 | | |
| 5 | 05:25 | | 06:05 | | 19:56 (14) | 06:54 | | | 07:43 | | | 07:37 | | 14:31 (12) | 08:26 | | |
| | 21:58 | | 21:21 | 20 | 20:16 (14) | 20:17 | | | 19:08 | | | 17:04 | 44 | 15:15 (12) | 16:29 | | |
| 6 | 05:26 | | 06:06 | | 19:55 (14) | 06:56 | | | 07:45 | | | 07:39 | | 14:31 (12) | 08:28 | | |
| | 21:57 | | 21:19 | 21 | 20:16 (14) | 20:15 | | | 19:05 | | | 17:02 | 44 | 15:15 (12) | 16:28 | | |
| 7 | 05:27 | | 06:08 | | 19:55 (14) | 06:58 | | | 07:47 | | | 07:41 | | 14:31 (12) | 08:29 | | |
| | 21:57 | | 21:18 | 22 | 20:17 (14) | 20:12 | | | 19:03 | | | 17:00 | 44 | 15:15 (12) | 16:28 | | |
| 8 | 05:28 | | 06:09 | | 19:54 (14) | 06:59 | | | 07:48 | | | 07:43 | | 14:31 (12) | 08:30 | | |
| | 21:56 | | 21:16 | 23 | 20:17 (14) | 20:10 | | | 19:01 | | | 16:59 | 44 | 15:15 (12) | 16:27 | | |
| 9 | 05:29 | | 06:11 | | 19:54 (14) | 07:01 | | | 07:50 | | | 07:44 | | 14:31 (12) | 08:31 | | |
| | 21:56 | | 21:14 | 23 | 20:17 (14) | 20:08 | | | 18:59 | | | 16:57 | 45 | 15:16 (12) | 16:27 | | |
| 10 | 05:30 | | 06:12 | | 19:54 (14) | 07:02 | | | 07:52 | | | 07:46 | | 14:31 (12) | 08:32 | | |
| | 21:55 | | 21:12 | 23 | 20:17 (14) | 20:06 | | | 18:56 | | | 16:56 | 45 | 15:16 (12) | 16:27 | | |
| 11 | 05:31 | | 06:14 | | 19:54 (14) | 07:04 | | | 07:53 | | | 07:48 | | 14:31 (12) | 08:33 | | |
| | 21:54 | | 21:10 | 23 | 20:17 (14) | 20:03 | | | 18:54 | | | 16:54 | 45 | 15:16 (12) | 16:27 | | |
| 12 | 05:32 | | 06:16 | | 19:54 (14) | 07:06 | | | 07:55 | | | 07:50 | | 14:32 (12) | 08:34 | | |
| | 21:53 | | 21:08 | 22 | 20:16 (14) | 20:01 | | | 18:52 | | | 16:52 | 44 | 15:16 (12) | 16:27 | | |
| 13 | 05:33 | | 06:17 | | 19:54 (14) | 07:07 | | | 07:57 | | | 07:51 | | 14:32 (12) | 08:35 | | |
| | 21:52 | | 21:06 | 22 | 20:16 (14) | 19:59 | | | 18:50 | | | 16:51 | 44 | 15:16 (12) | 16:27 | | |
| 14 | 05:34 | | 06:19 | | 19:54 (14) | 07:09 | | | 07:58 | | | 07:53 | | 14:33 (12) | 08:36 | | |
| | 21:51 | | 21:04 | 21 | 20:15 (14) | 19:56 | | | 18:48 | | | 16:49 | 43 | 15:16 (12) | 16:27 | | |
| 15 | 05:35 | | 06:20 | | 19:55 (14) | 07:10 | | | 08:00 | | | 07:55 | | 14:34 (12) | 08:37 | | |
| | 21:50 | | 21:02 | 19 | 20:14 (14) | 19:54 | | | 18:45 | | | 16:48 | 41 | 15:15 (12) | 16:27 | | |
| 16 | 05:36 | | 06:22 | | 19:56 (14) | 07:12 | | | 08:02 | | | 07:57 | | 14:34 (12) | 08:38 | | |
| | 21:49 | | 21:00 | 16 | 20:12 (14) | 19:52 | | | 18:43 | | | 16:47 | 41 | 15:15 (12) | 16:27 | | |
| 17 | 05:38 | | 06:24 | | 19:57 (14) | 07:14 | | | 08:04 | | | 07:58 | | 14:35 (12) | 08:39 | | |
| | 21:48 | | 20:58 | 14 | 20:11 (14) | 19:49 | | | 18:41 | | | 16:45 | 40 | 15:15 (12) | 16:27 | | |
| 18 | 05:39 | | 06:25 | | 19:59 (14) | 07:15 | | | 08:05 | | | 08:00 | | 14:35 (12) | 08:40 | | |
| | 21:47 | | 20:56 | 9 | 20:08 (14) | 19:47 | | | 18:39 | | | 16:44 | 39 | 15:14 (12) | 16:27 | | |
| 19 | 05:40 | | 06:27 | | | 07:17 | | | 08:07 | | | 08:02 | | 14:36 (12) | 08:40 | | |
| | 21:46 | | 20:54 | | | 19:45 | | | 18:37 | | | 16:43 | 38 | 15:14 (12) | 16:28 | | |
| 20 | 05:41 | | 06:28 | | | 07:19 | 18:18 (13) | | 08:09 | | | 08:04 | | 14:37 (12) | 08:41 | | |
| | 21:45 | | 20:52 | | | 19:42 | 5 | 18:23 (13) | 18:35 | | | 16:41 | 36 | 15:13 (12) | 16:28 | | |
| 21 | 05:43 | | 06:30 | | | 07:20 | | 18:14 (13) | 08:11 | | | 08:05 | | 14:38 (12) | 08:42 | | |
| | 21:44 | | 20:50 | | | 19:40 | 12 | 18:26 (13) | 18:33 | | | 16:40 | 35 | 15:13 (12) | 16:28 | | |
| 22 | 05:44 | | 06:32 | | 19:49 (19) | 07:22 | | 18:12 (13) | 08:12 | | | 08:07 | | 14:39 (12) | 08:42 | | |
| | 21:43 | | 20:48 | 2 | 19:51 (19) | 19:38 | 16 | 18:28 (13) | 18:31 | | | 16:39 | 34 | 15:13 (12) | 16:29 | | |
| 23 | 05:45 | | 06:33 | | 19:46 (19) | 07:23 | | 18:09 (13) | 08:14 | | 15:52 (12) | 08:09 | | 14:40 (12) | 08:43 | | |
| | 21:41 | | 20:46 | 9 | 19:55 (19) | 19:35 | 19 | 18:28 (13) | 18:29 | 7 | 15:59 (12) | 16:38 | 31 | 15:11 (12) | 16:29 | | |
| 24 | 05:47 | | 06:35 | | 19:43 (19) | 07:25 | | 18:09 (13) | 08:16 | | 15:46 (12) | 08:10 | | 14:41 (12) | 08:43 | | |
| | 21:40 | | 20:44 | 12 | 19:55 (19) | 19:33 | 20 | 18:29 (13) | 18:27 | 17 | 16:03 (12) | 16:37 | 30 | 15:11 (12) | 16:30 | | |
| 25 | 05:48 | | 06:37 | | 19:43 (19) | 07:27 | | 18:08 (13) | 07:18 | | 14:43 (12) | 08:12 | | 14:43 (12) | 08:44 | | |
| | 21:39 | | 20:41 | 13 | 19:56 (19) | 19:31 | 21 | 18:29 (13) | 17:25 | 23 | 15:06 (12) | 16:36 | 27 | 15:10 (12) | 16:31 | | |
| 26 | 05:50 | | 06:38 | | 19:42 (19) | 07:28 | | 18:07 (13) | 07:19 | | 14:40 (12) | 08:13 | | 14:44 (12) | 08:44 | | |
| | 21:37 | | 20:39 | 15 | 19:57 (19) | 19:28 | 22 | 18:29 (13) | 17:23 | 28 | 15:08 (12) | 16:35 | 26 | 15:10 (12) | 16:31 | | |
| 27 | 05:51 | | 06:40 | | 19:41 (19) | 07:30 | | 18:06 (13) | 07:21 | | 14:38 (12) | 08:15 | | 14:45 (12) | 08:44 | | |
| | 21:36 | | 20:37 | 16 | 19:57 (19) | 19:26 | 23 | 18:29 (13) | 17:21 | 31 | 15:09 (12) | 16:34 | 23 | 15:08 (12) | 16:32 | | |
| 28 | 05:52 | | 06:41 | | 19:41 (19) | 07:32 | | 18:07 (13) | 07:23 | | 14:37 (12) | 08:16 | | 14:47 (12) | 08:44 | | |
| | 21:34 | | 20:35 | 16 | 19:57 (19) | 19:24 | 22 | 18:29 (13) | 17:19 | 33 | 15:10 (12) | 16:33 | 20 | 15:07 (12) | 16:33 | | |
| 29 | 05:54 | | 06:43 | | 19:41 (19) | 07:33 | | 18:06 (13) | 07:25 | | 14:36 (12) | 08:18 | | 14:50 (12) | 08:44 | | |
| | 21:33 | | 20:33 | 15 | 19:56 (19) | 19:21 | 21 | 18:27 (13) | 17:17 | 36 | 15:12 (12) | 16:32 | 16 | 15:06 (12) | 16:34 | | |
| 30 | 05:55 | | 06:45 | | 19:41 (19) | 07:35 | | 18:07 (13) | 07:27 | | 14:35 (12) | 08:19 | | 14:51 (12) | 08:45 | | |
| | 21:31 | | 20:31 | 14 | 19:55 (19) | 19:19 | 20 | 18:27 (13) | 17:15 | 37 | 15:12 (12) | 16:32 | 13 | 15:04 (12) | 16:35 | | |
| 31 | 05:57 | 20:03 (14) | 06:46 | | 19:41 (19) | | | | 07:28 | | 14:34 (12) | | | | 08:45 | | |
| | 21:29 | 7 20:10 (14) | 20:28 | 13 | 19:54 (19) | | | | 17:13 | 39 | 15:13 (12) | | | | 16:36 | | |
| Potential sun hours | 501 | | 453 | | | 381 | | | 332 | | | 267 | | | 244 | | |
| Total, worst case | 7 | | 465 | | | 210 | | | 299 | | | 1100 | | | 7 | | |
| Sun reduction | 0.27 | | 0.30 | | | 0.28 | | | 0.24 | | | 0.18 | | | 0.13 | | |
| Oper. time red. | 1.00 | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | | |
| Wind dir. red. | 0.59 | | 0.60 | | | 0.68 | | | 0.71 | | | 0.71 | | | 0.71 | | |
| Total reduction | 0.16 | | 0.18 | | | 0.19 | | | 0.17 | | | 0.13 | | | 0.10 | | |
| Total, real | 1 | | 83 | | | 40 | | | 50 | | | 145 | | | 1 | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
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Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** I - H9

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | | | February | | | March | | | April | | | May | | | June | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | | | 08:18 | | 15:42 (12) | 07:25 | | | 07:14 | | | 06:10 | | 19:55 (14) | 05:25 | |
| | 16:37 | | | 17:24 | 35 | 16:17 (12) | 18:16 | | | 20:10 | | | 21:00 | 20 | 20:15 (14) | 21:46 | |
| 2 | 08:45 | | | 08:16 | | 15:41 (12) | 07:23 | | | 07:12 | | | 06:08 | | 19:55 (14) | 05:24 | |
| | 16:38 | | | 17:26 | 36 | 16:17 (12) | 18:18 | | | 20:11 | | | 21:02 | 21 | 20:16 (14) | 21:47 | |
| 3 | 08:44 | | | 08:15 | | 15:41 (12) | 07:20 | | | 07:10 | | | 06:06 | | 19:55 (14) | 05:23 | |
| | 16:39 | | | 17:28 | 38 | 16:19 (12) | 18:19 | | | 20:13 | | | 21:03 | 21 | 20:16 (14) | 21:48 | |
| 4 | 08:44 | | | 08:13 | | 15:40 (12) | 07:18 | | | 07:08 | | | 06:04 | | 19:54 (14) | 05:23 | |
| | 16:40 | | | 17:30 | 40 | 16:20 (12) | 18:21 | | | 20:15 | | | 21:05 | 22 | 20:16 (14) | 21:49 | |
| 5 | 08:44 | | | 08:12 | | 15:40 (12) | 07:16 | | | 07:05 | | | 06:02 | | 19:54 (14) | 05:22 | |
| | 16:41 | | | 17:32 | 40 | 16:20 (12) | 18:23 | | | 20:16 | | | 21:07 | 21 | 20:15 (14) | 21:50 | |
| 6 | 08:44 | | | 08:10 | | 15:39 (12) | 07:14 | | | 07:03 | | | 06:01 | | 19:55 (14) | 05:21 | |
| | 16:43 | | | 17:34 | 42 | 16:21 (12) | 18:25 | | | 20:18 | | | 21:08 | 20 | 20:15 (14) | 21:51 | |
| 7 | 08:43 | | | 08:08 | | 15:40 (12) | 07:12 | | | 07:01 | | | 05:59 | | 19:55 (14) | 05:21 | |
| | 16:44 | | | 17:35 | 42 | 16:22 (12) | 18:26 | | | 20:20 | | | 21:10 | 20 | 20:15 (14) | 21:52 | |
| 8 | 08:43 | | | 08:06 | | 15:39 (12) | 07:09 | | | 06:59 | | | 05:57 | | 19:55 (14) | 05:20 | |
| | 16:45 | | | 17:37 | 43 | 16:22 (12) | 18:28 | | | 20:21 | | | 21:12 | 19 | 20:14 (14) | 21:53 | |
| 9 | 08:42 | | | 08:05 | | 15:39 (12) | 07:07 | | | 06:56 | | | 05:55 | | 19:57 (14) | 05:20 | |
| | 16:46 | | | 17:39 | 43 | 16:22 (12) | 18:30 | | | 20:23 | | | 21:13 | 16 | 20:13 (14) | 21:53 | |
| 10 | 08:42 | | | 08:03 | | 15:39 (12) | 07:05 | | | 06:54 | | | 05:54 | | 19:57 (14) | 05:19 | |
| | 16:48 | | | 17:41 | 44 | 16:23 (12) | 18:32 | | | 20:25 | | | 21:15 | 15 | 20:12 (14) | 21:54 | |
| 11 | 08:41 | | | 08:01 | | 15:39 (12) | 07:03 | | | 06:52 | | | 05:52 | | 19:59 (14) | 05:19 | |
| | 16:49 | | | 17:43 | 44 | 16:23 (12) | 18:34 | | | 20:26 | | | 21:16 | 12 | 20:11 (14) | 21:55 | |
| 12 | 08:41 | | | 07:59 | | 15:39 (12) | 07:00 | | | 06:50 | | 19:52 (19) | 05:50 | | 20:00 (14) | 05:19 | |
| | 16:51 | | | 17:45 | 44 | 16:23 (12) | 18:35 | | | 20:28 | 7 | 19:59 (19) | 21:18 | 9 | 20:09 (14) | 21:56 | |
| 13 | 08:40 | | | 07:57 | | 15:39 (12) | 06:58 | | | 06:47 | | 19:49 (19) | 05:49 | | | 05:18 | |
| | 16:52 | | | 17:47 | 43 | 16:22 (12) | 18:37 | | | 20:30 | 11 | 20:00 (19) | 21:20 | | | 21:56 | |
| 14 | 08:39 | | | 07:55 | | 15:39 (12) | 06:56 | | 17:45 (13) | 06:45 | | 19:47 (19) | 05:47 | | | 05:18 | |
| | 16:54 | | | 17:48 | 43 | 16:22 (12) | 18:39 | 11 | 17:56 (13) | 20:32 | 14 | 20:01 (19) | 21:21 | | | 21:57 | |
| 15 | 08:38 | | | 07:54 | | 15:39 (12) | 06:54 | | 17:43 (13) | 06:43 | | 19:47 (19) | 05:46 | | | 05:18 | |
| | 16:55 | | | 17:50 | 43 | 16:22 (12) | 18:40 | 14 | 17:57 (13) | 20:33 | 14 | 20:01 (19) | 21:23 | | | 21:58 | |
| 16 | 08:37 | | | 07:52 | | 15:40 (12) | 06:51 | | 17:41 (13) | 06:41 | | 19:46 (19) | 05:44 | | | 05:18 | |
| | 16:57 | | | 17:52 | 42 | 16:22 (12) | 18:42 | 18 | 17:59 (13) | 20:35 | 15 | 20:01 (19) | 21:24 | | | 21:58 | |
| 17 | 08:37 | | | 07:50 | | 15:40 (12) | 06:49 | | 17:40 (13) | 06:39 | | 19:46 (19) | 05:43 | | | 05:18 | |
| | 16:58 | | | 17:54 | 41 | 16:21 (12) | 18:44 | 20 | 18:00 (13) | 20:37 | 15 | 20:01 (19) | 21:26 | | | 21:58 | |
| 18 | 08:36 | | | 07:48 | | 15:41 (12) | 06:47 | | 17:39 (13) | 06:37 | | 19:46 (19) | 05:41 | | | 05:18 | |
| | 17:00 | | | 17:56 | 40 | 16:21 (12) | 18:46 | 20 | 17:59 (13) | 20:38 | 15 | 20:01 (19) | 21:27 | | | 21:59 | |
| 19 | 08:35 | | | 07:46 | | 15:42 (12) | 06:44 | | 17:39 (13) | 06:34 | | 19:47 (19) | 05:40 | | | 05:18 | |
| | 17:02 | | | 17:58 | 38 | 16:20 (12) | 18:47 | 21 | 18:00 (13) | 20:40 | 13 | 20:00 (19) | 21:29 | | | 21:59 | |
| 20 | 08:34 | | | 07:44 | | 15:43 (12) | 06:42 | | 17:39 (13) | 06:32 | | 19:48 (19) | 05:38 | | | 05:18 | |
| | 17:03 | | | 18:00 | 36 | 16:19 (12) | 18:49 | 21 | 18:00 (13) | 20:42 | 11 | 19:59 (19) | 21:30 | | | 22:00 | |
| 21 | 08:33 | | | 07:42 | | 15:44 (12) | 06:40 | | 17:38 (13) | 06:30 | | 19:49 (19) | 05:37 | | | 05:18 | |
| | 17:05 | | | 18:01 | 34 | 16:18 (12) | 18:51 | 21 | 17:59 (13) | 20:43 | 8 | 19:57 (19) | 21:32 | | | 22:00 | |
| 22 | 08:31 | | | 07:40 | | 15:46 (12) | 06:37 | | 17:38 (13) | 06:28 | | | 05:36 | | | 05:18 | |
| | 17:07 | | | 18:03 | 31 | 16:17 (12) | 18:52 | 20 | 17:58 (13) | 20:45 | | | 21:33 | | | 22:00 | |
| 23 | 08:30 | | | 07:38 | | 15:47 (12) | 06:35 | | 17:39 (13) | 06:26 | | | 05:34 | | | 05:18 | |
| | 17:08 | | | 18:05 | 27 | 16:14 (12) | 18:54 | 18 | 17:57 (13) | 20:47 | | | 21:34 | | | 22:00 | |
| 24 | 08:29 | | | 07:35 | | 15:49 (12) | 06:33 | | 17:39 (13) | 06:24 | | | 05:33 | | | 05:19 | |
| | 17:10 | | | 18:07 | 24 | 16:13 (12) | 18:56 | 16 | 17:55 (13) | 20:48 | | | 21:36 | | | 22:00 | |
| 25 | 08:28 | | 15:53 (12) | 07:33 | | 15:52 (12) | 06:31 | | 17:41 (13) | 06:22 | | | 05:32 | | | 05:19 | |
| | 17:12 | 10 | 16:03 (12) | 18:09 | 18 | 16:10 (12) | 18:58 | 13 | 17:54 (13) | 20:50 | | | 21:37 | | | 22:00 | |
| 26 | 08:27 | | 15:50 (12) | 07:31 | | 15:56 (12) | 06:28 | | 17:44 (13) | 06:20 | | 20:01 (14) | 05:31 | | | 05:19 | |
| | 17:14 | 17 | 16:07 (12) | 18:10 | 10 | 16:06 (12) | 18:59 | 7 | 17:51 (13) | 20:52 | 10 | 20:11 (14) | 21:38 | | | 22:00 | |
| 27 | 08:25 | | 15:48 (12) | 07:29 | | | 06:26 | | | 06:18 | | 19:59 (14) | 05:30 | | | 05:20 | |
| | 17:15 | 21 | 16:09 (12) | 18:12 | | | 19:01 | | | 20:53 | 14 | 20:13 (14) | 21:40 | | | 22:00 | |
| 28 | 08:24 | | 15:47 (12) | 07:27 | | | 06:24 | | | 06:16 | | 19:58 (14) | 05:29 | | | 05:20 | |
| | 17:17 | 24 | 16:11 (12) | 18:14 | | | 19:03 | | | 20:55 | 16 | 20:14 (14) | 21:41 | | | 22:00 | |
| 29 | 08:22 | | 15:45 (12) | | | | 07:21 | | | 06:14 | | 19:57 (14) | 05:28 | | | 05:21 | |
| | 17:19 | 28 | 16:13 (12) | | | | 20:04 | | | 20:57 | 18 | 20:15 (14) | 21:42 | | | 22:00 | |
| 30 | 08:21 | | 15:44 (12) | | | | 07:19 | | | 06:12 | | 19:56 (14) | 05:27 | | | 05:21 | |
| | 17:21 | 30 | 16:14 (12) | | | | 20:06 | | | 20:58 | 19 | 20:15 (14) | 21:43 | | | 22:00 | |
| 31 | 08:19 | | 15:43 (12) | | | | 07:17 | | | | | | 05:26 | | | | |
| | 17:23 | 33 | 16:16 (12) | | | | 20:08 | | | | | | 21:45 | | | | |
| Potential sun hours | 260 | | | 278 | | | 367 | | | 416 | | | 485 | | | 498 | |
| Total, worst case | | 163 | | | 961 | | | 220 | | | 200 | | | 216 | | | |
| Sun reduction | | 0.16 | | | 0.21 | | | 0.24 | | | 0.35 | | | 0.37 | | | |
| Oper. time red. | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | | | |
| Wind dir. red. | | 0.71 | | | 0.71 | | | 0.67 | | | 0.60 | | | 0.59 | | | |
| Total reduction | | 0.11 | | | 0.15 | | | 0.16 | | | 0.21 | | | 0.22 | | | |
| Total, real | | 18 | | | 140 | | | 36 | | | 42 | | | 47 | | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
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+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** I - H9

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | July | | | August | | | September | | | October | | | November | | | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 05:22 | | | 05:58 | | 20:10 (14) | 06:48 | | | 07:37 | | | 07:30 | | 15:08 (12) | 08:21 |
| | 22:00 | | | 21:28 | 10 | 20:20 (14) | 20:26 | | | 19:17 | | | 17:11 | 44 | 15:52 (12) | 16:31 |
| 2 | 05:23 | | | 06:00 | | 20:08 (14) | 06:50 | | | 07:38 | | | 07:32 | | 15:09 (12) | 08:22 |
| | 21:59 | | | 21:26 | 13 | 20:21 (14) | 20:24 | | | 19:15 | | | 17:09 | 43 | 15:52 (12) | 16:30 |
| 3 | 05:23 | | | 06:01 | | 20:07 (14) | 06:51 | | | 07:40 | | | 07:34 | | 15:09 (12) | 08:24 |
| | 21:59 | | | 21:25 | 16 | 20:23 (14) | 20:22 | | | 19:12 | | | 17:07 | 43 | 15:52 (12) | 16:30 |
| 4 | 05:24 | | | 06:03 | | 20:06 (14) | 06:53 | | | 07:42 | | | 07:35 | | 15:09 (12) | 08:25 |
| | 21:58 | | | 21:23 | 17 | 20:23 (14) | 20:19 | | | 19:10 | | | 17:06 | 43 | 15:52 (12) | 16:29 |
| 5 | 05:25 | | | 06:05 | | 20:05 (14) | 06:54 | | | 07:43 | | | 07:37 | | 15:09 (12) | 08:26 |
| | 21:58 | | | 21:21 | 19 | 20:24 (14) | 20:17 | | | 19:08 | | | 17:04 | 41 | 15:50 (12) | 16:29 |
| 6 | 05:26 | | | 06:06 | | 20:04 (14) | 06:56 | | | 07:45 | | | 07:39 | | 15:10 (12) | 08:28 |
| | 21:57 | | | 21:19 | 20 | 20:24 (14) | 20:15 | | | 19:05 | | | 17:02 | 40 | 15:50 (12) | 16:28 |
| 7 | 05:27 | | | 06:08 | | 20:04 (14) | 06:58 | | | 07:47 | | | 07:41 | | 15:10 (12) | 08:29 |
| | 21:57 | | | 21:18 | 21 | 20:25 (14) | 20:12 | | | 19:03 | | | 17:00 | 39 | 15:49 (12) | 16:28 |
| 8 | 05:28 | | | 06:09 | | 20:03 (14) | 06:59 | | | 07:48 | | | 07:43 | | 15:11 (12) | 08:30 |
| | 21:56 | | | 21:16 | 22 | 20:25 (14) | 20:10 | | | 19:01 | | | 16:59 | 38 | 15:49 (12) | 16:27 |
| 9 | 05:29 | | | 06:11 | | 20:04 (14) | 07:01 | | | 07:50 | | | 07:44 | | 15:12 (12) | 08:31 |
| | 21:56 | | | 21:14 | 21 | 20:25 (14) | 20:08 | | | 18:59 | | | 16:57 | 36 | 15:48 (12) | 16:27 |
| 10 | 05:30 | | | 06:12 | | 20:03 (14) | 07:02 | | | 07:52 | | | 07:46 | | 15:13 (12) | 08:32 |
| | 21:55 | | | 21:12 | 22 | 20:25 (14) | 20:06 | | | 18:56 | | | 16:56 | 34 | 15:47 (12) | 16:27 |
| 11 | 05:31 | | | 06:14 | | 20:04 (14) | 07:04 | | | 07:53 | | | 07:48 | | 15:14 (12) | 08:33 |
| | 21:54 | | | 21:10 | 21 | 20:25 (14) | 20:03 | | | 18:54 | | | 16:54 | 33 | 15:47 (12) | 16:27 |
| 12 | 05:32 | | | 06:16 | | 20:03 (14) | 07:06 | | | 07:55 | | | 07:50 | | 15:16 (12) | 08:34 |
| | 21:53 | | | 21:08 | 21 | 20:24 (14) | 20:01 | | | 18:52 | | | 16:52 | 30 | 15:46 (12) | 16:27 |
| 13 | 05:33 | | | 06:17 | | 20:04 (14) | 07:07 | | | 07:57 | | | 07:51 | | 15:17 (12) | 08:35 |
| | 21:52 | | | 21:06 | 20 | 20:24 (14) | 19:59 | | | 18:50 | | | 16:51 | 27 | 15:44 (12) | 16:27 |
| 14 | 05:34 | | | 06:19 | | 20:04 (14) | 07:09 | | | 07:58 | | | 07:53 | | 15:19 (12) | 08:36 |
| | 21:51 | | | 21:04 | 18 | 20:22 (14) | 19:56 | | | 18:48 | | | 16:49 | 24 | 15:43 (12) | 16:27 |
| 15 | 05:35 | | | 06:20 | | 20:06 (14) | 07:10 | | | 08:00 | | | 07:55 | | 15:21 (12) | 08:37 |
| | 21:50 | | | 21:02 | 15 | 20:21 (14) | 19:54 | | | 18:45 | | | 16:48 | 21 | 15:42 (12) | 16:27 |
| 16 | 05:36 | | | 06:22 | | 20:06 (14) | 07:12 | | | 08:02 | | 16:27 (12) | 07:57 | | 15:23 (12) | 08:38 |
| | 21:49 | | | 21:00 | 13 | 20:19 (14) | 19:52 | | | 18:43 | 13 | 16:40 (12) | 16:47 | 17 | 15:40 (12) | 16:27 |
| 17 | 05:38 | | | 06:24 | | 20:09 (14) | 07:14 | | 18:33 (13) | 08:04 | | 16:23 (12) | 07:58 | | 15:27 (12) | 08:39 |
| | 21:48 | | | 20:58 | 8 | 20:17 (14) | 19:49 | 5 | 18:38 (13) | 18:41 | 20 | 16:43 (12) | 16:45 | 10 | 15:37 (12) | 16:27 |
| 18 | 05:39 | | | 06:25 | | | 07:15 | | 18:29 (13) | 08:05 | | 16:19 (12) | 08:00 | | | 08:40 |
| | 21:47 | | | 20:56 | | | 19:47 | 12 | 18:41 (13) | 18:39 | 26 | 16:45 (12) | 16:44 | | | 16:27 |
| 19 | 05:40 | | | 06:27 | | | 07:17 | | 18:27 (13) | 08:07 | | 16:17 (12) | 08:02 | | | 08:40 |
| | 21:46 | | | 20:54 | | | 19:45 | 15 | 18:42 (13) | 18:37 | 29 | 16:46 (12) | 16:43 | | | 16:28 |
| 20 | 05:41 | | | 06:28 | | | 07:19 | | 18:26 (13) | 08:09 | | 16:16 (12) | 08:04 | | | 08:41 |
| | 21:45 | | | 20:52 | | | 19:42 | 18 | 18:44 (13) | 18:35 | 32 | 16:48 (12) | 16:41 | | | 16:28 |
| 21 | 05:43 | | | 06:30 | | | 07:20 | | 18:24 (13) | 08:11 | | 16:14 (12) | 08:05 | | | 08:42 |
| | 21:44 | | | 20:50 | | | 19:40 | 19 | 18:43 (13) | 18:33 | 35 | 16:49 (12) | 16:40 | | | 16:28 |
| 22 | 05:44 | | | 06:32 | | 19:53 (19) | 07:22 | | 18:23 (13) | 08:12 | | 16:13 (12) | 08:07 | | | 08:42 |
| | 21:43 | | | 20:48 | 8 | 20:01 (19) | 19:38 | 21 | 18:44 (13) | 18:31 | 37 | 16:50 (12) | 16:39 | | | 16:29 |
| 23 | 05:45 | | | 06:33 | | 19:51 (19) | 07:23 | | 18:22 (13) | 08:14 | | 16:12 (12) | 08:08 | | | 08:43 |
| | 21:41 | | | 20:46 | 12 | 20:03 (19) | 19:35 | 21 | 18:43 (13) | 18:29 | 39 | 16:51 (12) | 16:38 | | | 16:29 |
| 24 | 05:47 | | | 06:35 | | 19:49 (19) | 07:25 | | 18:22 (13) | 08:16 | | 16:10 (12) | 08:10 | | | 08:43 |
| | 21:40 | | | 20:44 | 14 | 20:03 (19) | 19:33 | 21 | 18:43 (13) | 18:27 | 40 | 16:50 (12) | 16:37 | | | 16:30 |
| 25 | 05:48 | | | 06:37 | | 19:49 (19) | 07:27 | | 18:22 (13) | 07:18 | | 15:10 (12) | 08:12 | | | 08:44 |
| | 21:38 | | | 20:41 | 14 | 20:03 (19) | 19:31 | 21 | 18:43 (13) | 17:25 | 41 | 15:51 (12) | 16:36 | | | 16:31 |
| 26 | 05:50 | | | 06:38 | | 19:49 (19) | 07:28 | | 18:22 (13) | 07:19 | | 15:09 (12) | 08:13 | | | 08:44 |
| | 21:37 | | | 20:39 | 15 | 20:04 (19) | 19:28 | 20 | 18:42 (13) | 17:23 | 42 | 15:51 (12) | 16:35 | | | 16:31 |
| 27 | 05:51 | | | 06:40 | | 19:48 (19) | 07:30 | | 18:23 (13) | 07:21 | | 15:09 (12) | 08:15 | | | 08:44 |
| | 21:36 | | | 20:37 | 15 | 20:03 (19) | 19:26 | 18 | 18:41 (13) | 17:21 | 43 | 15:52 (12) | 16:34 | | | 16:32 |
| 28 | 05:52 | | | 06:41 | | 19:49 (19) | 07:32 | | 18:24 (13) | 07:23 | | 15:08 (12) | 08:16 | | | 08:44 |
| | 21:34 | | | 20:35 | 14 | 20:03 (19) | 19:24 | 16 | 18:40 (13) | 17:19 | 44 | 15:52 (12) | 16:33 | | | 16:33 |
| 29 | 05:54 | | | 06:43 | | 19:48 (19) | 07:33 | | 18:24 (13) | 07:25 | | 15:08 (12) | 08:18 | | | 08:44 |
| | 21:33 | | | 20:33 | 13 | 20:01 (19) | 19:21 | 13 | 18:37 (13) | 17:17 | 44 | 15:52 (12) | 16:32 | | | 16:34 |
| 30 | 05:55 | | | 06:45 | | 19:50 (19) | 07:35 | | 18:27 (13) | 07:27 | | 15:08 (12) | 08:19 | | | 08:45 |
| | 21:31 | | | 20:31 | 11 | 20:01 (19) | 19:19 | 7 | 18:34 (13) | 17:15 | 44 | 15:52 (12) | 16:32 | | | 16:35 |
| 31 | 05:57 | | 20:13 (14) | 06:46 | | 19:51 (19) | | | | 07:28 | | 15:08 (12) | | | | 08:45 |
| | 21:29 | 5 | 20:18 (14) | 20:28 | 7 | 19:58 (19) | | | | 17:13 | 44 | 15:52 (12) | | | | 16:36 |
| Potential sun hours | 501 | | | 453 | | | 381 | | | 332 | | | 267 | | | 244 |
| Total, worst case | | 5 | | | 420 | | | 227 | | | 573 | | | 563 | | |
| Sun reduction | | 0.27 | | | 0.30 | | | 0.28 | | | 0.24 | | | 0.18 | | |
| Oper. time red. | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | | |
| Wind dir. red. | | 0.59 | | | 0.59 | | | 0.67 | | | 0.71 | | | 0.71 | | |
| Total reduction | | 0.16 | | | 0.18 | | | 0.19 | | | 0.17 | | | 0.13 | | |
| Total, real | | 1 | | | 74 | | | 43 | | | 97 | | | 74 | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
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kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** J - H10

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | | February | | | March | | | April | | | May | | | June | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | | 08:18 | | | 07:25 | | | 16:49 (7) | 07:15 | | 18:51 (3) | 06:10 | | 19:05 (4) | 05:25 | | 19:17 (4) |
| | 16:37 | | 17:25 | | | 18:16 | | 22 | 17:11 (7) | 20:10 | 20 | 19:11 (3) | 21:00 | 30 | 19:35 (4) | 21:46 | 11 | 19:28 (4) |
| 2 | 08:45 | | 08:16 | | | 07:23 | | | 16:49 (7) | 07:12 | | 18:51 (3) | 06:08 | | 19:04 (4) | 05:24 | | 19:19 (4) |
| | 16:38 | | 17:26 | | | 18:18 | | 23 | 17:12 (7) | 20:11 | 20 | 19:11 (3) | 21:02 | 33 | 19:37 (4) | 21:47 | 7 | 19:26 (4) |
| 3 | 08:44 | | 08:15 | | | 07:20 | | | 16:49 (7) | 07:10 | | 18:52 (3) | 06:06 | | 19:03 (4) | 05:24 | | |
| | 16:39 | | 17:28 | | | 18:19 | | 23 | 17:12 (7) | 20:13 | 18 | 19:10 (3) | 21:03 | 34 | 19:37 (4) | 21:48 | | |
| 4 | 08:44 | | 08:13 | | | 07:18 | | | 16:49 (7) | 07:08 | | 18:52 (3) | 06:04 | | 19:02 (4) | 05:23 | | |
| | 16:40 | | 17:30 | | | 18:21 | | 23 | 17:12 (7) | 20:15 | 17 | 19:09 (3) | 21:05 | 35 | 19:37 (4) | 21:49 | | |
| 5 | 08:44 | | 08:12 | | | 07:16 | | | 16:49 (7) | 07:05 | | 18:53 (3) | 06:03 | | 19:02 (4) | 05:22 | | |
| | 16:41 | | 17:32 | | | 18:23 | | 23 | 17:12 (8) | 20:16 | 14 | 19:07 (3) | 21:07 | 35 | 19:37 (4) | 21:50 | | |
| 6 | 08:44 | | 08:10 | | | 07:14 | | | 16:50 (7) | 07:03 | | 18:55 (3) | 06:01 | | 19:02 (4) | 05:22 | | |
| | 16:43 | | 17:34 | | | 18:25 | | 25 | 17:15 (8) | 20:18 | 10 | 19:05 (3) | 21:08 | 36 | 19:38 (4) | 21:51 | | |
| 7 | 08:43 | | 08:08 | | | 07:12 | | | 16:51 (7) | 07:01 | | 18:59 (3) | 05:59 | | 19:01 (4) | 05:21 | | |
| | 16:44 | | 17:36 | | | 18:27 | | 26 | 17:17 (8) | 20:20 | 2 | 19:01 (3) | 21:10 | 37 | 19:38 (4) | 21:52 | | |
| 8 | 08:43 | | 08:06 | | | 07:09 | | | 16:52 (7) | 06:59 | | | 05:57 | | 19:01 (4) | 05:20 | | |
| | 16:45 | | 17:37 | | | 18:28 | | 27 | 17:19 (8) | 20:21 | | | 21:12 | 37 | 19:38 (4) | 21:53 | | |
| 9 | 08:42 | | 08:05 | | | 07:07 | | | 16:52 (8) | 06:56 | | | 05:56 | | 19:01 (4) | 05:20 | | |
| | 16:47 | | 17:39 | | | 18:30 | | 28 | 17:20 (8) | 20:23 | | | 21:13 | 38 | 19:39 (4) | 21:53 | | |
| 10 | 08:42 | | 08:03 | | | 07:05 | | | 16:51 (8) | 06:54 | | | 05:54 | | 19:00 (4) | 05:19 | | |
| | 16:48 | | 17:41 | | | 18:32 | | 30 | 17:21 (8) | 20:25 | | | 21:15 | 39 | 19:39 (4) | 21:54 | | |
| 11 | 08:41 | | 08:01 | | | 07:03 | | | 16:50 (8) | 06:52 | | | 05:52 | | 19:01 (4) | 05:19 | | |
| | 16:49 | | 17:43 | | | 18:34 | | 31 | 17:21 (8) | 20:27 | | | 21:16 | 38 | 19:39 (4) | 21:55 | | |
| 12 | 08:41 | | 07:59 | | | 07:00 | | | 16:48 (8) | 06:50 | | | 05:50 | | 19:01 (4) | 05:19 | | |
| | 16:51 | | 17:45 | | | 18:35 | | 33 | 17:21 (8) | 20:28 | | | 21:18 | 38 | 19:39 (4) | 21:56 | | |
| 13 | 08:40 | | 07:57 | | | 06:58 | | | 16:48 (8) | 06:48 | | | 05:49 | | 19:01 (4) | 05:19 | | |
| | 16:52 | | 17:47 | | | 18:37 | | 34 | 17:22 (8) | 20:30 | | | 21:20 | 38 | 19:39 (4) | 21:56 | | |
| 14 | 08:39 | | 07:56 | | | 06:56 | | | 16:48 (8) | 06:45 | | | 05:47 | | 19:01 (4) | 05:18 | | |
| | 16:54 | | 17:49 | | | 18:39 | | 34 | 17:22 (8) | 20:32 | | | 21:21 | 37 | 19:38 (4) | 21:57 | | |
| 15 | 08:38 | | 07:54 | | | 06:54 | | | 16:47 (8) | 06:43 | | | 05:46 | | 19:02 (4) | 05:18 | | |
| | 16:55 | | 17:50 | | | 18:41 | | 34 | 17:21 (8) | 20:33 | | | 21:23 | 36 | 19:38 (4) | 21:57 | | |
| 16 | 08:37 | | 07:52 | | | 06:51 | | | 16:47 (8) | 06:41 | | | 05:44 | | 19:01 (4) | 05:18 | | |
| | 16:57 | | 17:52 | | | 18:42 | | 34 | 17:21 (8) | 20:35 | | | 21:24 | 37 | 19:38 (4) | 21:58 | | |
| 17 | 08:37 | | 07:50 | | | 06:49 | | | 16:47 (8) | 06:39 | | | 05:43 | | 19:02 (4) | 05:18 | | |
| | 16:59 | | 17:54 | | | 18:44 | | 34 | 17:21 (8) | 20:37 | | | 21:26 | 36 | 19:38 (4) | 21:58 | | |
| 18 | 08:36 | | 07:48 | | | 06:47 | | | 16:47 (8) | 06:37 | | | 05:41 | | 19:03 (4) | 05:18 | | |
| | 17:00 | | 17:56 | | | 18:46 | | 33 | 17:20 (8) | 20:38 | | | 21:27 | 35 | 19:38 (4) | 21:59 | | |
| 19 | 08:35 | | 07:46 | | | 06:44 | | | 16:47 (8) | 06:34 | | | 05:40 | | 19:04 (4) | 05:18 | | |
| | 17:02 | | 17:58 | | | 18:47 | | 32 | 17:19 (8) | 20:40 | | | 21:29 | 34 | 19:38 (4) | 21:59 | | |
| 20 | 08:34 | | 07:44 | | | 06:42 | | | 16:48 (8) | 06:32 | | | 05:39 | | 19:03 (4) | 05:18 | | |
| | 17:03 | | 18:00 | | | 18:49 | | 31 | 17:19 (8) | 20:42 | | | 21:30 | 33 | 19:36 (4) | 22:00 | | |
| 21 | 08:33 | | 07:42 | | | 06:40 | | | 16:49 (8) | 06:30 | | | 05:37 | | 19:04 (4) | 05:18 | | |
| | 17:05 | | 18:01 | | | 18:51 | | 29 | 17:18 (8) | 20:43 | | | 21:32 | 32 | 19:36 (4) | 22:00 | | |
| 22 | 08:31 | | 07:40 | | | 06:38 | | | 16:50 (8) | 06:28 | | | 05:36 | | 19:05 (4) | 05:18 | | |
| | 17:07 | | 18:03 | | | 18:53 | | 26 | 17:16 (8) | 20:45 | | | 21:33 | 31 | 19:36 (4) | 22:00 | | |
| 23 | 08:30 | | 07:38 | | | 06:35 | | | 16:51 (8) | 06:26 | | | 05:35 | | 19:06 (4) | 05:19 | | |
| | 17:09 | | 18:05 | | | 18:54 | | 23 | 17:14 (8) | 20:47 | | | 21:34 | 29 | 19:35 (4) | 22:00 | | |
| 24 | 08:29 | | 07:35 | | 16:57 (7) | 06:33 | | | 16:53 (8) | 06:24 | | | 05:33 | | 19:07 (4) | 05:19 | | |
| | 17:10 | | 18:07 | 8 | 17:05 (7) | 18:56 | | 19 | 17:12 (8) | 20:48 | | | 21:36 | 28 | 19:35 (4) | 22:00 | | |
| 25 | 08:28 | | 07:33 | | 16:54 (7) | 06:31 | | | 16:55 (8) | 06:22 | | | 05:32 | | 19:08 (4) | 05:19 | | |
| | 17:12 | | 18:09 | 14 | 17:08 (7) | 18:58 | | 16 | 18:04 (3) | 20:50 | | | 21:37 | 26 | 19:34 (4) | 22:00 | | |
| 26 | 08:27 | | 07:31 | | 16:53 (7) | 06:28 | | | 17:58 (3) | 06:20 | | 19:15 (4) | 05:31 | | 19:09 (4) | 05:20 | | |
| | 17:14 | | 18:11 | 17 | 17:10 (7) | 18:59 | | 11 | 18:09 (3) | 20:52 | 13 | 19:28 (4) | 21:38 | 25 | 19:34 (4) | 22:00 | | |
| 27 | 08:25 | | 07:29 | | 16:52 (7) | 06:26 | | | 17:56 (3) | 06:18 | | 19:12 (4) | 05:30 | | 19:10 (4) | 05:20 | | |
| | 17:16 | | 18:12 | 19 | 17:11 (7) | 19:01 | | 15 | 18:11 (3) | 20:53 | 18 | 19:30 (4) | 21:40 | 23 | 19:33 (4) | 22:00 | | |
| 28 | 08:24 | | 07:27 | | 16:51 (7) | 06:24 | | | 17:54 (3) | 06:16 | | 19:09 (4) | 05:29 | | 19:11 (4) | 05:21 | | |
| | 17:17 | | 18:14 | 21 | 17:12 (7) | 19:03 | | 17 | 18:11 (3) | 20:55 | 23 | 19:32 (4) | 21:41 | 21 | 19:32 (4) | 22:00 | | |
| 29 | 08:22 | | | | | 07:21 | | | 18:53 (3) | 06:14 | | 19:07 (4) | 05:28 | | 19:12 (4) | 05:21 | | |
| | 17:19 | | | | | 20:04 | | 19 | 19:12 (3) | 20:57 | 26 | 19:33 (4) | 21:42 | 19 | 19:31 (4) | 22:00 | | |
| 30 | 08:21 | | | | | 07:19 | | | 18:52 (3) | 06:12 | | 19:06 (4) | 05:27 | | 19:13 (4) | 05:22 | | |
| | 17:21 | | | | | 20:06 | | 20 | 19:12 (3) | 20:59 | 28 | 19:34 (4) | 21:43 | 17 | 19:30 (4) | 22:00 | | |
| 31 | 08:19 | | | | | 07:17 | | | 18:51 (3) | | | | 05:26 | | 19:14 (4) | | | |
| | 17:23 | | | | | 20:08 | | 20 | 19:11 (3) | | | | 21:45 | 15 | 19:29 (4) | | | |
| Potential sun hours | 260 | | 278 | | | 367 | | | | 416 | | | 485 | | | 498 | | |
| Total, worst case | | | | 79 | | | 795 | | | | 209 | | | 982 | | | 18 | |
| Sun reduction | | | | 0.21 | | | 0.24 | | | | 0.35 | | | 0.37 | | | 0.30 | |
| Oper. time red. | | | | 1.00 | | | 1.00 | | | | 1.00 | | | 1.00 | | | 1.00 | |
| Wind dir. red. | | | | 0.70 | | | 0.69 | | | | 0.64 | | | 0.61 | | | 0.61 | |
| Total reduction | | | | 0.14 | | | 0.17 | | | | 0.23 | | | 0.23 | | | 0.18 | |
| Total, real | | | | 11 | | | 134 | | | | 47 | | | 222 | | | 3 | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
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+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** J - H10

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | July | | | August | | | September | | | October | | | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 05:22 | | | 05:59 | | 19:11 (4) | 06:48 | | | 07:37 | | 17:28 (8) | 07:30 | 08:21 |
| | 22:00 | | | 21:28 | 38 | 19:49 (4) | 20:26 | | | 19:17 | 33 | 18:01 (8) | 17:11 | 16:31 |
| 2 | 05:23 | | | 06:00 | | 19:11 (4) | 06:50 | | | 07:38 | | 17:28 (8) | 07:32 | 08:22 |
| | 21:59 | | | 21:26 | 39 | 19:50 (4) | 20:24 | | | 19:15 | 32 | 18:00 (8) | 17:09 | 16:30 |
| 3 | 05:24 | | | 06:02 | | 19:11 (4) | 06:51 | | | 07:40 | | 17:28 (8) | 07:34 | 08:24 |
| | 21:59 | | | 21:25 | 38 | 19:49 (4) | 20:22 | | | 19:12 | 31 | 17:59 (8) | 17:08 | 16:30 |
| 4 | 05:24 | | | 06:03 | | 19:10 (4) | 06:53 | | | 07:42 | | 17:29 (8) | 07:35 | 08:25 |
| | 21:58 | | | 21:23 | 38 | 19:48 (4) | 20:19 | | | 19:10 | 29 | 17:58 (8) | 17:06 | 16:29 |
| 5 | 05:25 | | | 06:05 | | 19:11 (4) | 06:54 | | 18:55 (3) | 07:43 | | 17:29 (7) | 07:37 | 08:26 |
| | 21:58 | | | 21:21 | 38 | 19:49 (4) | 20:17 | 2 | 18:57 (3) | 19:08 | 27 | 17:56 (8) | 17:04 | 16:29 |
| 6 | 05:26 | | | 06:06 | | 19:11 (4) | 06:56 | | 18:51 (3) | 07:45 | | 17:27 (7) | 07:39 | 08:28 |
| | 21:57 | | | 21:19 | 37 | 19:48 (4) | 20:15 | 10 | 19:01 (3) | 19:06 | 27 | 17:54 (8) | 17:02 | 16:28 |
| 7 | 05:27 | | | 06:08 | | 19:11 (4) | 06:58 | | 18:48 (3) | 07:47 | | 17:26 (7) | 07:41 | 08:29 |
| | 21:57 | | | 21:18 | 37 | 19:48 (4) | 20:13 | 14 | 19:02 (3) | 19:03 | 26 | 17:52 (8) | 17:01 | 16:28 |
| 8 | 05:28 | | | 06:09 | | 19:11 (4) | 06:59 | | 18:47 (3) | 07:48 | | 17:25 (7) | 07:43 | 08:30 |
| | 21:56 | | | 21:16 | 36 | 19:47 (4) | 20:10 | 17 | 19:04 (3) | 19:01 | 25 | 17:50 (8) | 16:59 | 16:28 |
| 9 | 05:29 | | | 06:11 | | 19:12 (4) | 07:01 | | 18:45 (3) | 07:50 | | 17:24 (7) | 07:44 | 08:31 |
| | 21:56 | | | 21:14 | 35 | 19:47 (4) | 20:08 | 19 | 19:04 (3) | 18:59 | 22 | 17:46 (7) | 16:57 | 16:27 |
| 10 | 05:30 | | 19:28 (4) | 06:13 | | 19:12 (4) | 07:03 | | 18:45 (3) | 07:52 | | 17:23 (7) | 07:46 | 08:32 |
| | 21:55 | 3 | 19:31 (4) | 21:12 | 33 | 19:45 (4) | 20:06 | 19 | 19:04 (3) | 18:57 | 23 | 17:46 (7) | 16:56 | 16:27 |
| 11 | 05:31 | | 19:25 (4) | 06:14 | | 19:13 (4) | 07:04 | | 18:43 (3) | 07:53 | | 17:23 (7) | 07:48 | 08:33 |
| | 21:54 | 10 | 19:35 (4) | 21:10 | 32 | 19:45 (4) | 20:03 | 20 | 19:03 (3) | 18:54 | 23 | 17:46 (7) | 16:54 | 16:27 |
| 12 | 05:32 | | 19:23 (4) | 06:16 | | 19:13 (4) | 07:06 | | 18:43 (3) | 07:55 | | 17:23 (7) | 07:50 | 08:34 |
| | 21:53 | 13 | 19:36 (4) | 21:08 | 30 | 19:43 (4) | 20:01 | 21 | 19:04 (3) | 18:52 | 23 | 17:46 (7) | 16:53 | 16:27 |
| 13 | 05:33 | | 19:22 (4) | 06:17 | | 19:15 (4) | 07:07 | | 18:43 (3) | 07:57 | | 17:23 (7) | 07:51 | 08:35 |
| | 21:52 | 16 | 19:38 (4) | 21:06 | 28 | 19:43 (4) | 19:59 | 20 | 19:03 (3) | 18:50 | 21 | 17:44 (7) | 16:51 | 16:27 |
| 14 | 05:34 | | 19:21 (4) | 06:19 | | 19:15 (4) | 07:09 | | 18:43 (3) | 07:59 | | 17:23 (7) | 07:53 | 08:36 |
| | 21:51 | 18 | 19:39 (4) | 21:04 | 25 | 19:40 (4) | 19:56 | 19 | 19:02 (3) | 18:48 | 21 | 17:44 (7) | 16:50 | 16:27 |
| 15 | 05:35 | | 19:20 (4) | 06:21 | | 19:17 (4) | 07:11 | | 18:44 (3) | 08:00 | | 17:24 (7) | 07:55 | 08:37 |
| | 21:50 | 20 | 19:40 (4) | 21:02 | 22 | 19:39 (4) | 19:54 | 17 | 19:01 (3) | 18:46 | 19 | 17:43 (7) | 16:48 | 16:27 |
| 16 | 05:36 | | 19:19 (4) | 06:22 | | 19:19 (4) | 07:12 | | 18:44 (3) | 08:02 | | 17:25 (7) | 07:57 | 08:38 |
| | 21:49 | 22 | 19:41 (4) | 21:00 | 17 | 19:36 (4) | 19:52 | 15 | 18:59 (3) | 18:43 | 16 | 17:41 (7) | 16:47 | 16:27 |
| 17 | 05:38 | | 19:19 (4) | 06:24 | | 19:22 (4) | 07:14 | | 18:46 (3) | 08:04 | | 17:27 (7) | 07:58 | 08:39 |
| | 21:48 | 24 | 19:43 (4) | 20:58 | 11 | 19:33 (4) | 19:49 | 11 | 18:57 (3) | 18:41 | 13 | 17:40 (7) | 16:45 | 16:27 |
| 18 | 05:39 | | 19:18 (4) | 06:25 | | | 07:15 | | 17:43 (8) | 08:05 | | 17:29 (7) | 08:00 | 08:40 |
| | 21:47 | 26 | 19:44 (4) | 20:56 | | | 19:47 | 17 | 18:53 (3) | 18:39 | 6 | 17:35 (7) | 16:44 | 16:27 |
| 19 | 05:40 | | 19:17 (4) | 06:27 | | | 07:17 | | 17:40 (8) | 08:07 | | | 08:02 | 08:40 |
| | 21:46 | 27 | 19:44 (4) | 20:54 | | | 19:45 | 18 | 17:58 (8) | 18:37 | | | 16:43 | 16:28 |
| 20 | 05:42 | | 19:16 (4) | 06:29 | | | 07:19 | | 17:38 (8) | 08:09 | | | 08:04 | 08:41 |
| | 21:45 | 29 | 19:45 (4) | 20:52 | | | 19:42 | 22 | 18:00 (8) | 18:35 | | | 16:42 | 16:28 |
| 21 | 05:43 | | 19:15 (4) | 06:30 | | | 07:20 | | 17:35 (8) | 08:11 | | | 08:05 | 08:42 |
| | 21:44 | 30 | 19:45 (4) | 20:50 | | | 19:40 | 26 | 18:01 (8) | 18:33 | | | 16:40 | 16:29 |
| 22 | 05:44 | | 19:15 (4) | 06:32 | | | 07:22 | | 17:34 (8) | 08:12 | | | 08:07 | 08:42 |
| | 21:43 | 32 | 19:47 (4) | 20:48 | | | 19:38 | 28 | 18:02 (8) | 18:31 | | | 16:39 | 16:29 |
| 23 | 05:46 | | 19:14 (4) | 06:33 | | | 07:24 | | 17:32 (8) | 08:14 | | | 08:08 | 08:43 |
| | 21:41 | 33 | 19:47 (4) | 20:46 | | | 19:35 | 30 | 18:02 (8) | 18:29 | | | 16:38 | 16:30 |
| 24 | 05:47 | | 19:14 (4) | 06:35 | | | 07:25 | | 17:31 (8) | 08:16 | | | 08:10 | 08:43 |
| | 21:40 | 33 | 19:47 (4) | 20:44 | | | 19:33 | 32 | 18:03 (8) | 18:27 | | | 16:37 | 16:30 |
| 25 | 05:48 | | 19:14 (4) | 06:37 | | | 07:27 | | 17:31 (8) | 07:18 | | | 08:12 | 08:44 |
| | 21:38 | 34 | 19:48 (4) | 20:42 | | | 19:31 | 32 | 18:03 (8) | 17:25 | | | 16:36 | 16:31 |
| 26 | 05:50 | | 19:13 (4) | 06:38 | | | 07:28 | | 17:29 (8) | 07:19 | | | 08:13 | 08:44 |
| | 21:37 | 35 | 19:48 (4) | 20:39 | | | 19:29 | 34 | 18:03 (8) | 17:23 | | | 16:35 | 16:31 |
| 27 | 05:51 | | 19:12 (4) | 06:40 | | | 07:30 | | 17:29 (8) | 07:21 | | | 08:15 | 08:44 |
| | 21:36 | 36 | 19:48 (4) | 20:37 | | | 19:26 | 34 | 18:03 (8) | 17:21 | | | 16:34 | 16:32 |
| 28 | 05:53 | | 19:13 (4) | 06:42 | | | 07:32 | | 17:29 (8) | 07:23 | | | 08:16 | 08:44 |
| | 21:34 | 36 | 19:49 (4) | 20:35 | | | 19:24 | 34 | 18:03 (8) | 17:19 | | | 16:33 | 16:33 |
| 29 | 05:54 | | 19:12 (4) | 06:43 | | | 07:33 | | 17:28 (8) | 07:25 | | | 08:18 | 08:44 |
| | 21:33 | 37 | 19:49 (4) | 20:33 | | | 19:22 | 34 | 18:02 (8) | 17:17 | | | 16:33 | 16:34 |
| 30 | 05:56 | | 19:11 (4) | 06:45 | | | 07:35 | | 17:28 (8) | 07:27 | | | 08:19 | 08:45 |
| | 21:31 | 38 | 19:49 (4) | 20:31 | | | 19:19 | 34 | 18:02 (8) | 17:15 | | | 16:32 | 16:35 |
| 31 | 05:57 | | 19:12 (4) | 06:46 | | | | | | 07:28 | | | | 08:45 |
| | 21:29 | 37 | 19:49 (4) | 20:28 | | | | | | 17:13 | | | | 16:36 |
| Potential sun hours | 501 | | | 453 | | | 381 | | | 332 | | | 267 | 244 |
| Total, worst case | | 589 | | | 534 | | | 579 | | | 417 | | | |
| Sun reduction | | 0.27 | | | 0.30 | | | 0.28 | | | 0.24 | | | |
| Oper. time red. | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | | | |
| Wind dir. red. | | 0.61 | | | 0.61 | | | 0.68 | | | 0.69 | | | |
| Total reduction | | 0.16 | | | 0.18 | | | 0.19 | | | 0.16 | | | |
| Total, real | | 96 | | | 97 | | | 112 | | | 69 | | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** K - H11

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | | | March | | April | | | May | | | June | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | | | 07:25 | | 16:59 (7) | 07:15 | | 18:54 (3) | 06:10 | | 19:04 (4) | 05:25 |
| | 16:37 | 17:25 | | | 18:16 | 17 | 17:16 (7) | 20:10 | 19 | 19:13 (3) | 21:00 | 33 | 19:37 (4) | 21:46 |
| 2 | 08:45 | 08:16 | | | 07:23 | | 16:58 (7) | 07:12 | | 18:54 (3) | 06:08 | | 19:05 (4) | 05:24 |
| | 16:38 | 17:26 | | | 18:18 | 19 | 17:17 (7) | 20:11 | 18 | 19:12 (3) | 21:02 | 33 | 19:38 (4) | 21:47 |
| 3 | 08:44 | 08:15 | | | 07:20 | | 16:57 (7) | 07:10 | | 18:54 (3) | 06:06 | | 19:04 (4) | 05:24 |
| | 16:39 | 17:28 | | | 18:19 | 21 | 17:18 (7) | 20:13 | 18 | 19:12 (3) | 21:03 | 33 | 19:37 (4) | 21:48 |
| 4 | 08:44 | 08:13 | | | 07:18 | | 16:57 (7) | 07:08 | | 18:54 (3) | 06:04 | | 19:04 (4) | 05:23 |
| | 16:40 | 17:30 | | | 18:21 | 21 | 17:18 (7) | 20:15 | 16 | 19:10 (3) | 21:05 | 33 | 19:37 (4) | 21:49 |
| 5 | 08:44 | 08:12 | | | 07:16 | | 16:56 (7) | 07:05 | | 18:56 (3) | 06:03 | | 19:03 (4) | 05:22 |
| | 16:41 | 17:32 | | | 18:23 | 21 | 17:17 (7) | 20:16 | 13 | 19:09 (3) | 21:07 | 34 | 19:37 (4) | 21:50 |
| 6 | 08:44 | 08:10 | | | 07:14 | | 16:56 (7) | 07:03 | | 18:58 (3) | 06:01 | | 19:04 (4) | 05:22 |
| | 16:43 | 17:34 | | | 18:25 | 21 | 17:17 (7) | 20:18 | 8 | 19:06 (3) | 21:08 | 34 | 19:38 (4) | 21:51 |
| 7 | 08:43 | 08:08 | | | 07:12 | | 16:57 (7) | 07:01 | | | 05:59 | | 19:04 (4) | 05:21 |
| | 16:44 | 17:36 | | | 18:27 | 20 | 17:17 (7) | 20:20 | | | 21:10 | 33 | 19:37 (4) | 21:52 |
| 8 | 08:43 | 08:06 | | | 07:09 | | 16:58 (7) | 06:59 | | | 05:57 | | 19:04 (4) | 05:20 |
| | 16:45 | 17:37 | | | 18:28 | 24 | 17:22 (8) | 20:21 | | | 21:12 | 33 | 19:37 (4) | 21:53 |
| 9 | 08:42 | 08:05 | | | 07:07 | | 16:58 (7) | 06:56 | | | 05:56 | | 19:04 (4) | 05:20 |
| | 16:47 | 17:39 | | | 18:30 | 26 | 17:24 (8) | 20:23 | | | 21:13 | 33 | 19:37 (4) | 21:53 |
| 10 | 08:42 | 08:03 | | | 07:05 | | 16:59 (7) | 06:54 | | | 05:54 | | 19:04 (4) | 05:19 |
| | 16:48 | 17:41 | | | 18:32 | 27 | 17:26 (8) | 20:25 | | | 21:15 | 32 | 19:36 (4) | 21:54 |
| 11 | 08:41 | 08:01 | | | 07:03 | | 17:02 (7) | 06:52 | | | 05:52 | | 19:05 (4) | 05:19 |
| | 16:49 | 17:43 | | | 18:34 | 25 | 17:27 (8) | 20:27 | | | 21:16 | 31 | 19:36 (4) | 21:55 |
| 12 | 08:41 | 07:59 | | | 07:00 | | 17:01 (8) | 06:50 | | | 05:50 | | 19:05 (4) | 05:19 |
| | 16:51 | 17:45 | | | 18:35 | 27 | 17:28 (8) | 20:28 | | | 21:18 | 30 | 19:35 (4) | 21:56 |
| 13 | 08:40 | 07:57 | | | 06:58 | | 17:01 (8) | 06:48 | | | 05:49 | | 19:06 (4) | 05:18 |
| | 16:52 | 17:47 | | | 18:37 | 28 | 17:29 (8) | 20:30 | | | 21:20 | 29 | 19:35 (4) | 21:56 |
| 14 | 08:39 | 07:55 | | | 06:56 | | 17:00 (8) | 06:45 | | | 05:47 | | 19:07 (4) | 05:18 |
| | 16:54 | 17:49 | | | 18:39 | 29 | 17:29 (8) | 20:32 | | | 21:21 | 27 | 19:34 (4) | 21:57 |
| 15 | 08:38 | 07:54 | | | 06:54 | | 16:59 (8) | 06:43 | | | 05:46 | | 19:08 (4) | 05:18 |
| | 16:55 | 17:50 | | | 18:41 | 30 | 17:29 (8) | 20:33 | | | 21:23 | 26 | 19:34 (4) | 21:57 |
| 16 | 08:37 | 07:52 | | | 06:51 | | 16:58 (8) | 06:41 | | | 05:44 | | 19:08 (4) | 05:18 |
| | 16:57 | 17:52 | | | 18:42 | 31 | 17:29 (8) | 20:35 | | | 21:24 | 24 | 19:32 (4) | 21:58 |
| 17 | 08:37 | 07:50 | | | 06:49 | | 16:58 (8) | 06:39 | | | 05:43 | | 19:10 (4) | 05:18 |
| | 16:59 | 17:54 | | | 18:44 | 31 | 17:29 (8) | 20:37 | | | 21:26 | 21 | 19:31 (4) | 21:58 |
| 18 | 08:36 | 07:48 | | | 06:47 | | 16:58 (8) | 06:37 | | | 05:41 | | 19:11 (4) | 05:18 |
| | 17:00 | 17:56 | | | 18:46 | 30 | 17:28 (8) | 20:38 | | | 21:27 | 20 | 19:31 (4) | 21:59 |
| 19 | 08:35 | 07:46 | | | 06:44 | | 16:58 (8) | 06:34 | | | 05:40 | | 19:13 (4) | 05:18 |
| | 17:02 | 17:58 | | | 18:47 | 30 | 17:28 (8) | 20:40 | | | 21:29 | 17 | 19:30 (4) | 21:59 |
| 20 | 08:34 | 07:44 | | | 06:42 | | 16:58 (8) | 06:32 | | | 05:38 | | 19:14 (4) | 05:18 |
| | 17:03 | 18:00 | | | 18:49 | 30 | 17:28 (8) | 20:42 | | | 21:30 | 13 | 19:27 (4) | 22:00 |
| 21 | 08:33 | 07:42 | | | 06:40 | | 16:59 (8) | 06:30 | | | 05:37 | | 19:17 (4) | 05:18 |
| | 17:05 | 18:01 | | | 18:51 | 28 | 17:27 (8) | 20:43 | | | 21:32 | 8 | 19:25 (4) | 22:00 |
| 22 | 08:31 | 07:40 | | | 06:38 | | 16:59 (8) | 06:28 | | | 05:36 | | | 05:18 |
| | 17:07 | 18:03 | | | 18:53 | 26 | 17:25 (8) | 20:45 | | | 21:33 | | | 22:00 |
| 23 | 08:30 | 07:38 | | | 06:35 | | 17:00 (8) | 06:26 | | 19:16 (4) | 05:35 | | | 05:19 |
| | 17:09 | 18:05 | | | 18:54 | 24 | 17:24 (8) | 20:47 | 12 | 19:28 (4) | 21:34 | | | 22:00 |
| 24 | 08:29 | 07:35 | | | 06:33 | | 17:02 (8) | 06:24 | | 19:13 (4) | 05:33 | | | 05:19 |
| | 17:10 | 18:07 | | | 18:56 | 21 | 17:23 (8) | 20:48 | 18 | 19:31 (4) | 21:36 | | | 22:00 |
| 25 | 08:28 | 07:33 | | | 06:31 | | 17:03 (8) | 06:22 | | 19:11 (4) | 05:32 | | | 05:19 |
| | 17:12 | 18:09 | | | 18:58 | 17 | 17:20 (8) | 20:50 | 22 | 19:33 (4) | 21:37 | | | 22:00 |
| 26 | 08:26 | 07:31 | | | 06:28 | | 17:06 (8) | 06:20 | | 19:10 (4) | 05:31 | | | 05:20 |
| | 17:14 | 18:11 | | | 18:59 | 19 | 18:09 (3) | 20:52 | 24 | 19:34 (4) | 21:38 | | | 22:00 |
| 27 | 08:25 | 07:29 | | 17:03 (7) | 06:26 | | 17:59 (3) | 06:18 | | 19:08 (4) | 05:30 | | | 05:20 |
| | 17:16 | 18:12 | 11 | 17:14 (7) | 19:01 | 12 | 18:11 (3) | 20:53 | 27 | 19:35 (4) | 21:40 | | | 22:00 |
| 28 | 08:24 | 07:27 | | 17:01 (7) | 06:24 | | 17:57 (3) | 06:16 | | 19:07 (4) | 05:29 | | | 05:21 |
| | 17:17 | 18:14 | 15 | 17:16 (7) | 19:03 | 15 | 18:12 (3) | 20:55 | 28 | 19:35 (4) | 21:41 | | | 22:00 |
| 29 | 08:22 | | | | 07:21 | | 18:56 (3) | 06:14 | | 19:06 (4) | 05:28 | | | 05:21 |
| | 17:19 | | | | 20:04 | 17 | 19:13 (3) | 20:57 | 30 | 19:36 (4) | 21:42 | | | 22:00 |
| 30 | 08:21 | | | | 07:19 | | 18:55 (3) | 06:12 | | 19:05 (4) | 05:27 | | | 05:22 |
| | 17:21 | | | | 20:06 | 18 | 19:13 (3) | 20:58 | 31 | 19:36 (4) | 21:43 | | | 22:00 |
| 31 | 08:19 | | | | 07:17 | | 18:54 (3) | | | | 05:26 | | | |
| | 17:23 | | | | 20:08 | 19 | 19:13 (3) | | | | 21:45 | | | |
| Potential sun hours | 260 | 278 | | | 367 | | | 416 | | | 485 | | | 498 |
| Total, worst case | | | 26 | | | 724 | | | 284 | | | 577 | | |
| Sun reduction | | | 0.21 | | | 0.24 | | | 0.35 | | | 0.37 | | |
| Oper. time red. | | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | | |
| Wind dir. red. | | | 0.70 | | | 0.69 | | | 0.63 | | | 0.61 | | |
| Total reduction | | | 0.14 | | | 0.17 | | | 0.22 | | | 0.23 | | |
| Total, real | | | 4 | | | 121 | | | 63 | | | 131 | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** K - H11

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | July | | | August | | | September | | | October | | | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 05:22 | | | 05:59 | | 19:16 (4) | 06:48 | | | 07:37 | | 17:41 (8) | 07:30 | 08:21 |
| | 22:00 | | | 21:28 | 30 | 19:46 (4) | 20:26 | | | 19:17 | 27 | 18:08 (8) | 17:11 | 16:31 |
| 2 | 05:23 | | | 06:00 | | 19:16 (4) | 06:50 | | | 07:38 | | 17:41 (8) | 07:32 | 08:22 |
| | 21:59 | | | 21:26 | 31 | 19:47 (4) | 20:24 | | | 19:15 | 25 | 18:06 (8) | 17:09 | 16:30 |
| 3 | 05:24 | | | 06:02 | | 19:15 (4) | 06:51 | | | 07:40 | | 17:38 (7) | 07:34 | 08:24 |
| | 21:59 | | | 21:25 | 32 | 19:47 (4) | 20:22 | | | 19:12 | 27 | 18:05 (8) | 17:08 | 16:30 |
| 4 | 05:24 | | | 06:03 | | 19:14 (4) | 06:53 | | | 07:42 | | 17:36 (7) | 07:35 | 08:25 |
| | 21:58 | | | 21:23 | 32 | 19:46 (4) | 20:19 | | | 19:10 | 27 | 18:03 (8) | 17:06 | 16:29 |
| 5 | 05:25 | | | 06:05 | | 19:14 (4) | 06:54 | | | 07:43 | | 17:34 (7) | 07:37 | 08:26 |
| | 21:58 | | | 21:21 | 33 | 19:47 (4) | 20:17 | | | 19:08 | 25 | 17:59 (8) | 17:04 | 16:29 |
| 6 | 05:26 | | | 06:06 | | 19:13 (4) | 06:56 | | 18:54 (3) | 07:45 | | 17:33 (7) | 07:39 | 08:28 |
| | 21:57 | | | 21:19 | 34 | 19:47 (4) | 20:15 | 8 | 19:02 (3) | 19:06 | 22 | 17:55 (8) | 17:02 | 16:28 |
| 7 | 05:27 | | | 06:08 | | 19:13 (4) | 06:58 | | 18:51 (3) | 07:47 | | 17:33 (7) | 07:41 | 08:29 |
| | 21:57 | | | 21:18 | 34 | 19:47 (4) | 20:13 | 13 | 19:04 (3) | 19:03 | 20 | 17:53 (7) | 17:01 | 16:28 |
| 8 | 05:28 | | | 06:09 | | 19:13 (4) | 06:59 | | 18:50 (3) | 07:48 | | 17:32 (7) | 07:43 | 08:30 |
| | 21:56 | | | 21:16 | 33 | 19:46 (4) | 20:10 | 15 | 19:05 (3) | 19:01 | 21 | 17:53 (7) | 16:59 | 16:28 |
| 9 | 05:29 | | | 06:11 | | 19:13 (4) | 07:01 | | 18:48 (3) | 07:50 | | 17:31 (7) | 07:44 | 08:31 |
| | 21:56 | | | 21:14 | 34 | 19:47 (4) | 20:08 | 17 | 19:05 (3) | 18:59 | 21 | 17:52 (7) | 16:57 | 16:27 |
| 10 | 05:30 | | | 06:13 | | 19:13 (4) | 07:03 | | 18:47 (3) | 07:52 | | 17:31 (7) | 07:46 | 08:32 |
| | 21:55 | | | 21:12 | 33 | 19:46 (4) | 20:06 | 18 | 19:05 (3) | 18:57 | 21 | 17:52 (7) | 16:56 | 16:27 |
| 11 | 05:31 | | | 06:14 | | 19:13 (4) | 07:04 | | 18:46 (3) | 07:53 | | 17:32 (7) | 07:48 | 08:33 |
| | 21:54 | | | 21:10 | 33 | 19:46 (4) | 20:03 | 19 | 19:05 (3) | 18:54 | 20 | 17:52 (7) | 16:54 | 16:27 |
| 12 | 05:32 | | | 06:16 | | 19:13 (4) | 07:06 | | 18:46 (3) | 07:55 | | 17:32 (7) | 07:50 | 08:34 |
| | 21:53 | | | 21:08 | 32 | 19:45 (4) | 20:01 | 19 | 19:05 (3) | 18:52 | 19 | 17:51 (7) | 16:53 | 16:27 |
| 13 | 05:33 | | | 06:17 | | 19:14 (4) | 07:07 | | 18:46 (3) | 07:57 | | 17:33 (7) | 07:51 | 08:35 |
| | 21:52 | | | 21:06 | 31 | 19:45 (4) | 19:59 | 19 | 19:05 (3) | 18:50 | 16 | 17:49 (7) | 16:51 | 16:27 |
| 14 | 05:34 | | | 06:19 | | 19:14 (4) | 07:09 | | 18:46 (3) | 07:59 | | 17:34 (7) | 07:53 | 08:36 |
| | 21:51 | | | 21:04 | 29 | 19:43 (4) | 19:56 | 17 | 19:03 (3) | 18:48 | 13 | 17:47 (7) | 16:50 | 16:27 |
| 15 | 05:35 | | | 06:21 | | 19:15 (4) | 07:11 | | 18:47 (3) | 08:00 | | 17:36 (7) | 07:55 | 08:37 |
| | 21:50 | | | 21:02 | 28 | 19:43 (4) | 19:54 | 15 | 19:02 (3) | 18:46 | 9 | 17:45 (7) | 16:48 | 16:27 |
| 16 | 05:36 | | | 06:22 | | 19:15 (4) | 07:12 | | 18:47 (3) | 08:02 | | | 07:57 | 08:38 |
| | 21:49 | | | 21:00 | 26 | 19:41 (4) | 19:52 | 13 | 19:00 (3) | 18:43 | | | 16:47 | 16:27 |
| 17 | 05:38 | | | 06:24 | | 19:17 (4) | 07:14 | | 17:55 (8) | 08:04 | | | 07:58 | 08:39 |
| | 21:48 | | | 20:58 | 23 | 19:40 (4) | 19:49 | 19 | 18:58 (3) | 18:41 | | | 16:45 | 16:27 |
| 18 | 05:39 | | | 06:25 | | 19:17 (4) | 07:15 | | 17:51 (8) | 08:05 | | | 08:00 | 08:40 |
| | 21:47 | | | 20:56 | 21 | 19:38 (4) | 19:47 | 16 | 18:07 (8) | 18:39 | | | 16:44 | 16:27 |
| 19 | 05:40 | | | 06:27 | | 19:20 (4) | 07:17 | | 17:49 (8) | 08:07 | | | 08:02 | 08:40 |
| | 21:46 | | | 20:54 | 16 | 19:36 (4) | 19:45 | 20 | 18:09 (8) | 18:37 | | | 16:43 | 16:28 |
| 20 | 05:42 | | | 06:29 | | 19:22 (4) | 07:19 | | 17:47 (8) | 08:09 | | | 08:04 | 08:41 |
| | 21:45 | | | 20:52 | 10 | 19:32 (4) | 19:42 | 23 | 18:10 (8) | 18:35 | | | 16:42 | 16:28 |
| 21 | 05:43 | | | 06:30 | | | 07:20 | | 17:45 (8) | 08:11 | | | 08:05 | 08:42 |
| | 21:44 | | | 20:50 | | | 19:40 | 26 | 18:11 (8) | 18:33 | | | 16:40 | 16:29 |
| 22 | 05:44 | | 19:31 (4) | 06:32 | | | 07:22 | | 17:44 (8) | 08:12 | | | 08:07 | 08:42 |
| | 21:42 | 2 | 19:33 (4) | 20:48 | | | 19:38 | 27 | 18:11 (8) | 18:31 | | | 16:39 | 16:29 |
| 23 | 05:46 | | 19:26 (4) | 06:33 | | | 07:24 | | 17:42 (8) | 08:14 | | | 08:08 | 08:43 |
| | 21:41 | 11 | 19:37 (4) | 20:46 | | | 19:35 | 29 | 18:11 (8) | 18:29 | | | 16:38 | 16:30 |
| 24 | 05:47 | | 19:24 (4) | 06:35 | | | 07:25 | | 17:42 (8) | 08:16 | | | 08:10 | 08:43 |
| | 21:40 | 14 | 19:38 (4) | 20:44 | | | 19:33 | 30 | 18:12 (8) | 18:27 | | | 16:37 | 16:30 |
| 25 | 05:48 | | 19:23 (4) | 06:37 | | | 07:27 | | 17:41 (8) | 07:18 | | | 08:12 | 08:44 |
| | 21:38 | 18 | 19:41 (4) | 20:42 | | | 19:31 | 31 | 18:12 (8) | 17:25 | | | 16:36 | 16:31 |
| 26 | 05:50 | | 19:21 (4) | 06:38 | | | 07:28 | | 17:40 (8) | 07:19 | | | 08:13 | 08:44 |
| | 21:37 | 21 | 19:42 (4) | 20:39 | | | 19:28 | 31 | 18:11 (8) | 17:23 | | | 16:35 | 16:31 |
| 27 | 05:51 | | 19:20 (4) | 06:40 | | | 07:30 | | 17:40 (8) | 07:21 | | | 08:15 | 08:44 |
| | 21:36 | 22 | 19:42 (4) | 20:37 | | | 19:26 | 31 | 18:11 (8) | 17:21 | | | 16:34 | 16:32 |
| 28 | 05:53 | | 19:19 (4) | 06:42 | | | 07:32 | | 17:40 (8) | 07:23 | | | 08:16 | 08:44 |
| | 21:34 | 25 | 19:44 (4) | 20:35 | | | 19:24 | 31 | 18:11 (8) | 17:19 | | | 16:33 | 16:33 |
| 29 | 05:54 | | 19:18 (4) | 06:43 | | | 07:33 | | 17:40 (8) | 07:25 | | | 08:18 | 08:44 |
| | 21:33 | 26 | 19:44 (4) | 20:33 | | | 19:22 | 29 | 18:09 (8) | 17:17 | | | 16:33 | 16:34 |
| 30 | 05:56 | | 19:17 (4) | 06:45 | | | 07:35 | | 17:40 (8) | 07:27 | | | 08:19 | 08:45 |
| | 21:31 | 28 | 19:45 (4) | 20:31 | | | 19:19 | 29 | 18:09 (8) | 17:15 | | | 16:32 | 16:35 |
| 31 | 05:57 | | 19:17 (4) | 06:46 | | | | | | 07:28 | | | | 08:45 |
| | 21:29 | 29 | 19:46 (4) | 20:28 | | | | | | 17:13 | | | | 16:36 |
| Potential sun hours | 501 | | | 453 | | | 381 | | | 332 | | | 267 | 244 |
| Total, worst case | | 196 | | | 575 | | | 545 | | | 313 | | | |
| Sun reduction | | 0.27 | | | 0.30 | | | 0.28 | | | 0.24 | | | |
| Oper. time red. | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | | | |
| Wind dir. red. | | 0.61 | | | 0.61 | | | 0.68 | | | 0.69 | | | |
| Total reduction | | 0.16 | | | 0.18 | | | 0.19 | | | 0.16 | | | |
| Total, real | | 32 | | | 105 | | | 105 | | | 52 | | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** L - H12

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | | February | | March | | | April | | | May | | | June | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | | 08:18 | | 07:25 | | | 07:15 | | 18:14 (8) | 06:10 | | 19:17 (4) | 05:25 | |
| | 16:37 | | 17:25 | | 18:16 | | | 20:10 | 14 | 18:28 (8) | 21:00 | 21 | 19:38 (4) | 21:46 | |
| 2 | 08:45 | | 08:16 | | 07:23 | | | 07:12 | | 18:17 (8) | 06:08 | | 19:17 (4) | 05:24 | |
| | 16:38 | | 17:26 | | 18:18 | | | 20:11 | 7 | 18:24 (8) | 21:02 | 23 | 19:40 (4) | 21:47 | |
| 3 | 08:44 | | 08:15 | | 07:20 | | | 07:10 | | | 06:06 | | 19:15 (4) | 05:24 | |
| | 16:39 | | 17:28 | | 18:19 | | | 20:13 | | | 21:03 | 25 | 19:40 (4) | 21:48 | |
| 4 | 08:44 | | 08:13 | | 07:18 | | 17:14 (7) | 07:08 | | | 06:04 | | 19:14 (4) | 05:23 | |
| | 16:40 | | 17:30 | | 18:21 | 4 | 17:18 (7) | 20:15 | | | 21:05 | 27 | 19:41 (4) | 21:49 | |
| 5 | 08:44 | | 08:12 | | 07:16 | | 17:09 (7) | 07:05 | | | 06:03 | | 19:13 (4) | 05:22 | |
| | 16:41 | | 17:32 | | 18:23 | 12 | 17:21 (7) | 20:16 | | | 21:07 | 28 | 19:41 (4) | 21:50 | |
| 6 | 08:44 | | 08:10 | | 07:14 | | 17:08 (7) | 07:03 | | | 06:01 | | 19:13 (4) | 05:22 | |
| | 16:43 | | 17:34 | | 18:25 | 15 | 17:23 (7) | 20:18 | | | 21:08 | 29 | 19:42 (4) | 21:51 | |
| 7 | 08:43 | | 08:08 | | 07:12 | | 17:06 (7) | 07:01 | | | 05:59 | | 19:12 (4) | 05:21 | |
| | 16:44 | | 17:36 | | 18:27 | 18 | 17:24 (7) | 20:20 | | | 21:10 | 30 | 19:42 (4) | 21:52 | |
| 8 | 08:43 | | 08:06 | | 07:09 | | 17:06 (7) | 06:59 | | | 05:57 | | 19:12 (4) | 05:20 | |
| | 16:45 | | 17:37 | | 18:28 | 19 | 17:25 (7) | 20:21 | | | 21:12 | 30 | 19:42 (4) | 21:53 | |
| 9 | 08:42 | | 08:05 | | 07:07 | | 17:04 (7) | 06:56 | | | 05:56 | | 19:12 (4) | 05:20 | |
| | 16:47 | | 17:39 | | 18:30 | 20 | 17:24 (7) | 20:23 | | | 21:13 | 31 | 19:43 (4) | 21:53 | |
| 10 | 08:42 | | 08:03 | | 07:05 | | 17:04 (7) | 06:54 | | | 05:54 | | 19:12 (4) | 05:19 | |
| | 16:48 | | 17:41 | | 18:32 | 21 | 17:25 (7) | 20:25 | | | 21:15 | 31 | 19:43 (4) | 21:54 | |
| 11 | 08:41 | | 08:01 | | 07:03 | | 17:04 (7) | 06:52 | | | 05:52 | | 19:12 (4) | 05:19 | |
| | 16:49 | | 17:43 | | 18:34 | 21 | 17:25 (7) | 20:26 | | | 21:16 | 31 | 19:43 (4) | 21:55 | |
| 12 | 08:41 | | 07:59 | | 07:00 | | 17:04 (7) | 06:50 | | | 05:50 | | 19:12 (4) | 05:19 | |
| | 16:51 | | 17:45 | | 18:35 | 19 | 17:23 (7) | 20:28 | | | 21:18 | 31 | 19:43 (4) | 21:56 | |
| 13 | 08:40 | | 07:57 | | 06:58 | | 17:04 (7) | 06:47 | | | 05:49 | | 19:12 (4) | 05:18 | |
| | 16:52 | | 17:47 | | 18:37 | 19 | 17:23 (7) | 20:30 | | | 21:20 | 31 | 19:43 (4) | 21:56 | |
| 14 | 08:39 | | 07:55 | | 06:56 | | 17:05 (7) | 06:45 | | | 05:47 | | 19:12 (4) | 05:18 | |
| | 16:54 | | 17:49 | | 18:39 | 17 | 17:22 (7) | 20:32 | | | 21:21 | 30 | 19:42 (4) | 21:57 | |
| 15 | 08:38 | | 07:54 | | 06:54 | | 17:06 (7) | 06:43 | | | 05:46 | | 19:13 (4) | 05:18 | |
| | 16:55 | | 17:50 | | 18:41 | 18 | 17:27 (8) | 20:33 | | | 21:23 | 30 | 19:43 (4) | 21:57 | |
| 16 | 08:37 | | 07:52 | | 06:51 | | 17:08 (7) | 06:41 | | | 05:44 | | 19:12 (4) | 05:18 | |
| | 16:57 | | 17:52 | | 18:42 | 23 | 17:32 (8) | 20:35 | | | 21:24 | 30 | 19:42 (4) | 21:58 | |
| 17 | 08:37 | | 07:50 | | 06:49 | | 17:16 (8) | 06:39 | | | 05:43 | | 19:13 (4) | 05:18 | |
| | 16:59 | | 17:54 | | 18:44 | 18 | 17:34 (8) | 20:37 | | | 21:26 | 29 | 19:42 (4) | 21:58 | |
| 18 | 08:36 | | 07:48 | | 06:47 | | 17:13 (8) | 06:37 | | | 05:41 | | 19:14 (4) | 05:18 | |
| | 17:00 | | 17:56 | | 18:46 | 22 | 17:35 (8) | 20:38 | | | 21:27 | 28 | 19:42 (4) | 21:59 | |
| 19 | 08:35 | | 07:46 | | 06:44 | | 17:12 (8) | 06:34 | | | 05:40 | | 19:15 (4) | 05:18 | |
| | 17:02 | | 17:58 | | 18:47 | 24 | 17:36 (8) | 20:40 | | | 21:29 | 26 | 19:41 (4) | 21:59 | |
| 20 | 08:34 | | 07:44 | | 06:42 | | 17:11 (8) | 06:32 | | | 05:38 | | 19:15 (4) | 05:18 | |
| | 17:03 | | 18:00 | | 18:49 | 26 | 17:37 (8) | 20:42 | | | 21:30 | 25 | 19:40 (4) | 22:00 | |
| 21 | 08:33 | | 07:42 | | 06:40 | | 17:10 (8) | 06:30 | | | 05:37 | | 19:16 (4) | 05:18 | |
| | 17:05 | | 18:01 | | 18:51 | 27 | 17:37 (8) | 20:43 | | | 21:32 | 24 | 19:40 (4) | 22:00 | |
| 22 | 08:31 | | 07:40 | | 06:38 | | 17:09 (8) | 06:28 | | | 05:36 | | 19:17 (4) | 05:18 | |
| | 17:07 | | 18:03 | | 18:53 | 29 | 17:38 (8) | 20:45 | | | 21:33 | 22 | 19:39 (4) | 22:00 | |
| 23 | 08:30 | | 07:38 | | 06:35 | | 17:09 (8) | 06:26 | | | 05:35 | | 19:18 (4) | 05:19 | |
| | 17:09 | | 18:05 | | 18:54 | 29 | 17:38 (8) | 20:47 | | | 21:34 | 21 | 19:39 (4) | 22:00 | |
| 24 | 08:29 | | 07:35 | | 06:33 | | 17:09 (8) | 06:24 | | | 05:33 | | 19:19 (4) | 05:19 | |
| | 17:10 | | 18:07 | | 18:56 | 29 | 17:38 (8) | 20:48 | | | 21:36 | 19 | 19:38 (4) | 22:00 | |
| 25 | 08:28 | | 07:33 | | 06:31 | | 17:08 (8) | 06:22 | | | 05:32 | | 19:20 (4) | 05:19 | |
| | 17:12 | | 18:09 | | 18:58 | 29 | 17:37 (8) | 20:50 | | | 21:37 | 17 | 19:37 (4) | 22:00 | |
| 26 | 08:26 | | 07:31 | | 06:28 | | 17:08 (8) | 06:20 | | | 05:31 | | 19:22 (4) | 05:20 | |
| | 17:14 | | 18:11 | | 18:59 | 29 | 17:37 (8) | 20:52 | | | 21:38 | 14 | 19:36 (4) | 22:00 | |
| 27 | 08:25 | | 07:29 | | 06:26 | | 17:09 (8) | 06:18 | | | 05:30 | | 19:24 (4) | 05:20 | |
| | 17:16 | | 18:12 | | 19:01 | 27 | 17:36 (8) | 20:53 | | | 21:40 | 10 | 19:34 (4) | 22:00 | |
| 28 | 08:24 | | 07:27 | | 06:24 | | 17:09 (8) | 06:16 | | 19:27 (4) | 05:29 | | 19:26 (4) | 05:21 | |
| | 17:17 | | 18:14 | | 19:03 | 26 | 17:35 (8) | 20:55 | 3 | 19:30 (4) | 21:41 | 6 | 19:32 (4) | 22:00 | |
| 29 | 08:22 | | | | 07:21 | | 18:09 (8) | 06:14 | | 19:22 (4) | 05:28 | | | 05:21 | |
| | 17:19 | | | | 20:04 | 25 | 18:34 (8) | 20:57 | 12 | 19:34 (4) | 21:42 | | | 22:00 | |
| 30 | 08:21 | | | | 07:19 | | 18:11 (8) | 06:12 | | 19:19 (4) | 05:27 | | | 05:22 | |
| | 17:21 | | | | 20:06 | 22 | 18:33 (8) | 20:58 | 17 | 19:36 (4) | 21:43 | | | 22:00 | |
| 31 | 08:19 | | | | 07:17 | | 18:11 (8) | | | | 05:26 | | | | |
| | 17:23 | | | | 20:08 | 19 | 18:30 (8) | | | | 21:45 | | | | |
| Potential sun hours | 260 | | 278 | | 367 | | | 416 | | | 485 | | | 498 | |
| Total, worst case | | | | | | 607 | | | 53 | | | 699 | | | |
| Sun reduction | | | | | | 0.24 | | | 0.35 | | | 0.37 | | | |
| Oper. time red. | | | | | | 1.00 | | | 1.00 | | | 1.00 | | | |
| Wind dir. red. | | | | | | 0.69 | | | 0.63 | | | 0.60 | | | |
| Total reduction | | | | | | 0.17 | | | 0.23 | | | 0.22 | | | |
| Total, real | | | | | | 102 | | | 12 | | | 156 | | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** L - H12

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | July | | | August | | | September | | | October | | | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 05:22 | | | 05:59 | | 19:22 (4) | 06:48 | | | 07:37 | | 17:44 (7) | 07:30 | 08:21 |
| | 21:59 | | | 21:28 | 31 | 19:53 (4) | 20:26 | | | 19:17 | 19 | 18:03 (7) | 17:11 | 16:31 |
| 2 | 05:23 | | | 06:00 | | 19:22 (4) | 06:50 | | | 07:38 | | 17:42 (7) | 07:32 | 08:22 |
| | 21:59 | | | 21:26 | 32 | 19:54 (4) | 20:24 | | | 19:15 | 20 | 18:02 (7) | 17:09 | 16:30 |
| 3 | 05:24 | | | 06:02 | | 19:22 (4) | 06:51 | | | 07:40 | | 17:42 (7) | 07:34 | 08:24 |
| | 21:59 | | | 21:25 | 31 | 19:53 (4) | 20:22 | | | 19:12 | 20 | 18:02 (7) | 17:08 | 16:30 |
| 4 | 05:24 | | | 06:03 | | 19:22 (4) | 06:53 | | | 07:42 | | 17:42 (7) | 07:35 | 08:25 |
| | 21:58 | | | 21:23 | 30 | 19:52 (4) | 20:19 | | | 19:10 | 20 | 18:02 (7) | 17:06 | 16:29 |
| 5 | 05:25 | | | 06:05 | | 19:22 (4) | 06:54 | | | 07:43 | | 17:41 (7) | 07:37 | 08:26 |
| | 21:58 | | | 21:21 | 31 | 19:53 (4) | 20:17 | | | 19:08 | 20 | 18:01 (7) | 17:04 | 16:29 |
| 6 | 05:26 | | | 06:06 | | 19:22 (4) | 06:56 | | | 07:45 | | 17:42 (7) | 07:39 | 08:28 |
| | 21:57 | | | 21:19 | 30 | 19:52 (4) | 20:15 | | | 19:06 | 18 | 18:00 (7) | 17:02 | 16:28 |
| 7 | 05:27 | | | 06:08 | | 19:23 (4) | 06:58 | | | 07:47 | | 17:43 (7) | 07:41 | 08:29 |
| | 21:57 | | | 21:18 | 29 | 19:52 (4) | 20:13 | | | 19:03 | 16 | 17:59 (7) | 17:01 | 16:28 |
| 8 | 05:28 | | | 06:09 | | 19:23 (4) | 06:59 | | | 07:48 | | 17:44 (7) | 07:43 | 08:30 |
| | 21:56 | | | 21:16 | 28 | 19:51 (4) | 20:10 | | | 19:01 | 14 | 17:58 (7) | 16:59 | 16:28 |
| 9 | 05:29 | | | 06:11 | | 19:24 (4) | 07:01 | | | 07:50 | | 17:45 (7) | 07:44 | 08:31 |
| | 21:56 | | | 21:14 | 26 | 19:50 (4) | 20:08 | | | 18:59 | 10 | 17:55 (7) | 16:57 | 16:27 |
| 10 | 05:30 | | | 06:13 | | 19:24 (4) | 07:03 | | 18:11 (8) | 07:52 | | | 07:46 | 08:32 |
| | 21:55 | | | 21:12 | 25 | 19:49 (4) | 20:06 | 6 | 18:17 (8) | 18:57 | | | 16:56 | 16:27 |
| 11 | 05:31 | | | 06:14 | | 19:25 (4) | 07:04 | | 18:06 (8) | 07:53 | | | 07:48 | 08:33 |
| | 21:54 | | | 21:10 | 23 | 19:48 (4) | 20:03 | 14 | 18:20 (8) | 18:54 | | | 16:54 | 16:27 |
| 12 | 05:32 | | | 06:16 | | 19:26 (4) | 07:06 | | 18:04 (8) | 07:55 | | | 07:50 | 08:34 |
| | 21:53 | | | 21:08 | 20 | 19:46 (4) | 20:01 | 18 | 18:22 (8) | 18:52 | | | 16:53 | 16:27 |
| 13 | 05:33 | | | 06:17 | | 19:28 (4) | 07:07 | | 18:02 (8) | 07:57 | | | 07:51 | 08:35 |
| | 21:52 | | | 21:06 | 16 | 19:44 (4) | 19:59 | 22 | 18:24 (8) | 18:50 | | | 16:51 | 16:27 |
| 14 | 05:34 | | | 06:19 | | 19:30 (4) | 07:09 | | 18:00 (8) | 07:59 | | | 07:53 | 08:36 |
| | 21:51 | | | 21:04 | 11 | 19:41 (4) | 19:56 | 24 | 18:24 (8) | 18:48 | | | 16:50 | 16:27 |
| 15 | 05:35 | | | 06:21 | | | 07:11 | | 17:59 (8) | 08:00 | | | 07:55 | 08:37 |
| | 21:50 | | | 21:02 | | | 19:54 | 26 | 18:25 (8) | 18:46 | | | 16:48 | 16:27 |
| 16 | 05:36 | | 19:33 (4) | 06:22 | | | 07:12 | | 17:57 (8) | 08:02 | | | 07:57 | 08:38 |
| | 21:49 | 9 | 19:42 (4) | 21:00 | | | 19:52 | 28 | 18:25 (8) | 18:43 | | | 16:47 | 16:27 |
| 17 | 05:38 | | 19:32 (4) | 06:24 | | | 07:14 | | 17:57 (8) | 08:04 | | | 07:58 | 08:39 |
| | 21:48 | 12 | 19:44 (4) | 20:58 | | | 19:49 | 28 | 18:25 (8) | 18:41 | | | 16:45 | 16:27 |
| 18 | 05:39 | | 19:31 (4) | 06:25 | | | 07:15 | | 17:56 (8) | 08:05 | | | 08:00 | 08:40 |
| | 21:47 | 15 | 19:46 (4) | 20:56 | | | 19:47 | 28 | 18:24 (8) | 18:39 | | | 16:44 | 16:27 |
| 19 | 05:40 | | 19:29 (4) | 06:27 | | | 07:17 | | 17:55 (8) | 08:07 | | | 08:02 | 08:40 |
| | 21:46 | 18 | 19:47 (4) | 20:54 | | | 19:45 | 29 | 18:24 (8) | 18:37 | | | 16:43 | 16:28 |
| 20 | 05:42 | | 19:28 (4) | 06:29 | | | 07:19 | | 17:55 (8) | 08:09 | | | 08:04 | 08:41 |
| | 21:45 | 20 | 19:48 (4) | 20:52 | | | 19:42 | 29 | 18:24 (8) | 18:35 | | | 16:42 | 16:28 |
| 21 | 05:43 | | 19:27 (4) | 06:30 | | | 07:20 | | 17:55 (8) | 08:11 | | | 08:05 | 08:42 |
| | 21:44 | 21 | 19:48 (4) | 20:50 | | | 19:40 | 28 | 18:23 (8) | 18:33 | | | 16:40 | 16:29 |
| 22 | 05:44 | | 19:27 (4) | 06:32 | | | 07:22 | | 17:55 (8) | 08:12 | | | 08:07 | 08:42 |
| | 21:42 | 23 | 19:50 (4) | 20:48 | | | 19:38 | 28 | 18:23 (8) | 18:31 | | | 16:39 | 16:29 |
| 23 | 05:46 | | 19:26 (4) | 06:33 | | | 07:24 | | 17:55 (8) | 08:14 | | | 08:08 | 08:43 |
| | 21:41 | 24 | 19:50 (4) | 20:46 | | | 19:35 | 26 | 18:21 (8) | 18:29 | | | 16:38 | 16:30 |
| 24 | 05:47 | | 19:25 (4) | 06:35 | | | 07:25 | | 17:55 (8) | 08:16 | | | 08:10 | 08:43 |
| | 21:40 | 26 | 19:51 (4) | 20:44 | | | 19:33 | 25 | 18:20 (8) | 18:27 | | | 16:37 | 16:30 |
| 25 | 05:48 | | 19:25 (4) | 06:37 | | | 07:27 | | 17:57 (8) | 07:18 | | | 08:12 | 08:43 |
| | 21:38 | 27 | 19:52 (4) | 20:42 | | | 19:31 | 22 | 18:19 (8) | 17:25 | | | 16:36 | 16:31 |
| 26 | 05:50 | | 19:24 (4) | 06:38 | | | 07:28 | | 17:57 (8) | 07:19 | | | 08:13 | 08:44 |
| | 21:37 | 28 | 19:52 (4) | 20:39 | | | 19:28 | 20 | 18:17 (8) | 17:23 | | | 16:35 | 16:31 |
| 27 | 05:51 | | 19:23 (4) | 06:40 | | | 07:30 | | 17:51 (7) | 07:21 | | | 08:15 | 08:44 |
| | 21:36 | 29 | 19:52 (4) | 20:37 | | | 19:26 | 23 | 18:15 (8) | 17:21 | | | 16:34 | 16:32 |
| 28 | 05:53 | | 19:24 (4) | 06:42 | | | 07:32 | | 17:48 (7) | 07:23 | | | 08:16 | 08:44 |
| | 21:34 | 29 | 19:53 (4) | 20:35 | | | 19:24 | 22 | 18:11 (8) | 17:19 | | | 16:33 | 16:33 |
| 29 | 05:54 | | 19:23 (4) | 06:43 | | | 07:33 | | 17:46 (7) | 07:25 | | | 08:18 | 08:44 |
| | 21:33 | 30 | 19:53 (4) | 20:33 | | | 19:22 | 15 | 18:01 (7) | 17:17 | | | 16:33 | 16:34 |
| 30 | 05:56 | | 19:22 (4) | 06:45 | | | 07:35 | | 17:44 (7) | 07:27 | | | 08:19 | 08:45 |
| | 21:31 | 31 | 19:53 (4) | 20:31 | | | 19:19 | 18 | 18:02 (7) | 17:15 | | | 16:32 | 16:35 |
| 31 | 05:57 | | 19:23 (4) | 06:46 | | | | | | 07:28 | | | | 08:45 |
| | 21:29 | 31 | 19:54 (4) | 20:28 | | | | | | 17:13 | | | | 16:36 |
| Potential sun hours | 501 | | | 453 | | | 381 | | | 332 | | | 267 | 244 |
| Total, worst case | | 373 | | | 363 | | | 479 | | | 157 | | | |
| Sun reduction | | 0.27 | | | 0.30 | | | 0.28 | | | 0.24 | | | |
| Oper. time red. | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | | | |
| Wind dir. red. | | 0.60 | | | 0.60 | | | 0.68 | | | 0.69 | | | |
| Total reduction | | 0.16 | | | 0.18 | | | 0.19 | | | 0.16 | | | |
| Total, real | | 60 | | | 65 | | | 93 | | | 26 | | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** M - H13

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | | | April | | | May | | | June | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | | | 07:15 | | 18:15 (8) | 06:10 | | | 05:25 | | 19:29 (4) |
| | 16:37 | 17:25 | 18:16 | | | 20:10 | 26 | 18:41 (8) | 21:00 | | | 21:46 | 14 | 19:43 (4) |
| 2 | 08:45 | 08:16 | 07:23 | | | 07:12 | | 18:16 (8) | 06:08 | | 19:32 (4) | 05:24 | | 19:30 (4) |
| | 16:38 | 17:26 | 18:18 | | | 20:11 | 24 | 18:40 (8) | 21:02 | 5 | 19:37 (4) | 21:47 | 12 | 19:42 (4) |
| 3 | 08:44 | 08:15 | 07:20 | | | 07:10 | | 18:17 (8) | 06:06 | | 19:27 (4) | 05:24 | | 19:31 (4) |
| | 16:39 | 17:28 | 18:19 | | | 20:13 | 21 | 18:38 (8) | 21:03 | 14 | 19:41 (4) | 21:48 | 9 | 19:40 (4) |
| 4 | 08:44 | 08:13 | 07:18 | | | 07:08 | | 18:18 (8) | 06:04 | | 19:25 (4) | 05:23 | | 19:34 (4) |
| | 16:40 | 17:30 | 18:21 | | | 20:15 | 18 | 18:36 (8) | 21:05 | 17 | 19:42 (4) | 21:49 | 5 | 19:39 (4) |
| 5 | 08:44 | 08:12 | 07:16 | | | 07:05 | | 18:20 (8) | 06:03 | | 19:23 (4) | 05:22 | | |
| | 16:41 | 17:32 | 18:23 | | | 20:16 | 14 | 18:34 (8) | 21:07 | 20 | 19:43 (4) | 21:50 | | |
| 6 | 08:44 | 08:10 | 07:14 | | | 07:03 | | 18:24 (8) | 06:01 | | 19:23 (4) | 05:22 | | |
| | 16:43 | 17:34 | 18:25 | | | 20:18 | 6 | 18:30 (8) | 21:08 | 22 | 19:45 (4) | 21:51 | | |
| 7 | 08:43 | 08:08 | 07:12 | | 17:18 (7) | 07:01 | | | 05:59 | | 19:21 (4) | 05:21 | | |
| | 16:44 | 17:36 | 18:27 | 5 | 17:23 (7) | 20:20 | | | 21:10 | 25 | 19:46 (4) | 21:52 | | |
| 8 | 08:43 | 08:06 | 07:09 | | 17:14 (7) | 06:59 | | | 05:57 | | 19:20 (4) | 05:20 | | |
| | 16:45 | 17:37 | 18:28 | 12 | 17:26 (7) | 20:21 | | | 21:12 | 26 | 19:46 (4) | 21:53 | | |
| 9 | 08:42 | 08:05 | 07:07 | | 17:12 (7) | 06:56 | | | 05:56 | | 19:20 (4) | 05:20 | | |
| | 16:47 | 17:39 | 18:30 | 15 | 17:27 (7) | 20:23 | | | 21:13 | 27 | 19:47 (4) | 21:53 | | |
| 10 | 08:42 | 08:03 | 07:05 | | 17:11 (7) | 06:54 | | | 05:54 | | 19:19 (4) | 05:19 | | |
| | 16:48 | 17:41 | 18:32 | 17 | 17:28 (7) | 20:25 | | | 21:15 | 28 | 19:47 (4) | 21:54 | | |
| 11 | 08:41 | 08:01 | 07:03 | | 17:10 (7) | 06:52 | | | 05:52 | | 19:19 (4) | 05:19 | | |
| | 16:49 | 17:43 | 18:34 | 19 | 17:29 (7) | 20:26 | | | 21:16 | 29 | 19:48 (4) | 21:55 | | |
| 12 | 08:41 | 07:59 | 07:00 | | 17:09 (7) | 06:50 | | | 05:50 | | 19:18 (4) | 05:19 | | |
| | 16:51 | 17:45 | 18:35 | 20 | 17:29 (7) | 20:28 | | | 21:18 | 30 | 19:48 (4) | 21:56 | | |
| 13 | 08:40 | 07:57 | 06:58 | | 17:09 (7) | 06:47 | | | 05:49 | | 19:19 (4) | 05:18 | | |
| | 16:52 | 17:47 | 18:37 | 20 | 17:29 (7) | 20:30 | | | 21:20 | 30 | 19:49 (4) | 21:56 | | |
| 14 | 08:39 | 07:55 | 06:56 | | 17:09 (7) | 06:45 | | | 05:47 | | 19:18 (4) | 05:18 | | |
| | 16:54 | 17:49 | 18:39 | 20 | 17:29 (7) | 20:32 | | | 21:21 | 30 | 19:48 (4) | 21:57 | | |
| 15 | 08:38 | 07:54 | 06:54 | | 17:08 (7) | 06:43 | | | 05:46 | | 19:18 (4) | 05:18 | | |
| | 16:55 | 17:50 | 18:41 | 19 | 17:27 (7) | 20:33 | | | 21:23 | 31 | 19:49 (4) | 21:57 | | |
| 16 | 08:37 | 07:52 | 06:51 | | 17:09 (7) | 06:41 | | | 05:44 | | 19:18 (4) | 05:18 | | |
| | 16:57 | 17:52 | 18:42 | 18 | 17:27 (7) | 20:35 | | | 21:24 | 30 | 19:48 (4) | 21:58 | | |
| 17 | 08:37 | 07:50 | 06:49 | | 17:10 (7) | 06:39 | | | 05:43 | | 19:18 (4) | 05:18 | | |
| | 16:59 | 17:54 | 18:44 | 16 | 17:26 (7) | 20:37 | | | 21:26 | 31 | 19:49 (4) | 21:58 | | |
| 18 | 08:36 | 07:48 | 06:47 | | 17:11 (7) | 06:37 | | | 05:41 | | 19:19 (4) | 05:18 | | |
| | 17:00 | 17:56 | 18:46 | 13 | 17:24 (7) | 20:38 | | | 21:27 | 30 | 19:49 (4) | 21:59 | | |
| 19 | 08:35 | 07:46 | 06:44 | | 17:13 (7) | 06:34 | | | 05:40 | | 19:19 (4) | 05:18 | | |
| | 17:02 | 17:58 | 18:47 | 11 | 17:33 (8) | 20:40 | | | 21:29 | 30 | 19:49 (4) | 21:59 | | |
| 20 | 08:34 | 07:44 | 06:42 | | 17:25 (8) | 06:32 | | | 05:38 | | 19:19 (4) | 05:18 | | |
| | 17:03 | 18:00 | 18:49 | 13 | 17:38 (8) | 20:42 | | | 21:30 | 29 | 19:48 (4) | 22:00 | | |
| 21 | 08:33 | 07:42 | 06:40 | | 17:21 (8) | 06:30 | | | 05:37 | | 19:20 (4) | 05:18 | | |
| | 17:05 | 18:01 | 18:51 | 19 | 17:40 (8) | 20:43 | | | 21:32 | 28 | 19:48 (4) | 22:00 | | |
| 22 | 08:31 | 07:40 | 06:38 | | 17:20 (8) | 06:28 | | | 05:36 | | 19:20 (4) | 05:18 | | |
| | 17:07 | 18:03 | 18:53 | 21 | 17:41 (8) | 20:45 | | | 21:33 | 28 | 19:48 (4) | 22:00 | | |
| 23 | 08:30 | 07:38 | 06:35 | | 17:19 (8) | 06:26 | | | 05:35 | | 19:21 (4) | 05:19 | | |
| | 17:09 | 18:05 | 18:54 | 23 | 17:42 (8) | 20:47 | | | 21:34 | 27 | 19:48 (4) | 22:00 | | |
| 24 | 08:29 | 07:35 | 06:33 | | 17:18 (8) | 06:24 | | | 05:33 | | 19:22 (4) | 05:19 | | |
| | 17:10 | 18:07 | 18:56 | 25 | 17:43 (8) | 20:48 | | | 21:36 | 25 | 19:47 (4) | 22:00 | | |
| 25 | 08:28 | 07:33 | 06:31 | | 17:16 (8) | 06:22 | | | 05:32 | | 19:22 (4) | 05:19 | | |
| | 17:12 | 18:09 | 18:58 | 27 | 17:43 (8) | 20:50 | | | 21:37 | 25 | 19:47 (4) | 22:00 | | |
| 26 | 08:26 | 07:31 | 06:28 | | 17:16 (8) | 06:20 | | | 05:31 | | 19:23 (4) | 05:20 | | |
| | 17:14 | 18:11 | 18:59 | 28 | 17:44 (8) | 20:52 | | | 21:38 | 24 | 19:47 (4) | 22:00 | | |
| 27 | 08:25 | 07:29 | 06:26 | | 17:15 (8) | 06:18 | | | 05:30 | | 19:24 (4) | 05:20 | | |
| | 17:16 | 18:12 | 19:01 | 29 | 17:44 (8) | 20:53 | | | 21:40 | 22 | 19:46 (4) | 22:00 | | |
| 28 | 08:24 | 07:27 | 06:24 | | 17:14 (8) | 06:16 | | | 05:29 | | 19:24 (4) | 05:21 | | |
| | 17:17 | 18:14 | 19:03 | 29 | 17:43 (8) | 20:55 | | | 21:41 | 21 | 19:45 (4) | 22:00 | | |
| 29 | 08:22 | | 07:21 | | 18:14 (8) | 06:14 | | | 05:28 | | 19:25 (4) | 05:21 | | |
| | 17:19 | | 20:04 | 29 | 18:43 (8) | 20:57 | | | 21:42 | 20 | 19:45 (4) | 22:00 | | |
| 30 | 08:21 | | 07:19 | | 18:15 (8) | 06:12 | | | 05:27 | | 19:26 (4) | 05:22 | | |
| | 17:21 | | 20:06 | 28 | 18:43 (8) | 20:58 | | | 21:43 | 18 | 19:44 (4) | 22:00 | | |
| 31 | 08:19 | | 07:17 | | 18:14 (8) | | | | 05:26 | | 19:27 (4) | | | |
| | 17:23 | | 20:08 | 27 | 18:41 (8) | | | | 21:45 | 16 | 19:43 (4) | | | |
| Potential sun hours | 260 | 278 | 367 | | | 416 | | | 485 | | | 498 | | |
| Total, worst case | | | | 503 | | | 109 | | | 738 | | | 40 | |
| Sun reduction | | | | 0.24 | | | 0.35 | | | 0.37 | | | 0.30 | |
| Oper. time red. | | | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Wind dir. red. | | | | 0.68 | | | 0.68 | | | 0.60 | | | 0.60 | |
| Total reduction | | | | 0.17 | | | 0.24 | | | 0.22 | | | 0.18 | |
| Total, real | | | | 84 | | | 26 | | | 163 | | | 7 | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
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+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** M - H13

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | July | | | August | | | September | | | October | | | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 05:22 | | | 05:59 | | 19:29 (4) | 06:48 | | | 07:37 | | 17:48 (7) | 07:30 | 08:21 |
| | 21:59 | | | 21:28 | 29 | 19:58 (4) | 20:26 | | | 19:17 | 21 | 18:09 (7) | 17:11 | 16:31 |
| 2 | 05:23 | | | 06:00 | | 19:30 (4) | 06:50 | | | 07:38 | | 17:48 (7) | 07:32 | 08:22 |
| | 21:59 | | | 21:26 | 29 | 19:59 (4) | 20:24 | | | 19:15 | 19 | 18:07 (7) | 17:09 | 16:30 |
| 3 | 05:24 | | | 06:02 | | 19:30 (4) | 06:51 | | | 07:40 | | 17:48 (7) | 07:34 | 08:24 |
| | 21:59 | | | 21:25 | 28 | 19:58 (4) | 20:22 | | | 19:12 | 19 | 18:07 (7) | 17:08 | 16:30 |
| 4 | 05:24 | | | 06:03 | | 19:30 (4) | 06:53 | | | 07:42 | | 17:49 (7) | 07:35 | 08:25 |
| | 21:58 | | | 21:23 | 27 | 19:57 (4) | 20:19 | | | 19:10 | 17 | 18:06 (7) | 17:06 | 16:29 |
| 5 | 05:25 | | | 06:05 | | 19:31 (4) | 06:54 | | | 07:43 | | 17:50 (7) | 07:37 | 08:26 |
| | 21:58 | | | 21:21 | 25 | 19:56 (4) | 20:17 | | | 19:08 | 13 | 18:03 (7) | 17:04 | 16:29 |
| 6 | 05:26 | | | 06:06 | | 19:31 (4) | 06:56 | | 18:21 (8) | 07:45 | | 17:52 (7) | 07:39 | 08:28 |
| | 21:57 | | | 21:19 | 24 | 19:55 (4) | 20:15 | 4 | 18:25 (8) | 19:06 | 9 | 18:01 (7) | 17:02 | 16:28 |
| 7 | 05:27 | | | 06:08 | | 19:32 (4) | 06:58 | | 18:15 (8) | 07:47 | | | 07:41 | 08:29 |
| | 21:57 | | | 21:18 | 22 | 19:54 (4) | 20:13 | 14 | 18:29 (8) | 19:03 | | | 17:01 | 16:28 |
| 8 | 05:28 | | | 06:09 | | 19:33 (4) | 06:59 | | 18:13 (8) | 07:48 | | | 07:43 | 08:30 |
| | 21:56 | | | 21:16 | 19 | 19:52 (4) | 20:10 | 18 | 18:31 (8) | 19:01 | | | 16:59 | 16:28 |
| 9 | 05:29 | | 19:39 (4) | 06:11 | | 19:35 (4) | 07:01 | | 18:10 (8) | 07:50 | | | 07:44 | 08:31 |
| | 21:56 | 8 | 19:47 (4) | 21:14 | 16 | 19:51 (4) | 20:08 | 22 | 18:32 (8) | 18:59 | | | 16:57 | 16:27 |
| 10 | 05:30 | | 19:38 (4) | 06:13 | | 19:37 (4) | 07:03 | | 18:09 (8) | 07:52 | | | 07:46 | 08:32 |
| | 21:55 | 10 | 19:48 (4) | 21:12 | 11 | 19:48 (4) | 20:06 | 24 | 18:33 (8) | 18:57 | | | 16:56 | 16:27 |
| 11 | 05:31 | | 19:37 (4) | 06:14 | | | 07:04 | | 18:07 (8) | 07:53 | | | 07:48 | 08:33 |
| | 21:54 | 13 | 19:50 (4) | 21:10 | | | 20:03 | 26 | 18:33 (8) | 18:54 | | | 16:54 | 16:27 |
| 12 | 05:32 | | 19:36 (4) | 06:16 | | | 07:06 | | 18:07 (8) | 07:55 | | | 07:50 | 08:34 |
| | 21:53 | 15 | 19:51 (4) | 21:08 | | | 20:01 | 26 | 18:33 (8) | 18:52 | | | 16:53 | 16:27 |
| 13 | 05:33 | | 19:35 (4) | 06:17 | | | 07:07 | | 18:06 (8) | 07:57 | | | 07:51 | 08:35 |
| | 21:52 | 17 | 19:52 (4) | 21:06 | | | 19:59 | 28 | 18:34 (8) | 18:50 | | | 16:51 | 16:27 |
| 14 | 05:34 | | 19:34 (4) | 06:19 | | | 07:09 | | 18:05 (8) | 07:59 | | | 07:53 | 08:36 |
| | 21:51 | 19 | 19:53 (4) | 21:04 | | | 19:56 | 28 | 18:33 (8) | 18:48 | | | 16:50 | 16:27 |
| 15 | 05:35 | | 19:33 (4) | 06:21 | | | 07:11 | | 18:05 (8) | 08:00 | | | 07:55 | 08:37 |
| | 21:50 | 21 | 19:54 (4) | 21:02 | | | 19:54 | 28 | 18:33 (8) | 18:46 | | | 16:48 | 16:27 |
| 16 | 05:36 | | 19:33 (4) | 06:22 | | | 07:12 | | 18:04 (8) | 08:02 | | | 07:57 | 08:38 |
| | 21:49 | 21 | 19:54 (4) | 21:00 | | | 19:52 | 28 | 18:32 (8) | 18:43 | | | 16:47 | 16:27 |
| 17 | 05:38 | | 19:33 (4) | 06:24 | | | 07:14 | | 18:04 (8) | 08:04 | | | 07:58 | 08:39 |
| | 21:48 | 23 | 19:56 (4) | 20:58 | | | 19:49 | 28 | 18:32 (8) | 18:41 | | | 16:45 | 16:27 |
| 18 | 05:39 | | 19:32 (4) | 06:25 | | | 07:15 | | 18:03 (8) | 08:05 | | | 08:00 | 08:40 |
| | 21:47 | 24 | 19:56 (4) | 20:56 | | | 19:47 | 28 | 18:31 (8) | 18:39 | | | 16:44 | 16:27 |
| 19 | 05:40 | | 19:31 (4) | 06:27 | | | 07:17 | | 18:04 (8) | 08:07 | | | 08:02 | 08:40 |
| | 21:46 | 26 | 19:57 (4) | 20:54 | | | 19:45 | 26 | 18:30 (8) | 18:37 | | | 16:43 | 16:28 |
| 20 | 05:42 | | 19:31 (4) | 06:29 | | | 07:19 | | 18:05 (8) | 08:09 | | | 08:04 | 08:41 |
| | 21:45 | 26 | 19:57 (4) | 20:52 | | | 19:42 | 24 | 18:29 (8) | 18:35 | | | 16:42 | 16:28 |
| 21 | 05:43 | | 19:30 (4) | 06:30 | | | 07:20 | | 18:05 (8) | 08:11 | | | 08:05 | 08:42 |
| | 21:44 | 27 | 19:57 (4) | 20:50 | | | 19:40 | 22 | 18:27 (8) | 18:33 | | | 16:40 | 16:29 |
| 22 | 05:44 | | 19:30 (4) | 06:32 | | | 07:22 | | 18:06 (8) | 08:12 | | | 08:07 | 08:42 |
| | 21:42 | 28 | 19:58 (4) | 20:48 | | | 19:38 | 20 | 18:26 (8) | 18:31 | | | 16:39 | 16:29 |
| 23 | 05:46 | | 19:30 (4) | 06:33 | | | 07:24 | | 18:07 (8) | 08:14 | | | 08:08 | 08:43 |
| | 21:41 | 29 | 19:59 (4) | 20:46 | | | 19:35 | 16 | 18:23 (8) | 18:29 | | | 16:38 | 16:30 |
| 24 | 05:47 | | 19:29 (4) | 06:35 | | | 07:25 | | 17:58 (7) | 08:16 | | | 08:10 | 08:43 |
| | 21:40 | 30 | 19:59 (4) | 20:44 | | | 19:33 | 13 | 18:19 (8) | 18:27 | | | 16:37 | 16:30 |
| 25 | 05:48 | | 19:30 (4) | 06:37 | | | 07:27 | | 17:55 (7) | 07:18 | | | 08:12 | 08:43 |
| | 21:38 | 29 | 19:59 (4) | 20:42 | | | 19:31 | 12 | 18:07 (7) | 17:25 | | | 16:36 | 16:31 |
| 26 | 05:50 | | 19:29 (4) | 06:38 | | | 07:28 | | 17:52 (7) | 07:19 | | | 08:13 | 08:44 |
| | 21:37 | 30 | 19:59 (4) | 20:39 | | | 19:28 | 15 | 18:07 (7) | 17:23 | | | 16:35 | 16:31 |
| 27 | 05:51 | | 19:29 (4) | 06:40 | | | 07:30 | | 17:51 (7) | 07:21 | | | 08:15 | 08:44 |
| | 21:36 | 30 | 19:59 (4) | 20:37 | | | 19:26 | 17 | 18:08 (7) | 17:21 | | | 16:34 | 16:32 |
| 28 | 05:53 | | 19:29 (4) | 06:42 | | | 07:32 | | 17:50 (7) | 07:23 | | | 08:16 | 08:44 |
| | 21:34 | 31 | 20:00 (4) | 20:35 | | | 19:24 | 19 | 18:09 (7) | 17:19 | | | 16:33 | 16:33 |
| 29 | 05:54 | | 19:29 (4) | 06:43 | | | 07:33 | | 17:49 (7) | 07:25 | | | 08:18 | 08:44 |
| | 21:33 | 30 | 19:59 (4) | 20:33 | | | 19:22 | 19 | 18:08 (7) | 17:17 | | | 16:33 | 16:34 |
| 30 | 05:56 | | 19:28 (4) | 06:45 | | | 07:35 | | 17:48 (7) | 07:27 | | | 08:19 | 08:45 |
| | 21:31 | 31 | 19:59 (4) | 20:31 | | | 19:19 | 21 | 18:09 (7) | 17:15 | | | 16:32 | 16:35 |
| 31 | 05:57 | | 19:29 (4) | 06:46 | | | | | | 07:28 | | | | 08:45 |
| | 21:29 | 30 | 19:59 (4) | 20:28 | | | | | | 17:13 | | | | 16:36 |
| Potential sun hours | 501 | | | 453 | | | 381 | | | 332 | | | 267 | 244 |
| Total, worst case | | 548 | | | 230 | | | 526 | | | 98 | | | |
| Sun reduction | | 0.27 | | | 0.30 | | | 0.28 | | | 0.24 | | | |
| Oper. time red. | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | | | |
| Wind dir. red. | | 0.60 | | | 0.60 | | | 0.68 | | | 0.69 | | | |
| Total reduction | | 0.16 | | | 0.18 | | | 0.19 | | | 0.16 | | | |
| Total, real | | 87 | | | 41 | | | 101 | | | 16 | | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
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kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** N - H14

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | | February | | March | | April | | | May | | | June | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | | 08:18 | | 07:25 | | 17:08 (7) | 07:15 | | | 06:10 | | 19:05 (4) | 05:25 |
| | 16:37 | | 17:25 | | 18:16 | 9 | 17:17 (7) | 20:10 | | | 21:00 | 31 | 19:36 (4) | 21:46 |
| 2 | 08:45 | | 08:16 | | 07:23 | | 17:06 (7) | 07:12 | | | 06:08 | | 19:06 (4) | 05:24 |
| | 16:38 | | 17:26 | | 18:18 | 14 | 17:20 (7) | 20:11 | | | 21:02 | 31 | 19:37 (4) | 21:47 |
| 3 | 08:44 | | 08:15 | | 07:20 | | 17:05 (7) | 07:10 | | | 06:06 | | 19:06 (4) | 05:24 |
| | 16:39 | | 17:28 | | 18:19 | 16 | 17:21 (7) | 20:13 | | | 21:03 | 30 | 19:36 (4) | 21:48 |
| 4 | 08:44 | | 08:13 | | 07:18 | | 17:04 (7) | 07:08 | | | 06:04 | | 19:06 (4) | 05:23 |
| | 16:40 | | 17:30 | | 18:21 | 18 | 17:22 (7) | 20:15 | | | 21:05 | 30 | 19:36 (4) | 21:49 |
| 5 | 08:44 | | 08:12 | | 07:16 | | 17:03 (7) | 07:05 | | | 06:03 | | 19:06 (4) | 05:22 |
| | 16:41 | | 17:32 | | 18:23 | 19 | 17:22 (7) | 20:16 | | | 21:07 | 29 | 19:35 (4) | 21:50 |
| 6 | 08:44 | | 08:10 | | 07:14 | | 17:02 (7) | 07:03 | | | 06:01 | | 19:07 (4) | 05:22 |
| | 16:43 | | 17:34 | | 18:25 | 20 | 17:22 (7) | 20:18 | | | 21:08 | 28 | 19:35 (4) | 21:51 |
| 7 | 08:43 | | 08:08 | | 07:12 | | 17:02 (7) | 07:01 | | | 05:59 | | 19:07 (4) | 05:21 |
| | 16:44 | | 17:36 | | 18:27 | 20 | 17:22 (7) | 20:20 | | | 21:10 | 28 | 19:35 (4) | 21:52 |
| 8 | 08:43 | | 08:06 | | 07:09 | | 17:03 (7) | 06:59 | | | 05:57 | | 19:07 (4) | 05:20 |
| | 16:45 | | 17:37 | | 18:28 | 19 | 17:22 (7) | 20:21 | | | 21:12 | 27 | 19:34 (4) | 21:53 |
| 9 | 08:42 | | 08:05 | | 07:07 | | 17:02 (7) | 06:56 | | | 05:56 | | 19:08 (4) | 05:20 |
| | 16:47 | | 17:39 | | 18:30 | 19 | 17:21 (7) | 20:23 | | | 21:13 | 25 | 19:33 (4) | 21:53 |
| 10 | 08:42 | | 08:03 | | 07:05 | | 17:03 (7) | 06:54 | | | 05:54 | | 19:09 (4) | 05:19 |
| | 16:48 | | 17:41 | | 18:32 | 23 | 17:26 (8) | 20:25 | | | 21:15 | 23 | 19:32 (4) | 21:54 |
| 11 | 08:41 | | 08:01 | | 07:03 | | 17:04 (7) | 06:52 | | | 05:52 | | 19:10 (4) | 05:19 |
| | 16:49 | | 17:43 | | 18:34 | 25 | 17:29 (8) | 20:26 | | | 21:16 | 22 | 19:32 (4) | 21:55 |
| 12 | 08:41 | | 07:59 | | 07:00 | | 17:05 (7) | 06:50 | | | 05:50 | | 19:11 (4) | 05:19 |
| | 16:51 | | 17:45 | | 18:35 | 26 | 17:31 (8) | 20:28 | | | 21:18 | 19 | 19:30 (4) | 21:56 |
| 13 | 08:40 | | 07:57 | | 06:58 | | 17:09 (7) | 06:47 | | | 05:49 | | 19:13 (4) | 05:18 |
| | 16:52 | | 17:47 | | 18:37 | 23 | 17:32 (8) | 20:30 | | | 21:20 | 16 | 19:29 (4) | 21:56 |
| 14 | 08:39 | | 07:55 | | 06:56 | | 17:09 (8) | 06:45 | | | 05:47 | | 19:14 (4) | 05:18 |
| | 16:54 | | 17:49 | | 18:39 | 25 | 17:34 (8) | 20:32 | | | 21:21 | 13 | 19:27 (4) | 21:57 |
| 15 | 08:38 | | 07:54 | | 06:54 | | 17:08 (8) | 06:43 | | | 05:46 | | 19:17 (4) | 05:18 |
| | 16:55 | | 17:50 | | 18:41 | 25 | 17:33 (8) | 20:33 | | | 21:23 | 8 | 19:25 (4) | 21:57 |
| 16 | 08:37 | | 07:52 | | 06:51 | | 17:07 (8) | 06:41 | | | 05:44 | | | 05:18 |
| | 16:57 | | 17:52 | | 18:42 | 27 | 17:34 (8) | 20:35 | | | 21:24 | | | 21:58 |
| 17 | 08:37 | | 07:50 | | 06:49 | | 17:07 (8) | 06:39 | | | 05:43 | | | 05:18 |
| | 16:59 | | 17:54 | | 18:44 | 28 | 17:35 (8) | 20:37 | | | 21:26 | | | 21:58 |
| 18 | 08:36 | | 07:48 | | 06:47 | | 17:06 (8) | 06:37 | | | 05:41 | | | 05:18 |
| | 17:00 | | 17:56 | | 18:46 | 28 | 17:34 (8) | 20:38 | | | 21:27 | | | 21:59 |
| 19 | 08:35 | | 07:46 | | 06:44 | | 17:06 (8) | 06:34 | | | 05:40 | | | 05:18 |
| | 17:02 | | 17:58 | | 18:47 | 28 | 17:34 (8) | 20:40 | | | 21:29 | | | 21:59 |
| 20 | 08:34 | | 07:44 | | 06:42 | | 17:06 (8) | 06:32 | | | 05:38 | | | 05:18 |
| | 17:03 | | 18:00 | | 18:49 | 28 | 17:34 (8) | 20:42 | | | 21:30 | | | 22:00 |
| 21 | 08:33 | | 07:42 | | 06:40 | | 17:05 (8) | 06:30 | | 19:18 (4) | 05:37 | | | 05:18 |
| | 17:05 | | 18:01 | | 18:51 | 27 | 17:32 (8) | 20:43 | 10 | 19:28 (4) | 21:32 | | | 22:00 |
| 22 | 08:31 | | 07:40 | | 06:38 | | 17:06 (8) | 06:28 | | 19:15 (4) | 05:36 | | | 05:18 |
| | 17:07 | | 18:03 | | 18:53 | 26 | 17:32 (8) | 20:45 | 15 | 19:30 (4) | 21:33 | | | 22:00 |
| 23 | 08:30 | | 07:38 | | 06:35 | | 17:07 (8) | 06:26 | | 19:13 (4) | 05:35 | | | 05:19 |
| | 17:09 | | 18:05 | | 18:54 | 24 | 17:31 (8) | 20:47 | 19 | 19:32 (4) | 21:34 | | | 22:00 |
| 24 | 08:29 | | 07:35 | | 06:33 | | 17:08 (8) | 06:24 | | 19:11 (4) | 05:33 | | | 05:19 |
| | 17:10 | | 18:07 | | 18:56 | 22 | 17:30 (8) | 20:48 | 22 | 19:33 (4) | 21:36 | | | 22:00 |
| 25 | 08:28 | | 07:33 | | 06:31 | | 17:08 (8) | 06:22 | | 19:10 (4) | 05:32 | | | 05:19 |
| | 17:12 | | 18:09 | | 18:58 | 20 | 17:28 (8) | 20:50 | 24 | 19:34 (4) | 21:37 | | | 22:00 |
| 26 | 08:26 | | 07:31 | | 06:28 | | 17:10 (8) | 06:20 | | 19:09 (4) | 05:31 | | | 05:20 |
| | 17:14 | | 18:11 | | 18:59 | 16 | 17:26 (8) | 20:52 | 26 | 19:35 (4) | 21:38 | | | 22:00 |
| 27 | 08:25 | | 07:29 | | 06:26 | | 17:14 (8) | 06:18 | | 19:08 (4) | 05:30 | | | 05:20 |
| | 17:16 | | 18:12 | | 19:01 | 9 | 17:23 (8) | 20:53 | 28 | 19:36 (4) | 21:40 | | | 22:00 |
| 28 | 08:24 | | 07:27 | | 06:24 | | | 06:16 | | 19:07 (4) | 05:29 | | | 05:21 |
| | 17:17 | | 18:14 | | 19:03 | | | 20:55 | 29 | 19:36 (4) | 21:41 | | | 22:00 |
| 29 | 08:22 | | | | 07:21 | | | 06:14 | | 19:06 (4) | 05:28 | | | 05:21 |
| | 17:19 | | | | 20:04 | | | 20:57 | 30 | 19:36 (4) | 21:42 | | | 22:00 |
| 30 | 08:21 | | | | 07:19 | | | 06:12 | | 19:06 (4) | 05:27 | | | 05:22 |
| | 17:21 | | | | 20:06 | | | 20:58 | 30 | 19:36 (4) | 21:43 | | | 22:00 |
| 31 | 08:19 | | | | 07:17 | | | | | | 05:26 | | | |
| | 17:23 | | | | 20:08 | | | | | | 21:45 | | | |
| Potential sun hours | 260 | | 278 | | 367 | | | 416 | | | 485 | | | 498 |
| Total, worst case | | | | | | 584 | | | 233 | | | 360 | | |
| Sun reduction | | | | | | 0.24 | | | 0.35 | | | 0.37 | | |
| Oper. time red. | | | | | | 1.00 | | | 1.00 | | | 1.00 | | |
| Wind dir. red. | | | | | | 0.69 | | | 0.62 | | | 0.62 | | |
| Total reduction | | | | | | 0.17 | | | 0.22 | | | 0.23 | | |
| Total, real | | | | | | 98 | | | 51 | | | 82 | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
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Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** N - H14

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | July | | | August | | | September | | | October | | | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 05:22 | | | 05:59 | | 19:21 (4) | 06:48 | | | 07:37 | | 17:46 (7) | 07:30 | 08:21 |
| | 21:59 | | | 21:28 | 20 | 19:41 (4) | 20:26 | | | 19:17 | 25 | 18:11 (8) | 17:11 | 16:31 |
| 2 | 05:23 | | | 06:00 | | 19:20 (4) | 06:50 | | | 07:38 | | 17:43 (7) | 07:32 | 08:22 |
| | 21:59 | | | 21:26 | 23 | 19:43 (4) | 20:24 | | | 19:15 | 25 | 18:08 (8) | 17:09 | 16:30 |
| 3 | 05:24 | | | 06:02 | | 19:19 (4) | 06:51 | | | 07:40 | | 17:41 (7) | 07:34 | 08:24 |
| | 21:59 | | | 21:25 | 24 | 19:43 (4) | 20:22 | | | 19:12 | 25 | 18:06 (8) | 17:08 | 16:30 |
| 4 | 05:24 | | | 06:03 | | 19:17 (4) | 06:53 | | | 07:42 | | 17:40 (7) | 07:35 | 08:25 |
| | 21:58 | | | 21:23 | 26 | 19:43 (4) | 20:19 | | | 19:10 | 18 | 17:58 (7) | 17:06 | 16:29 |
| 5 | 05:25 | | | 06:05 | | 19:17 (4) | 06:54 | | | 07:43 | | 17:39 (7) | 07:37 | 08:26 |
| | 21:58 | | | 21:21 | 27 | 19:44 (4) | 20:17 | | | 19:08 | 19 | 17:58 (7) | 17:04 | 16:29 |
| 6 | 05:26 | | | 06:06 | | 19:16 (4) | 06:56 | | | 07:45 | | 17:38 (7) | 07:39 | 08:28 |
| | 21:57 | | | 21:19 | 28 | 19:44 (4) | 20:15 | | | 19:06 | 20 | 17:58 (7) | 17:02 | 16:28 |
| 7 | 05:27 | | | 06:08 | | 19:16 (4) | 06:58 | | | 07:47 | | 17:38 (7) | 07:41 | 08:29 |
| | 21:57 | | | 21:18 | 29 | 19:45 (4) | 20:13 | | | 19:03 | 20 | 17:58 (7) | 17:01 | 16:28 |
| 8 | 05:28 | | | 06:09 | | 19:15 (4) | 06:59 | | | 07:48 | | 17:38 (7) | 07:43 | 08:30 |
| | 21:56 | | | 21:16 | 30 | 19:45 (4) | 20:10 | | | 19:01 | 20 | 17:58 (7) | 16:59 | 16:28 |
| 9 | 05:29 | | | 06:11 | | 19:15 (4) | 07:01 | | | 07:50 | | 17:38 (7) | 07:44 | 08:31 |
| | 21:56 | | | 21:14 | 30 | 19:45 (4) | 20:08 | | | 18:59 | 18 | 17:56 (7) | 16:57 | 16:27 |
| 10 | 05:30 | | | 06:13 | | 19:14 (4) | 07:03 | | | 07:52 | | 17:38 (7) | 07:46 | 08:32 |
| | 21:55 | | | 21:12 | 31 | 19:45 (4) | 20:06 | | | 18:57 | 18 | 17:56 (7) | 16:56 | 16:27 |
| 11 | 05:31 | | | 06:14 | | 19:15 (4) | 07:04 | | | 07:53 | | 17:40 (7) | 07:48 | 08:33 |
| | 21:54 | | | 21:10 | 30 | 19:45 (4) | 20:03 | | | 18:54 | 15 | 17:55 (7) | 16:54 | 16:27 |
| 12 | 05:32 | | | 06:16 | | 19:14 (4) | 07:06 | | | 07:55 | | 17:41 (7) | 07:50 | 08:34 |
| | 21:53 | | | 21:08 | 30 | 19:44 (4) | 20:01 | | | 18:52 | 12 | 17:53 (7) | 16:53 | 16:27 |
| 13 | 05:33 | | | 06:17 | | 19:14 (4) | 07:07 | | | 07:57 | | 17:43 (7) | 07:51 | 08:35 |
| | 21:52 | | | 21:06 | 30 | 19:44 (4) | 19:59 | | | 18:50 | 6 | 17:49 (7) | 16:51 | 16:27 |
| 14 | 05:34 | | | 06:19 | | 19:14 (4) | 07:09 | | | 07:59 | | | 07:53 | 08:36 |
| | 21:51 | | | 21:04 | 29 | 19:43 (4) | 19:56 | | | 18:48 | | | 16:50 | 16:27 |
| 15 | 05:35 | | | 06:21 | | 19:15 (4) | 07:11 | | | 08:00 | | | 07:55 | 08:37 |
| | 21:50 | | | 21:02 | 28 | 19:43 (4) | 19:54 | | | 18:46 | | | 16:48 | 16:27 |
| 16 | 05:36 | | | 06:22 | | 19:15 (4) | 07:12 | | 18:03 (8) | 08:02 | | | 07:57 | 08:38 |
| | 21:49 | | | 21:00 | 27 | 19:42 (4) | 19:52 | 7 | 18:10 (8) | 18:43 | | | 16:47 | 16:27 |
| 17 | 05:38 | | | 06:24 | | 19:15 (4) | 07:14 | | 17:59 (8) | 08:04 | | | 07:58 | 08:39 |
| | 21:48 | | | 20:58 | 27 | 19:42 (4) | 19:49 | 15 | 18:14 (8) | 18:41 | | | 16:45 | 16:27 |
| 18 | 05:39 | | | 06:25 | | 19:16 (4) | 07:15 | | 17:56 (8) | 08:05 | | | 08:00 | 08:40 |
| | 21:47 | | | 20:56 | 24 | 19:40 (4) | 19:47 | 19 | 18:15 (8) | 18:39 | | | 16:44 | 16:27 |
| 19 | 05:40 | | | 06:27 | | 19:17 (4) | 07:17 | | 17:55 (8) | 08:07 | | | 08:02 | 08:40 |
| | 21:46 | | | 20:54 | 22 | 19:39 (4) | 19:45 | 21 | 18:16 (8) | 18:37 | | | 16:43 | 16:28 |
| 20 | 05:41 | | | 06:29 | | 19:18 (4) | 07:19 | | 17:53 (8) | 08:09 | | | 08:04 | 08:41 |
| | 21:45 | | | 20:52 | 19 | 19:37 (4) | 19:42 | 24 | 18:17 (8) | 18:35 | | | 16:42 | 16:28 |
| 21 | 05:43 | | | 06:30 | | 19:20 (4) | 07:20 | | 17:52 (8) | 08:11 | | | 08:05 | 08:42 |
| | 21:44 | | | 20:50 | 15 | 19:35 (4) | 19:40 | 25 | 18:17 (8) | 18:33 | | | 16:40 | 16:29 |
| 22 | 05:44 | | | 06:32 | | 19:24 (4) | 07:22 | | 17:51 (8) | 08:12 | | | 08:07 | 08:42 |
| | 21:42 | | | 20:48 | 8 | 19:32 (4) | 19:38 | 27 | 18:18 (8) | 18:31 | | | 16:39 | 16:29 |
| 23 | 05:46 | | | 06:33 | | | 07:24 | | 17:50 (8) | 08:14 | | | 08:08 | 08:43 |
| | 21:41 | | | 20:46 | | | 19:35 | 27 | 18:17 (8) | 18:29 | | | 16:38 | 16:30 |
| 24 | 05:47 | | | 06:35 | | | 07:25 | | 17:49 (8) | 08:16 | | | 08:10 | 08:43 |
| | 21:40 | | | 20:44 | | | 19:33 | 28 | 18:17 (8) | 18:27 | | | 16:37 | 16:30 |
| 25 | 05:48 | | | 06:37 | | | 07:27 | | 17:49 (8) | 07:18 | | | 08:12 | 08:43 |
| | 21:38 | | | 20:42 | | | 19:31 | 28 | 18:17 (8) | 17:25 | | | 16:36 | 16:31 |
| 26 | 05:50 | | | 06:38 | | | 07:28 | | 17:48 (8) | 07:19 | | | 08:13 | 08:44 |
| | 21:37 | | | 20:39 | | | 19:28 | 28 | 18:16 (8) | 17:23 | | | 16:35 | 16:31 |
| 27 | 05:51 | | | 06:40 | | | 07:30 | | 17:49 (8) | 07:21 | | | 08:15 | 08:44 |
| | 21:36 | | | 20:37 | | | 19:26 | 27 | 18:16 (8) | 17:21 | | | 16:34 | 16:32 |
| 28 | 05:53 | | | 06:42 | | | 07:32 | | 17:49 (8) | 07:23 | | | 08:16 | 08:44 |
| | 21:34 | | | 20:35 | | | 19:24 | 26 | 18:15 (8) | 17:19 | | | 16:33 | 16:33 |
| 29 | 05:54 | | 19:26 (4) | 06:43 | | | 07:33 | | 17:49 (8) | 07:25 | | | 08:18 | 08:44 |
| | 21:33 | 11 | 19:37 (4) | 20:33 | | | 19:22 | 25 | 18:14 (8) | 17:17 | | | 16:33 | 16:34 |
| 30 | 05:56 | | 19:24 (4) | 06:45 | | | 07:35 | | 17:50 (8) | 07:27 | | | 08:19 | 08:45 |
| | 21:31 | 14 | 19:38 (4) | 20:31 | | | 19:19 | 23 | 18:13 (8) | 17:15 | | | 16:32 | 16:35 |
| 31 | 05:57 | | 19:22 (4) | 06:46 | | | | | | 07:28 | | | | 08:45 |
| | 21:29 | 18 | 19:40 (4) | 20:28 | | | | | | 17:13 | | | | 16:36 |
| Potential sun hours | 501 | | | 453 | | | 381 | | | 332 | | | 267 | 244 |
| Total, worst case | | 43 | | | 557 | | | 350 | | | 241 | | | |
| Sun reduction | | 0.27 | | | 0.30 | | | 0.28 | | | 0.24 | | | |
| Oper. time red. | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | | | |
| Wind dir. red. | | 0.62 | | | 0.62 | | | 0.69 | | | 0.69 | | | |
| Total reduction | | 0.17 | | | 0.18 | | | 0.19 | | | 0.16 | | | |
| Total, real | | 7 | | | 102 | | | 68 | | | 40 | | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
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Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** O - H15

## Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:15 | 06:10 | 05:25 | 05:22 | 05:59 | 06:48 | 19:02 (4) | 07:37 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | 22 19:24 (4) | 19:17 | 23 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | 07:12 | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | 19:02 (4) | 07:38 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 20 19:22 (4) | 19:15 | 22 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | 06:06 | 05:24 | 05:24 | 06:02 | 06:51 | 19:04 (4) | 07:40 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 | 21:03 | 21:48 | 21:59 | 21:25 | 20:22 | 17 19:21 (4) | 19:12 | 22 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:04 | 05:23 | 05:24 | 06:03 | 06:53 | 19:06 (4) | 07:42 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 13 19:19 (4) | 19:10 | 21 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | 06:03 | 05:22 | 05:25 | 06:05 | 06:54 | 19:08 (4) | 07:43 | 08:26 |
| | 16:41 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 7 19:15 (4) | 19:08 | 19 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 17:22 (8) 07:03 | 06:01 | 05:21 | 05:26 | 06:06 | 06:56 | | 07:45 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 9 17:31 (8) 20:18 | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | | 19:06 | 16 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 17:19 (8) 07:01 | 19:12 (4) 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | | 07:47 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 15 17:34 (8) 20:20 | 7 19:19 (4) 21:10 | 21:52 | 21:57 | 21:18 | 20:13 | | 19:03 | 13 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 17:17 (8) 06:59 | 19:08 (4) 05:57 | 05:20 | 05:28 | 06:09 | 06:59 | | 07:48 | 08:30 |
| | 16:45 | 17:37 | 18:28 | 17 17:34 (8) 20:21 | 13 19:21 (4) 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | | 19:01 | 5 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 17:16 (8) 06:56 | 19:06 (4) 05:55 | 05:20 | 05:29 | 06:11 | 07:01 | | 07:50 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20 17:36 (8) 20:23 | 17 19:23 (4) 21:13 | 21:53 | 21:56 | 21:14 | 20:08 | | 18:59 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 17:15 (8) 06:54 | 19:04 (4) 05:54 | 05:19 | 05:30 | 06:13 | 07:02 | | 07:52 | 07:46 08:32 |
| | 16:48 | 17:41 | 18:32 | 21 17:36 (8) 20:25 | 20 19:24 (4) 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | | 18:57 | 16:56 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 17:15 (8) 06:52 | 19:03 (4) 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | | 07:53 | 07:48 08:33 |
| | 16:49 | 17:43 | 18:34 | 22 17:37 (8) 20:26 | 22 19:25 (4) 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | | 18:54 | 16:54 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | 17:14 (8) 06:50 | 19:03 (4) 05:50 | 05:19 | 05:32 | 06:16 | 07:06 | | 07:55 | 07:50 08:34 |
| | 16:51 | 17:45 | 18:35 | 22 17:36 (8) 20:28 | 22 19:25 (4) 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | | 18:52 | 16:53 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 17:14 (8) 06:47 | 19:01 (4) 05:49 | 05:18 | 05:33 | 06:17 | 07:07 | | 07:57 | 07:51 08:35 |
| | 16:52 | 17:47 | 18:37 | 22 17:36 (8) 20:30 | 24 19:25 (4) 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | | 18:50 | 16:51 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 17:14 (8) 06:45 | 19:01 (4) 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | | 07:59 | 07:53 08:36 |
| | 16:54 | 17:49 | 18:39 | 22 17:36 (8) 20:32 | 24 19:25 (4) 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | | 18:48 | 16:50 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 17:13 (8) 06:43 | 19:00 (4) 05:46 | 05:18 | 05:35 | 06:21 | 07:11 | | 08:00 | 07:55 08:37 |
| | 16:55 | 17:50 | 18:41 | 22 17:35 (8) 20:33 | 25 19:25 (4) 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | | 18:46 | 16:48 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 17:14 (8) 06:41 | 19:01 (4) 05:44 | 05:18 | 05:36 | 06:22 | 07:12 | | 08:02 | 07:57 08:38 |
| | 16:57 | 17:52 | 18:42 | 20 17:34 (8) 20:35 | 24 19:25 (4) 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | | 18:43 | 16:47 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 17:15 (8) 06:39 | 19:01 (4) 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | | 08:04 | 07:58 08:39 |
| | 16:59 | 17:54 | 18:44 | 18 17:33 (8) 20:37 | 23 19:24 (4) 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | | 18:41 | 16:45 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 17:16 (8) 06:37 | 19:01 (4) 05:41 | 05:18 | 05:39 | 06:25 | 07:15 | | 08:05 | 08:00 08:40 |
| | 17:00 | 17:56 | 18:46 | 15 17:31 (8) 20:38 | 23 19:24 (4) 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | | 18:39 | 16:44 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | 17:18 (8) 06:34 | 19:02 (4) 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | | 08:07 | 08:02 08:40 |
| | 17:02 | 17:58 | 18:47 | 10 17:28 (8) 20:40 | 21 19:23 (4) 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | | 18:37 | 16:43 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 19:03 (4) 05:38 | 05:18 | 05:41 | 06:29 | 19:12 (4) 07:19 | | 08:09 | 08:03 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | 19 19:22 (4) 21:30 | 22:00 | 21:45 | 20:52 | 9 19:21 (4) 19:42 | | 18:35 | 16:42 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | 19:04 (4) 05:37 | 05:18 | 05:43 | 06:30 | 19:10 (4) 07:20 | | 08:11 | 08:05 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | 16 19:20 (4) 21:32 | 22:00 | 21:44 | 20:50 | 13 19:23 (4) 19:40 | | 18:33 | 16:40 16:29 |
| 22 | 08:31 | 07:40 | 06:38 | 06:28 | 19:05 (4) 05:36 | 05:18 | 05:44 | 06:32 | 19:07 (4) 07:22 | | 08:12 | 08:07 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | 13 19:18 (4) 21:33 | 22:00 | 21:42 | 20:48 | 17 19:24 (4) 19:38 | | 18:31 | 16:39 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 19:08 (4) 05:35 | 05:19 | 05:45 | 06:33 | 19:06 (4) 07:24 | | 08:14 | 08:08 08:43 |
| | 17:08 | 18:05 | 18:54 | 20:47 | 7 19:15 (4) 21:34 | 22:00 | 21:41 | 20:46 | 19 19:25 (4) 19:35 | | 18:29 | 16:38 16:30 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | 05:33 | 05:19 | 05:47 | 06:35 | 19:05 (4) 07:25 | 18:03 (8) | 08:16 | 08:10 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 21:36 | 22:00 | 21:40 | 20:44 | 22 19:27 (4) 19:33 | 8 18:11 (8) | 18:27 | 16:37 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 19:04 (4) 07:27 | 18:00 (8) | 07:18 | 08:12 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:38 | 20:41 | 22 19:26 (4) 19:31 | 14 18:14 (8) | 17:25 | 16:36 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 06:20 | 05:31 | 05:20 | 05:50 | 06:38 | 19:03 (4) 07:28 | 17:57 (8) | 07:19 | 08:13 08:44 |
| | 17:14 | 18:10 | 18:59 | 20:52 | 21:38 | 22:00 | 21:37 | 20:39 | 24 19:27 (4) 19:28 | 17 18:14 (8) | 17:23 | 16:35 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 19:02 (4) 07:30 | 17:56 (8) | 07:21 | 08:15 08:44 |
| | 17:16 | 18:12 | 19:01 | 20:53 | 21:40 | 22:00 | 21:36 | 20:37 | 24 19:26 (4) 19:26 | 20 18:16 (8) | 17:21 | 16:34 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:21 | 05:53 | 06:41 | 19:02 (4) 07:32 | 17:55 (8) | 07:23 | 08:16 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 25 19:27 (4) 19:24 | 21 18:16 (8) | 17:19 | 16:33 16:33 |
| 29 | 08:22 | | 07:21 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 19:02 (4) 07:33 | 17:54 (8) | 07:25 | 08:18 08:44 |
| | 17:19 | | 20:04 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 24 19:26 (4) 19:22 | 22 18:16 (8) | 17:17 | 16:33 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:56 | 06:45 | 19:02 (4) 07:35 | 17:53 (8) | 07:27 | 08:19 08:45 |
| | 17:21 | | 20:06 | 20:58 | 21:43 | 22:00 | 21:31 | 20:31 | 24 19:26 (4) 19:19 | 23 18:16 (8) | 17:15 | 16:32 16:35 |
| 31 | 08:19 | | 07:17 | | 05:26 | | 05:57 | 06:46 | 19:01 (4) | | 07:28 | 08:45 |
| | 17:23 | | 20:08 | | 21:44 | | 21:29 | 20:28 | 23 19:24 (4) | | 17:13 | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | | 332 | 267 | 244 |
| Total, worst case | | | 255 | 320 | | | | 246 | 204 | | 141 | | |
| Sun reduction | | | 0.24 | 0.35 | | | | 0.30 | 0.28 | | 0.24 | | |
| Oper. time red. | | | 1.00 | 1.00 | | | | 1.00 | 1.00 | | 1.00 | | |
| Wind dir. red. | | | 0.69 | 0.64 | | | | 0.64 | 0.67 | | 0.69 | | |
| Total reduction | | | 0.17 | 0.23 | | | | 0.19 | 0.19 | | 0.16 | | |
| Total, real | | | 43 | 73 | | | | 47 | 39 | | 23 | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
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Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** P - H17

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | | April | | May | | June | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | | 07:15 | | 06:10 | | 05:25 | | 20:19 (5) |
| | 16:37 | 17:25 | 18:16 | | 20:10 | | 21:00 | | 21:46 | 4 | 20:23 (5) |
| 2 | 08:44 | 08:16 | 07:23 | | 07:12 | | 06:08 | | 05:24 | | 20:16 (5) |
| | 16:38 | 17:26 | 18:18 | | 20:11 | | 21:02 | | 21:47 | 10 | 20:26 (5) |
| 3 | 08:44 | 08:15 | 07:20 | | 07:10 | | 06:06 | | 05:24 | | 20:15 (5) |
| | 16:39 | 17:28 | 18:19 | | 20:13 | | 21:03 | | 21:48 | 12 | 20:27 (5) |
| 4 | 08:44 | 08:13 | 07:18 | | 07:08 | | 06:04 | | 05:23 | | 20:14 (5) |
| | 16:40 | 17:30 | 18:21 | | 20:15 | | 21:05 | | 21:49 | 15 | 20:29 (5) |
| 5 | 08:44 | 08:12 | 07:16 | | 07:05 | | 06:03 | | 05:22 | | 20:13 (5) |
| | 16:41 | 17:32 | 18:23 | | 20:16 | | 21:07 | | 21:50 | 16 | 20:29 (5) |
| 6 | 08:44 | 08:10 | 07:14 | | 07:03 | | 06:01 | | 05:21 | | 20:13 (5) |
| | 16:43 | 17:34 | 18:25 | | 20:18 | | 21:08 | | 21:51 | 18 | 20:31 (5) |
| 7 | 08:43 | 08:08 | 07:12 | | 07:01 | | 05:59 | | 05:21 | | 20:12 (5) |
| | 16:44 | 17:36 | 18:27 | | 20:20 | | 21:10 | | 21:52 | 19 | 20:31 (5) |
| 8 | 08:43 | 08:06 | 07:09 | | 06:59 | | 05:57 | | 05:20 | | 20:12 (5) |
| | 16:45 | 17:37 | 18:28 | | 20:21 | | 21:12 | | 21:53 | 20 | 20:32 (5) |
| 9 | 08:42 | 08:05 | 07:07 | | 06:56 | | 05:55 | | 05:20 | | 20:12 (5) |
| | 16:47 | 17:39 | 18:30 | | 20:23 | | 21:13 | | 21:53 | 20 | 20:32 (5) |
| 10 | 08:42 | 08:03 | 07:05 | | 06:54 | | 05:54 | | 05:19 | | 20:12 (5) |
| | 16:48 | 17:41 | 18:32 | | 20:25 | | 21:15 | | 21:54 | 21 | 20:33 (5) |
| 11 | 08:41 | 08:01 | 07:03 | | 06:52 | | 19:21 (4) | | 05:52 | | 05:19 | | 20:12 (5) |
| | 16:49 | 17:43 | 18:34 | | 20:26 | 4 | 19:25 (4) | | 21:16 | | 21:55 | 22 | 20:34 (5) |
| 12 | 08:41 | 07:59 | 07:00 | | 06:50 | | 19:17 (4) | | 05:50 | | 05:19 | | 20:11 (5) |
| | 16:51 | 17:45 | 18:35 | | 20:28 | 12 | 19:29 (4) | | 21:18 | | 21:56 | 22 | 20:33 (5) |
| 13 | 08:40 | 07:57 | 06:58 | 17:34 (8) | 06:47 | | 19:14 (4) | | 05:49 | | 05:18 | | 20:11 (5) |
| | 16:52 | 17:47 | 18:37 | 9 | 17:43 (8) | 20:30 | 15 | 19:29 (4) | | 21:20 | | 21:56 | 23 | 20:34 (5) |
| 14 | 08:39 | 07:55 | 06:56 | 17:32 (8) | 06:45 | | 19:13 (4) | | 05:47 | | 05:18 | | 20:11 (5) |
| | 16:54 | 17:49 | 18:39 | 14 | 17:46 (8) | 20:32 | 18 | 19:31 (4) | | 21:21 | | 21:57 | 24 | 20:35 (5) |
| 15 | 08:38 | 07:54 | 06:54 | 17:30 (8) | 06:43 | | 19:12 (4) | | 05:46 | | 05:18 | | 20:12 (5) |
| | 16:55 | 17:50 | 18:41 | 16 | 17:46 (8) | 20:33 | 19 | 19:31 (4) | | 21:23 | | 21:57 | 23 | 20:35 (5) |
| 16 | 08:37 | 07:52 | 06:51 | 17:29 (8) | 06:41 | | 19:11 (4) | | 05:44 | | 05:18 | | 20:12 (5) |
| | 16:57 | 17:52 | 18:42 | 18 | 17:47 (8) | 20:35 | 21 | 19:32 (4) | | 21:24 | | 21:58 | 24 | 20:36 (5) |
| 17 | 08:37 | 07:50 | 06:49 | 17:28 (8) | 06:39 | | 19:11 (4) | | 05:43 | | 05:18 | | 20:12 (5) |
| | 16:58 | 17:54 | 18:44 | 20 | 17:48 (8) | 20:37 | 21 | 19:32 (4) | | 21:26 | | 21:58 | 24 | 20:36 (5) |
| 18 | 08:36 | 07:48 | 06:47 | 17:27 (8) | 06:37 | | 19:10 (4) | | 05:41 | | 05:18 | | 20:12 (5) |
| | 17:00 | 17:56 | 18:46 | 20 | 17:47 (8) | 20:38 | 22 | 19:32 (4) | | 21:27 | | 21:59 | 24 | 20:36 (5) |
| 19 | 08:35 | 07:46 | 06:44 | 17:27 (8) | 06:34 | | 19:10 (4) | | 05:40 | | 05:18 | | 20:12 (5) |
| | 17:02 | 17:58 | 18:47 | 20 | 17:47 (8) | 20:40 | 22 | 19:32 (4) | | 21:29 | | 21:59 | 24 | 20:36 (5) |
| 20 | 08:34 | 07:44 | 06:42 | 17:27 (8) | 06:32 | | 19:10 (4) | | 05:38 | | 05:18 | | 20:12 (5) |
| | 17:03 | 18:00 | 18:49 | 20 | 17:47 (8) | 20:42 | 21 | 19:31 (4) | | 21:30 | | 21:59 | 24 | 20:36 (5) |
| 21 | 08:33 | 07:42 | 06:40 | 17:26 (8) | 06:30 | | 19:10 (4) | | 05:37 | | 05:18 | | 20:12 (5) |
| | 17:05 | 18:01 | 18:51 | 20 | 17:46 (8) | 20:43 | 21 | 19:31 (4) | | 21:32 | | 22:00 | 24 | 20:36 (5) |
| 22 | 08:31 | 07:40 | 06:38 | 17:27 (8) | 06:28 | | 19:11 (4) | | 05:36 | | 05:18 | | 20:13 (5) |
| | 17:07 | 18:03 | 18:53 | 18 | 17:45 (8) | 20:45 | 19 | 19:30 (4) | | 21:33 | | 22:00 | 24 | 20:37 (5) |
| 23 | 08:30 | 07:38 | 06:35 | 17:28 (8) | 06:26 | | 19:12 (4) | | 05:35 | | 05:19 | | 20:13 (5) |
| | 17:08 | 18:05 | 18:54 | 16 | 17:44 (8) | 20:47 | 17 | 19:29 (4) | | 21:34 | | 22:00 | 24 | 20:37 (5) |
| 24 | 08:29 | 07:35 | 06:33 | 17:30 (8) | 06:24 | | 19:13 (4) | | 05:33 | | 05:19 | | 20:13 (5) |
| | 17:10 | 18:07 | 18:56 | 13 | 17:43 (8) | 20:48 | 15 | 19:28 (4) | | 21:36 | | 22:00 | 24 | 20:37 (5) |
| 25 | 08:28 | 07:33 | 06:31 | 17:32 (8) | 06:22 | | 19:14 (4) | | 05:32 | | 05:19 | | 20:14 (5) |
| | 17:12 | 18:09 | 18:58 | 7 | 17:39 (8) | 20:50 | 12 | 19:26 (4) | | 21:37 | | 22:00 | 24 | 20:38 (5) |
| 26 | 08:26 | 07:31 | 06:28 | | | 06:20 | | 19:17 (4) | | 05:31 | | 05:20 | | 20:14 (5) |
| | 17:14 | 18:10 | 18:59 | | | 20:52 | 5 | 19:22 (4) | | 21:38 | | 22:00 | 24 | 20:38 (5) |
| 27 | 08:25 | 07:29 | 06:26 | | | 06:18 | | | | 05:30 | | 05:20 | | 20:15 (5) |
| | 17:16 | 18:12 | 19:01 | | | 20:53 | | | | 21:40 | | 22:00 | 23 | 20:38 (5) |
| 28 | 08:24 | 07:27 | 06:24 | | | 06:16 | | | | 05:29 | | 05:20 | | 20:14 (5) |
| | 17:17 | 18:14 | 19:03 | | | 20:55 | | | | 21:41 | | 22:00 | 24 | 20:38 (5) |
| 29 | 08:22 | | 07:21 | | | 06:14 | | | | 05:28 | | 05:21 | | 20:15 (5) |
| | 17:19 | | 20:04 | | | 20:57 | | | | 21:42 | | 22:00 | 23 | 20:38 (5) |
| 30 | 08:21 | | 07:19 | | | 06:12 | | | | 05:27 | | 05:22 | | 20:15 (5) |
| | 17:21 | | 20:06 | | | 20:58 | | | | 21:43 | | 22:00 | 23 | 20:38 (5) |
| 31 | 08:19 | | 07:17 | | | | | | | 05:26 | | | | |
| | 17:23 | | 20:08 | | | | | | | 21:44 | | | | |
| Potential sun hours | 260 | 278 | 367 | | 416 | | 485 | | 498 | | |
| Total, worst case | | | | 211 | | 264 | | | | 626 | |
| Sun reduction | | | | 0.24 | | 0.35 | | | | 0.30 | |
| Oper. time red. | | | | 1.00 | | 1.00 | | | | 1.00 | |
| Wind dir. red. | | | | 0.68 | | 0.63 | | | | 0.56 | |
| Total reduction | | | | 0.17 | | 0.22 | | | | 0.17 | |
| Total, real | | | | 35 | | 59 | | | | 105 | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
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Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** P - H17

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | July | | August | | September | | October | | November | December |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 05:22 | 20:16 (5) | 05:59 | | 06:48 | 19:20 (4) | 07:37 | 18:17 (8) | 07:30 | 08:21 |
| | 21:59 22 | 20:38 (5) | 21:28 | | 20:26 4 | 19:24 (4) | 19:17 3 | 18:20 (8) | 17:11 | 16:31 |
| 2 | 05:23 | 20:16 (5) | 06:00 | | 06:50 | | 07:38 | | 07:32 | 08:22 |
| | 21:59 21 | 20:37 (5) | 21:26 | | 20:24 | | 19:15 | | 17:09 | 16:30 |
| 3 | 05:24 | 20:17 (5) | 06:02 | | 06:51 | | 07:40 | | 07:34 | 08:24 |
| | 21:59 20 | 20:37 (5) | 21:24 | | 20:22 | | 19:12 | | 17:07 | 16:30 |
| 4 | 05:24 | 20:17 (5) | 06:03 | | 06:53 | | 07:42 | | 07:35 | 08:25 |
| | 21:58 20 | 20:37 (5) | 21:23 | | 20:19 | | 19:10 | | 17:06 | 16:29 |
| 5 | 05:25 | 20:18 (5) | 06:05 | | 06:54 | | 07:43 | | 07:37 | 08:26 |
| | 21:58 19 | 20:37 (5) | 21:21 | | 20:17 | | 19:08 | | 17:04 | 16:29 |
| 6 | 05:26 | 20:18 (5) | 06:06 | | 06:56 | | 07:45 | | 07:39 | 08:28 |
| | 21:57 18 | 20:36 (5) | 21:19 | | 20:15 | | 19:06 | | 17:02 | 16:28 |
| 7 | 05:27 | 20:19 (5) | 06:08 | | 06:58 | | 07:47 | | 07:41 | 08:29 |
| | 21:57 17 | 20:36 (5) | 21:17 | | 20:13 | | 19:03 | | 17:01 | 16:28 |
| 8 | 05:28 | 20:20 (5) | 06:09 | | 06:59 | | 07:48 | | 07:43 | 08:30 |
| | 21:56 15 | 20:35 (5) | 21:16 | | 20:10 | | 19:01 | | 16:59 | 16:28 |
| 9 | 05:29 | 20:21 (5) | 06:11 | | 07:01 | | 07:50 | | 07:44 | 08:31 |
| | 21:55 14 | 20:35 (5) | 21:14 | | 20:08 | | 18:59 | | 16:57 | 16:27 |
| 10 | 05:30 | 20:23 (5) | 06:13 | | 07:02 | | 07:52 | | 07:46 | 08:32 |
| | 21:55 11 | 20:34 (5) | 21:12 | | 20:06 | | 18:57 | | 16:56 | 16:27 |
| 11 | 05:31 | 20:25 (5) | 06:14 | | 07:04 | | 07:53 | | 07:48 | 08:33 |
| | 21:54 7 | 20:32 (5) | 21:10 | | 20:03 | | 18:54 | | 16:54 | 16:27 |
| 12 | 05:32 | | 06:16 | | 07:06 | | 07:55 | | 07:50 | 08:34 |
| | 21:53 | | 21:08 | | 20:01 | | 18:52 | | 16:53 | 16:27 |
| 13 | 05:33 | | 06:17 | | 07:07 | | 07:57 | | 07:51 | 08:35 |
| | 21:52 | | 21:06 | | 19:59 | | 18:50 | | 16:51 | 16:27 |
| 14 | 05:34 | | 06:19 | | 07:09 | | 07:58 | | 07:53 | 08:36 |
| | 21:51 | | 21:04 | | 19:56 | | 18:48 | | 16:50 | 16:27 |
| 15 | 05:35 | | 06:21 | | 07:11 | | 08:00 | | 07:55 | 08:37 |
| | 21:50 | | 21:02 | | 19:54 | | 18:46 | | 16:48 | 16:27 |
| 16 | 05:36 | | 06:22 | | 07:12 | | 08:02 | | 07:57 | 08:38 |
| | 21:49 | | 21:00 | | 19:52 | | 18:43 | | 16:47 | 16:27 |
| 17 | 05:38 | | 06:24 | 19:23 (4) | 07:14 | | 08:04 | | 07:58 | 08:39 |
| | 21:48 | | 20:58 7 | 19:30 (4) | 19:49 | | 18:41 | | 16:45 | 16:27 |
| 18 | 05:39 | | 06:25 | 19:19 (4) | 07:15 | 18:20 (8) | 08:05 | | 08:00 | 08:40 |
| | 21:47 | | 20:56 13 | 19:32 (4) | 19:47 5 | 18:25 (8) | 18:39 | | 16:44 | 16:27 |
| 19 | 05:40 | | 06:27 | 19:18 (4) | 07:17 | 18:17 (8) | 08:07 | | 08:02 | 08:40 |
| | 21:46 | | 20:54 15 | 19:33 (4) | 19:45 12 | 18:29 (8) | 18:37 | | 16:43 | 16:28 |
| 20 | 05:41 | | 06:29 | 19:16 (4) | 07:19 | 18:15 (8) | 08:09 | | 08:03 | 08:41 |
| | 21:45 | | 20:52 18 | 19:34 (4) | 19:42 15 | 18:30 (8) | 18:35 | | 16:42 | 16:28 |
| 21 | 05:43 | | 06:30 | 19:16 (4) | 07:20 | 18:13 (8) | 08:11 | | 08:05 | 08:42 |
| | 21:44 | | 20:50 19 | 19:35 (4) | 19:40 17 | 18:30 (8) | 18:33 | | 16:40 | 16:29 |
| 22 | 05:44 | | 06:32 | 19:14 (4) | 07:22 | 18:12 (8) | 08:12 | | 08:07 | 08:42 |
| | 21:42 | | 20:48 21 | 19:35 (4) | 19:38 19 | 18:31 (8) | 18:31 | | 16:39 | 16:29 |
| 23 | 05:45 | | 06:33 | 19:14 (4) | 07:23 | 18:11 (8) | 08:14 | | 08:08 | 08:43 |
| | 21:41 | | 20:46 21 | 19:35 (4) | 19:35 20 | 18:31 (8) | 18:29 | | 16:38 | 16:29 |
| 24 | 05:47 | | 06:35 | 19:14 (4) | 07:25 | 18:10 (8) | 08:16 | | 08:10 | 08:43 |
| | 21:40 | | 20:44 22 | 19:36 (4) | 19:33 21 | 18:31 (8) | 18:27 | | 16:37 | 16:30 |
| 25 | 05:48 | | 06:37 | 19:13 (4) | 07:27 | 18:10 (8) | 07:18 | | 08:12 | 08:43 |
| | 21:38 | | 20:41 22 | 19:35 (4) | 19:31 21 | 18:31 (8) | 17:25 | | 16:36 | 16:31 |
| 26 | 05:50 | | 06:38 | 19:13 (4) | 07:28 | 18:10 (8) | 07:19 | | 08:13 | 08:44 |
| | 21:37 | | 20:39 22 | 19:35 (4) | 19:28 20 | 18:30 (8) | 17:23 | | 16:35 | 16:31 |
| 27 | 05:51 | | 06:40 | 19:13 (4) | 07:30 | 18:10 (8) | 07:21 | | 08:15 | 08:44 |
| | 21:36 | | 20:37 21 | 19:34 (4) | 19:26 19 | 18:29 (8) | 17:21 | | 16:34 | 16:32 |
| 28 | 05:53 | | 06:41 | 19:14 (4) | 07:32 | 18:11 (8) | 07:23 | | 08:16 | 08:44 |
| | 21:34 | | 20:35 19 | 19:33 (4) | 19:24 17 | 18:28 (8) | 17:19 | | 16:33 | 16:33 |
| 29 | 05:54 | | 06:43 | 19:14 (4) | 07:33 | 18:11 (8) | 07:25 | | 08:18 | 08:44 |
| | 21:33 | | 20:33 17 | 19:31 (4) | 19:22 15 | 18:26 (8) | 17:17 | | 16:33 | 16:34 |
| 30 | 05:56 | | 06:45 | 19:15 (4) | 07:35 | 18:13 (8) | 07:27 | | 08:19 | 08:45 |
| | 21:31 | | 20:31 15 | 19:30 (4) | 19:19 11 | 18:24 (8) | 17:15 | | 16:32 | 16:35 |
| 31 | 05:57 | | 06:46 | 19:16 (4) | | | 07:28 | | | 08:45 |
| | 21:29 | | 20:28 11 | 19:27 (4) | | | 17:13 | | | 16:36 |
| Potential sun hours | 501 | | 453 | | 381 | | 332 | | 267 | 244 |
| Total, worst case | 184 | | 263 | | 216 | | 3 | | | |
| Sun reduction | 0.27 | | 0.30 | | 0.28 | | 0.24 | | | |
| Oper. time red. | 1.00 | | 1.00 | | 1.00 | | 1.00 | | | |
| Wind dir. red. | 0.56 | | 0.63 | | 0.68 | | 0.68 | | | |
| Total reduction | 0.15 | | 0.19 | | 0.19 | | 0.16 | | | |
| Total, real | 27 | | 49 | | 42 | | 0 | | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
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kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** Q - H18

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:14 | 06:10 | 19:26 (5) | 05:25 | 05:22 | 19:42 (5) | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | 21:00 25 | 19:51 (5) | 21:46 | 21:59 | 21:28 14 | 19:56 (5) | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | 07:12 | 06:08 | 19:27 (5) | 05:24 | 05:23 | 19:41 (5) | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 21:02 25 | 19:52 (5) | 21:47 | 21:59 | 21:26 17 | 19:58 (5) | 20:24 | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | 06:06 | 19:27 (5) | 05:23 | 05:24 | 19:39 (5) | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 | 21:03 24 | 19:51 (5) | 21:48 | 21:59 | 21:24 19 | 19:58 (5) | 20:22 | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:04 | 19:26 (5) | 05:23 | 05:24 | 19:38 (5) | 06:53 | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 25 | 19:51 (5) | 21:49 | 21:58 | 21:23 20 | 19:58 (5) | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | 06:03 | 19:26 (5) | 05:22 | 05:25 | 19:38 (5) | 06:54 | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | 20:16 | 21:07 24 | 19:50 (5) | 21:50 | 21:58 | 21:21 21 | 19:59 (5) | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 19:27 (5) | 05:21 | 05:26 | 19:36 (5) | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:08 24 | 19:51 (5) | 21:51 | 21:57 | 21:19 23 | 19:59 (5) | 20:15 | 19:05 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 19:27 (5) | 05:21 | 05:27 | 19:36 (5) | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 21:10 23 | 19:50 (5) | 21:52 | 21:57 | 21:17 24 | 20:00 (5) | 20:12 | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 05:57 | 19:27 (5) | 05:20 | 05:28 | 19:36 (5) | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | 20:21 | 21:12 22 | 19:49 (5) | 21:53 | 21:56 | 21:16 24 | 20:00 (5) | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | 05:55 | 19:29 (5) | 05:20 | 05:29 | 19:36 (5) | 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 21:13 20 | 19:49 (5) | 21:53 | 21:55 | 21:14 24 | 20:00 (5) | 20:08 | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 19:29 (5) | 05:19 | 05:30 | 19:35 (5) | 07:02 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 18 | 19:47 (5) | 21:54 | 21:55 | 21:12 25 | 20:00 (5) | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 19:31 (5) | 05:19 | 05:31 | 06:14 | 19:36 (5) | 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | 20:26 | 21:16 16 | 19:47 (5) | 21:55 | 21:54 | 21:10 24 | 20:00 (5) | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | 06:50 | 05:50 | 19:32 (5) | 05:19 | 05:32 | 06:16 | 19:35 (5) | 07:06 | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 13 | 19:45 (5) | 21:56 | 21:53 | 21:08 24 | 19:59 (5) | 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:47 | 05:49 | 19:34 (5) | 05:18 | 05:33 | 06:17 | 19:36 (5) | 07:07 | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 21:20 9 | 19:43 (5) | 21:56 | 21:52 | 21:06 23 | 19:59 (5) | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 06:45 | 05:47 | | 05:18 | 05:34 | 06:19 | 19:36 (5) | 07:09 | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 21:21 | | 21:57 | 21:51 | 21:04 22 | 19:58 (5) | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | | 05:18 | 05:35 | 06:20 | 19:37 (5) | 07:11 | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | 20:33 | 21:23 | | 21:57 | 21:50 | 21:02 20 | 19:57 (5) | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | 05:44 | | 05:18 | 05:36 | 06:22 | 19:37 (5) | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | | 21:58 | 21:49 | 21:00 19 | 19:56 (5) | 19:52 | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | | 05:18 | 05:38 | 06:24 | 19:38 (5) | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | 20:37 | 21:26 | | 21:58 | 21:48 | 20:58 17 | 19:55 (5) | 19:49 | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 | | 05:18 | 05:39 | 06:25 | 19:39 (5) | 07:15 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | | 21:59 | 21:47 | 20:56 13 | 19:52 (5) | 19:47 | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | 06:34 | 05:40 | | 05:18 | 05:40 | 06:27 | 19:42 (5) | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | 21:29 | | 21:59 | 21:46 | 20:54 8 | 19:50 (5) | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 05:38 | | 05:18 | 05:41 | 06:29 | | 07:19 | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | 21:30 | | 21:59 | 21:45 | 20:52 | | 19:42 | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | 05:37 | | 05:18 | 05:43 | 06:30 | | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | 21:32 | | 22:00 | 21:44 | 20:50 | | 19:40 | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | 06:28 | 05:36 | | 05:18 | 05:44 | 06:32 | | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | 21:33 | | 22:00 | 21:42 | 20:48 | | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 05:35 | | 05:19 | 05:45 | 06:33 | | 07:23 | 08:14 | 08:08 | 08:43 |
| | 17:08 | 18:05 | 18:54 | 20:47 | 21:34 | | 22:00 | 21:41 | 20:46 | | 19:35 | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | 19:36 (5) 05:33 | | 05:19 | 05:47 | 06:35 | | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 9 | 19:45 (5) 21:36 | | 22:00 | 21:40 | 20:44 | | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 19:33 (5) 05:32 | | 05:19 | 05:48 | 06:37 | | 07:27 | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 14 | 19:47 (5) 21:37 | | 22:00 | 21:38 | 20:41 | | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 06:20 | 19:31 (5) 05:31 | | 05:20 | 05:50 | 06:38 | | 07:28 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | 20:52 17 | 19:48 (5) 21:38 | | 22:00 | 21:37 | 20:39 | | 19:28 | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 19:30 (5) 05:30 | | 05:20 | 05:51 | 06:40 | | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 | 20:53 19 | 19:49 (5) 21:40 | | 22:00 | 21:36 | 20:37 | | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 19:29 (5) 05:29 | | 05:20 | 05:53 | 06:41 | | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 21 | 19:50 (5) 21:41 | | 22:00 | 21:34 | 20:35 | | 19:24 | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 06:14 | 19:28 (5) 05:28 | | 05:21 | 05:54 | 06:43 | | 07:33 | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 20:57 22 | 19:50 (5) 21:42 | | 22:00 | 21:33 | 20:33 | | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 19:27 (5) 05:27 | | 05:22 | 05:56 19:46 (5) | 06:45 | | 07:35 | 07:27 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:58 24 | 19:51 (5) 21:43 | | 22:00 | 21:31 5 19:51 (5) | 20:31 | | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | 05:26 | | | 05:57 19:44 (5) | 06:46 | | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:44 | | | 21:29 11 19:55 (5) | 20:28 | | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 244 |
| Total, worst case | | | | 126 | 268 | | 16 | 381 | | | | |
| Sun reduction | | | | 0.35 | 0.37 | | 0.27 | 0.30 | | | | |
| Oper. time red. | | | | 1.00 | 1.00 | | 1.00 | 1.00 | | | | |
| Wind dir. red. | | | | 0.60 | 0.60 | | 0.60 | 0.60 | | | | |
| Total reduction | | | | 0.21 | 0.22 | | 0.16 | 0.18 | | | | |
| Total, real | | | | 27 | 59 | | 3 | 68 | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
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IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** R - H19

## Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | | April | | May | June | July | August | | September | | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | | 07:14 | | 06:10 | 05:25 | 05:22 | 05:59 | | 06:48 | | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | | 20:10 | | 21:00 | 21:46 | 21:59 | 21:28 | | 20:26 | | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | | 07:12 | | 06:08 | 05:24 | 05:23 | 06:00 | | 06:50 | | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | | 20:11 | | 21:02 | 21:47 | 21:59 | 21:26 | | 20:24 | | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | | 07:10 | | 06:06 | 05:23 | 05:24 | 06:02 | | 06:51 | | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | | 20:13 | | 21:03 | 21:48 | 21:59 | 21:24 | | 20:22 | | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | | 07:08 | | 06:04 | 05:23 | 05:24 | 06:03 | | 06:53 | | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | | 20:15 | | 21:05 | 21:49 | 21:58 | 21:23 | | 20:19 | | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | | 07:05 | | 06:03 | 05:22 | 05:25 | 06:05 | | 06:54 | | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | | 20:16 | | 21:07 | 21:50 | 21:58 | 21:21 | | 20:17 | | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | | 07:03 | | 06:01 | 05:21 | 05:26 | 06:06 | | 06:56 | | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | | 20:18 | | 21:08 | 21:51 | 21:57 | 21:19 | | 20:15 | | 19:05 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | | 07:01 | | 05:59 | 05:21 | 05:27 | 06:08 | | 06:58 | | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | | 20:20 | | 21:10 | 21:52 | 21:57 | 21:17 | | 20:12 | | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | | 06:59 | | 05:57 | 05:20 | 05:28 | 06:09 | | 06:59 | | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | | 20:21 | | 21:12 | 21:53 | 21:56 | 21:16 | | 20:10 | | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | | 06:56 | | 05:55 | 05:20 | 05:29 | 06:11 | | 07:01 | | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | | 20:23 | | 21:13 | 21:53 | 21:55 | 21:14 | | 20:08 | | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | | 06:54 | | 05:54 | 05:19 | 05:30 | 06:13 | | 07:02 | | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | | 20:25 | | 21:15 | 21:54 | 21:55 | 21:12 | | 20:06 | | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | | 06:52 | | 05:52 | 05:19 | 05:31 | 06:14 | | 07:04 | | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | | 20:26 | | 21:16 | 21:55 | 21:54 | 21:10 | | 20:03 | | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | | 06:50 | | 05:50 | 05:19 | 05:32 | 06:16 | | 07:06 | | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | | 20:28 | | 21:18 | 21:56 | 21:53 | 21:08 | | 20:01 | | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | | 06:47 | 19:21 (5) | 05:49 | 05:18 | 05:33 | 06:17 | 19:26 (5) | 07:07 | 18:40 (4) | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | | 20:30 | 9 19:30 (5) | 21:20 | 21:56 | 21:52 | 21:06 | 10 19:36 (5) | 19:59 | 7 18:47 (4) | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | | 06:45 | 19:18 (5) | 05:47 | 05:18 | 05:34 | 06:19 | 19:23 (5) | 07:09 | 18:37 (4) | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | | 20:32 | 14 19:32 (5) | 21:21 | 21:57 | 21:51 | 21:04 | 14 19:37 (5) | 19:56 | 12 18:49 (4) | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | | 06:43 | 19:16 (5) | 05:46 | 05:18 | 05:35 | 06:20 | 19:22 (5) | 07:11 | 18:35 (4) | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | | 20:33 | 18 19:34 (5) | 21:23 | 21:57 | 21:50 | 21:02 | 17 19:39 (5) | 19:54 | 15 18:50 (4) | 18:46 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | | 06:41 | 19:15 (5) | 05:44 | 05:18 | 05:36 | 06:22 | 19:20 (5) | 07:12 | 18:34 (4) | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | | 20:35 | 20 19:35 (5) | 21:24 | 21:58 | 21:49 | 21:00 | 19 19:39 (5) | 19:52 | 16 18:50 (4) | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | | 06:39 | 19:14 (5) | 05:43 | 05:18 | 05:38 | 06:24 | 19:19 (5) | 07:14 | 18:33 (4) | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | | 20:37 | 22 19:36 (5) | 21:26 | 21:58 | 21:48 | 20:58 | 22 19:41 (5) | 19:49 | 18 18:51 (4) | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | | 06:37 | 19:13 (5) | 05:41 | 05:18 | 05:39 | 06:25 | 19:18 (5) | 07:15 | 18:32 (4) | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | | 20:38 | 23 19:36 (5) | 21:27 | 21:59 | 21:47 | 20:56 | 22 19:40 (5) | 19:47 | 18 18:50 (4) | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | 17:55 (4) | 06:34 | 19:12 (5) | 05:40 | 05:18 | 05:40 | 06:27 | 19:17 (5) | 07:17 | 18:32 (4) | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 1 17:56 (4) | 20:40 | 25 19:37 (5) | 21:29 | 21:59 | 21:46 | 20:54 | 24 19:41 (5) | 19:45 | 18 18:50 (4) | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 17:50 (4) | 06:32 | 19:12 (5) | 05:38 | 05:18 | 05:41 | 06:29 | 19:16 (5) | 07:19 | 18:32 (4) | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 11 18:01 (4) | 20:42 | 25 19:37 (5) | 21:30 | 21:59 | 21:45 | 20:52 | 25 19:41 (5) | 19:42 | 18 18:50 (4) | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 17:47 (4) | 06:30 | 19:12 (5) | 05:37 | 05:18 | 05:43 | 06:30 | 19:16 (5) | 07:20 | 18:32 (4) | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 14 18:01 (4) | 20:43 | 25 19:37 (5) | 21:32 | 22:00 | 21:44 | 20:50 | 25 19:41 (5) | 19:40 | 16 18:48 (4) | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | 17:46 (4) | 06:28 | 19:11 (5) | 05:36 | 05:18 | 05:44 | 06:32 | 19:15 (5) | 07:22 | 18:33 (4) | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 16 18:02 (4) | 20:45 | 25 19:36 (5) | 21:33 | 22:00 | 21:42 | 20:48 | 25 19:40 (5) | 19:38 | 14 18:47 (4) | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 17:46 (4) | 06:26 | 19:11 (5) | 05:35 | 05:19 | 05:45 | 06:33 | 19:16 (5) | 07:23 | 18:33 (4) | 08:14 | 08:08 | 08:43 |
| | 17:08 | 18:05 | 18:54 | 17 18:03 (4) | 20:47 | 25 19:36 (5) | 21:34 | 22:00 | 21:41 | 20:46 | 24 19:40 (5) | 19:35 | 12 18:45 (4) | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | 17:45 (4) | 06:24 | 19:12 (5) | 05:33 | 05:19 | 05:47 | 06:35 | 19:16 (5) | 07:25 | 18:36 (4) | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 19 18:04 (4) | 20:48 | 23 19:35 (5) | 21:36 | 22:00 | 21:40 | 20:44 | 24 19:40 (5) | 19:33 | 6 18:42 (4) | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 17:44 (4) | 06:22 | 19:12 (5) | 05:32 | 05:19 | 05:48 | 06:37 | 19:16 (5) | 07:27 | | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 19 18:03 (4) | 20:50 | 23 19:35 (5) | 21:37 | 22:00 | 21:38 | 20:41 | 23 19:39 (5) | 19:31 | | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 17:45 (4) | 06:20 | 19:13 (5) | 05:31 | 05:20 | 05:50 | 06:38 | 19:17 (5) | 07:28 | | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | 17 18:02 (4) | 20:52 | 21 19:34 (5) | 21:38 | 22:00 | 21:37 | 20:39 | 22 19:39 (5) | 19:28 | | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 17:45 (4) | 06:18 | 19:13 (5) | 05:30 | 05:20 | 05:51 | 06:40 | 19:17 (5) | 07:30 | | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 | 17 18:02 (4) | 20:53 | 20 19:33 (5) | 21:40 | 22:00 | 21:36 | 20:37 | 20 19:37 (5) | 19:26 | | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 17:45 (4) | 06:16 | 19:14 (5) | 05:29 | 05:20 | 05:53 | 06:41 | 19:18 (5) | 07:32 | | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 15 18:00 (4) | 20:55 | 17 19:31 (5) | 21:41 | 22:00 | 21:34 | 20:35 | 18 19:36 (5) | 19:24 | | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 18:46 (4) | 06:14 | 19:16 (5) | 05:28 | 05:21 | 05:54 | 06:43 | 19:19 (5) | 07:33 | | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 13 18:59 (4) | 20:57 | 13 19:29 (5) | 21:42 | 22:00 | 21:33 | 20:33 | 14 19:33 (5) | 19:22 | | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 18:49 (4) | 06:12 | 19:18 (5) | 05:27 | 05:22 | 05:56 | 06:45 | 19:22 (5) | 07:35 | | 07:27 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 8 18:57 (4) | 20:58 | 8 19:26 (5) | 21:43 | 22:00 | 21:31 | 20:31 | 8 19:30 (5) | 19:19 | | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | | | 05:26 | | 05:57 | 06:46 | | | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | | | 21:44 | | 21:29 | 20:28 | | | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | | 416 | | 485 | 498 | 501 | 453 | | 381 | | 332 | 267 | 244 |
| Total, worst case | | | | 167 | | 356 | | | | | 356 | | 170 | | | |
| Sun reduction | | | | 0.24 | | 0.35 | | | | | 0.30 | | 0.28 | | | |
| Oper. time red. | | | | 1.00 | | 1.00 | | | | | 1.00 | | 1.00 | | | |
| Wind dir. red. | | | | 0.67 | | 0.63 | | | | | 0.63 | | 0.67 | | | |
| Total reduction | | | | 0.16 | | 0.22 | | | | | 0.19 | | 0.19 | | | |
| Total, real | | | | 27 | | 79 | | | | | 66 | | 32 | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** S - H20

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45<br>16:37 | 08:18<br>17:25 | 07:25<br>18:16 | 07:14<br>20:10 | 06:10<br>21:00 | 05:25<br>21:46 | 05:22<br>21:59 | 05:59<br>21:28 | 06:48<br>20:26 24 | 19:07 (5)<br>19:31 (5) | 07:37<br>19:17 | 07:30<br>17:11 | 08:21<br>16:31 |
| 2 | 08:44<br>16:38 | 08:16<br>17:26 | 07:23<br>18:18 | 07:12<br>20:11 | 06:08<br>21:02 | 05:24<br>21:47 | 05:23<br>21:59 | 06:00<br>21:26 | 06:50<br>20:24 20 | 19:08 (5)<br>19:28 (5) | 07:38<br>19:15 | 07:32<br>17:09 | 08:22<br>16:30 |
| 3 | 08:44<br>16:39 | 08:15<br>17:28 | 07:20<br>18:19 | 07:10<br>20:13 | 06:06<br>21:03 | 05:23<br>21:48 | 05:24<br>21:59 | 06:02<br>21:25 | 06:51<br>20:22 18 | 19:09 (5)<br>19:27 (5) | 07:40<br>19:12 | 07:34<br>17:07 | 08:24<br>16:30 |
| 4 | 08:44<br>16:40 | 08:13<br>17:30 | 07:18<br>18:21 | 07:08<br>20:15 | 06:04<br>21:05 | 05:23<br>21:49 | 05:24<br>21:58 | 06:03<br>21:23 | 06:53<br>20:19 13 | 19:12 (5)<br>19:25 (5) | 07:42<br>19:10 | 07:35<br>17:06 | 08:25<br>16:29 |
| 5 | 08:44<br>16:41 | 08:12<br>17:32 | 07:16<br>18:23 | 07:05<br>20:16 | 06:03<br>21:07 | 05:22<br>21:50 | 05:25<br>21:58 | 06:05<br>21:21 | 06:54<br>20:17 | | 07:43<br>19:08 | 07:37<br>17:04 | 08:26<br>16:29 |
| 6 | 08:44<br>16:43 | 08:10<br>17:34 | 07:14<br>18:25 | 07:03<br>20:18 | 06:01<br>21:08 | 05:21<br>21:51 | 05:26<br>21:57 | 06:06<br>21:19 | 06:56<br>20:15 | | 07:45<br>19:06 | 07:39<br>17:02 | 08:28<br>16:28 |
| 7 | 08:43<br>16:44 | 08:08<br>17:36 | 07:12<br>18:27 | 07:01<br>20:20 | 05:59<br>21:10 | 05:21<br>21:52 | 05:27<br>21:57 | 06:08<br>21:18 | 06:58<br>20:13 | | 07:47<br>19:03 | 07:41<br>17:01 | 08:29<br>16:28 |
| 8 | 08:43<br>16:45 | 08:06<br>17:37 | 07:09<br>18:28 | 06:59<br>20:21 12 | 19:14 (5)<br>05:57<br>19:26 (5)<br>21:12 | 05:20<br>21:53 | 05:28<br>21:56 | 06:09<br>21:16 | 06:59<br>20:10 | | 07:48<br>19:01 | 07:43<br>16:59 | 08:30<br>16:28 |
| 9 | 08:42<br>16:47 | 08:05<br>17:39 | 07:07<br>18:30 | 06:56<br>20:23 18 | 19:11 (5)<br>05:55<br>19:29 (5)<br>21:13 | 05:20<br>21:53 | 05:29<br>21:56 | 06:11<br>21:14 | 07:01<br>20:08 | | 07:50<br>18:59 | 07:44<br>16:57 | 08:31<br>16:27 |
| 10 | 08:42<br>16:48 | 08:03<br>17:41 | 07:05<br>18:32 | 06:54<br>20:25 20 | 19:10 (5)<br>05:54<br>19:30 (5)<br>21:15 | 05:19<br>21:54 | 05:30<br>21:55 | 06:13<br>21:12 | 07:02<br>20:06 | | 07:52<br>18:57 | 07:46<br>16:56 | 08:32<br>16:27 |
| 11 | 08:41<br>16:49 | 08:01<br>17:43 | 07:03<br>18:34 | 06:52<br>20:26 24 | 19:08 (5)<br>05:52<br>19:32 (5)<br>21:16 | 05:19<br>21:55 | 05:31<br>21:54 | 06:14<br>21:10 | 07:04<br>20:03 | | 07:53<br>18:54 | 07:48<br>16:54 | 08:33<br>16:27 |
| 12 | 08:41<br>16:51 | 07:59<br>17:45 | 07:00<br>18:35 | 06:50<br>20:28 26 | 19:07 (5)<br>05:50<br>19:33 (5)<br>21:18 | 05:19<br>21:56 | 05:32<br>21:53 | 06:16<br>21:08 | 07:06<br>20:01 | | 07:55<br>18:52 | 07:50<br>16:53 | 08:34<br>16:27 |
| 13 | 08:40<br>16:52 | 07:57<br>17:47 | 06:58<br>18:37 | 06:47<br>20:30 27 | 19:05 (5)<br>05:49<br>19:32 (5)<br>21:20 | 05:18<br>21:56 | 05:33<br>21:52 | 06:17<br>21:06 | 07:07<br>19:59 | | 07:57<br>18:50 | 07:51<br>16:51 | 08:35<br>16:27 |
| 14 | 08:39<br>16:54 | 07:55<br>17:49 | 06:56<br>18:39 | 06:45<br>20:32 28 | 19:05 (5)<br>05:47<br>19:33 (5)<br>21:21 | 05:18<br>21:57 | 05:34<br>21:51 | 06:19<br>21:04 | 07:09<br>19:56 | 17:37 (8)<br>07:58<br>17:41 (8)<br>18:48 4 | 07:53<br>16:50 | 08:36<br>16:27 |
| 15 | 08:38<br>16:55 | 07:54<br>17:50 | 06:54<br>18:40 | 06:43<br>20:33 29 | 19:04 (5)<br>05:46<br>19:33 (5)<br>21:23 | 05:18<br>21:57 | 05:35<br>21:50 | 06:20<br>21:02 | 07:11<br>19:54 | 17:33 (8)<br>08:00<br>17:44 (8)<br>18:46 11 | 07:55<br>16:48 | 08:37<br>16:27 |
| 16 | 08:37<br>16:57 | 07:52<br>17:52 10 | 17:02 (8)<br>06:51<br>17:12 (8)<br>18:42 | 06:41<br>20:35 29 | 19:04 (5)<br>05:44<br>19:33 (5)<br>21:24 | 05:18<br>21:58 | 05:36<br>21:49 | 06:22<br>19:18 (5)<br>21:00 10 | 07:12<br>19:28 (5)<br>19:52 | 17:32 (8)<br>08:02<br>17:46 (8)<br>18:43 14 | 07:57<br>16:47 | 08:38<br>16:27 |
| 17 | 08:37<br>16:58 | 07:50<br>17:54 13 | 17:01 (8)<br>06:49<br>17:14 (8)<br>18:44 | 06:39<br>20:37 29 | 19:04 (5)<br>05:43<br>19:33 (5)<br>21:26 | 05:18<br>21:58 | 05:38<br>21:48 | 06:24<br>19:16 (5)<br>20:58 15 | 07:14<br>19:31 (5)<br>19:49 | 17:29 (8)<br>08:04<br>17:46 (8)<br>18:41 17 | 07:58<br>16:45 | 08:39<br>16:27 |
| 18 | 08:36<br>17:00 | 07:48<br>17:56 16 | 16:59 (8)<br>06:47<br>17:15 (8)<br>18:46 | 06:37<br>20:38 29 | 19:04 (5)<br>05:41<br>19:33 (5)<br>21:27 | 05:18<br>21:59 | 05:39<br>21:47 | 06:25<br>19:13 (5)<br>20:56 19 | 07:15<br>19:32 (5)<br>19:47 | 17:29 (8)<br>08:05<br>17:46 (8)<br>18:39 17 | 08:00<br>16:44 | 08:40<br>16:27 |
| 19 | 08:35<br>17:02 | 07:46<br>17:58 17 | 16:59 (8)<br>06:44<br>17:16 (8)<br>18:47 | 06:34<br>20:40 28 | 19:04 (5)<br>05:40<br>19:32 (5)<br>21:29 | 05:18<br>21:59 | 05:40<br>21:46 | 06:27<br>19:12 (5)<br>20:54 22 | 07:17<br>19:34 (5)<br>19:45 | 17:28 (8)<br>08:07<br>17:47 (8)<br>18:37 19 | 08:02<br>16:43 | 08:40<br>16:28 |
| 20 | 08:34<br>17:03 | 07:44<br>18:00 18 | 16:58 (8)<br>06:42<br>17:16 (8)<br>18:49 | 06:32<br>20:42 28 | 19:04 (5)<br>05:38<br>19:32 (5)<br>21:30 | 05:18<br>22:00 | 05:41<br>21:45 | 06:29<br>19:10 (5)<br>20:52 24 | 07:19<br>19:34 (5)<br>19:42 | 17:28 (8)<br>08:09<br>17:47 (8)<br>18:35 19 | 08:03<br>16:42 | 08:41<br>16:28 |
| 21 | 08:33<br>17:05 | 07:42<br>18:01 18 | 16:58 (8)<br>06:40<br>17:16 (8)<br>18:51 | 06:30<br>20:43 26 | 19:05 (5)<br>05:37<br>19:31 (5)<br>21:32 | 05:18<br>22:00 | 05:43<br>21:44 | 06:30<br>19:10 (5)<br>20:50 25 | 07:20<br>19:35 (5)<br>19:40 | 17:28 (8)<br>08:11<br>17:47 (8)<br>18:33 19 | 08:05<br>16:40 | 08:42<br>16:28 |
| 22 | 08:31<br>17:07 | 07:40<br>18:03 19 | 16:58 (8)<br>06:37<br>17:17 (8)<br>18:53 | 06:28<br>20:45 25 | 19:05 (5)<br>05:36<br>19:30 (5)<br>21:33 | 05:18<br>22:00 | 05:44<br>21:42 | 06:32<br>19:08 (5)<br>20:48 27 | 07:22<br>19:35 (5)<br>19:38 | 17:29 (8)<br>08:12<br>17:46 (8)<br>18:31 17 | 08:07<br>16:39 | 08:42<br>16:29 |
| 23 | 08:30<br>17:08 | 07:38<br>18:05 18 | 16:57 (8)<br>06:35<br>17:15 (8)<br>18:54 | 06:26<br>20:47 23 | 19:06 (5)<br>05:35<br>19:29 (5)<br>21:34 | 05:19<br>22:00 | 05:45<br>21:41 | 06:33<br>19:08 (5)<br>20:46 28 | 07:23<br>19:36 (5)<br>19:35 | 17:29 (8)<br>08:14<br>17:46 (8)<br>18:29 17 | 08:08<br>16:38 | 08:43<br>16:29 |
| 24 | 08:29<br>17:10 | 07:35<br>18:07 17 | 16:58 (8)<br>06:33<br>17:15 (8)<br>18:56 | 06:24<br>20:48 21 | 19:07 (5)<br>05:33<br>19:28 (5)<br>21:36 | 05:19<br>22:00 | 05:47<br>21:40 | 06:35<br>19:08 (5)<br>20:44 28 | 07:25<br>19:36 (5)<br>19:33 | 17:29 (8)<br>08:16<br>17:44 (8)<br>18:27 15 | 08:10<br>16:37 | 08:43<br>16:30 |
| 25 | 08:28<br>17:12 | 07:33<br>18:09 15 | 16:59 (8)<br>06:31<br>17:14 (8)<br>18:58 | 06:22<br>20:50 18 | 19:08 (5)<br>05:32<br>19:26 (5)<br>21:37 | 05:19<br>22:00 | 05:48<br>21:38 | 06:37<br>19:07 (5)<br>20:41 28 | 07:27<br>19:35 (5)<br>19:31 | 16:30 (8)<br>07:18<br>16:43 (8)<br>17:25 13 | 08:12<br>16:36 | 08:43<br>16:31 |
| 26 | 08:26<br>17:14 | 07:31<br>18:10 13 | 17:00 (8)<br>06:28<br>17:13 (8)<br>18:59 | 06:20<br>20:52 14 | 19:10 (5)<br>05:31<br>19:24 (5)<br>21:38 | 05:20<br>22:00 | 05:50<br>21:37 | 06:38<br>19:07 (5)<br>20:39 29 | 07:28<br>19:36 (5)<br>19:28 | 16:33 (8)<br>07:19<br>16:40 (8)<br>17:23 7 | 08:13<br>16:35 | 08:44<br>16:31 |
| 27 | 08:25<br>17:15 | 07:29<br>18:12 9 | 17:02 (8)<br>06:26<br>17:11 (8)<br>19:01 | 06:18<br>20:53 8 | 19:13 (5)<br>05:30<br>19:21 (5)<br>21:40 | 05:20<br>22:00 | 05:51<br>21:36 | 06:40<br>19:06 (5)<br>20:37 29 | 07:30<br>19:35 (5)<br>19:26 | 07:21<br>17:21 | 08:15<br>16:34 | 08:44<br>16:32 |
| 28 | 08:24<br>17:17 | 07:27<br>18:14 | 06:24<br>19:03 | 06:16<br>20:55 | 05:29<br>21:41 | 05:20<br>22:00 | 05:53<br>21:34 | 06:41<br>19:06 (5)<br>20:35 29 | 07:32<br>19:35 (5)<br>19:24 | 07:23<br>17:19 | 08:16<br>16:33 | 08:44<br>16:33 |
| 29 | 08:22<br>17:19 | | 07:21<br>20:04 | 06:14<br>20:57 | 05:28<br>21:42 | 05:21<br>22:00 | 05:54<br>21:33 | 06:43<br>19:06 (5)<br>20:33 28 | 07:33<br>19:34 (5)<br>19:22 | 07:25<br>17:17 | 08:18<br>16:33 | 08:44<br>16:34 |
| 30 | 08:21<br>17:21 | | 07:19<br>20:06 | 06:12<br>20:58 | 05:27<br>21:43 | 05:22<br>22:00 | 05:56<br>21:31 | 06:45<br>19:06 (5)<br>20:31 27 | 07:35<br>19:33 (5)<br>19:19 | 07:27<br>17:15 | 08:19<br>16:32 | 08:45<br>16:35 |
| 31 | 08:19<br>17:23 | | 07:17<br>20:08 | | 05:26<br>21:44 | | 05:57<br>21:29 | 06:46<br>19:06 (5)<br>20:28 25<br>19:31 (5) | | 07:28<br>17:13 | | 08:45<br>16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 244 |
| Total, worst case | | 183 | | 462 | | | | 393 | 75 | 189 | | |
| Sun reduction | | 0.21 | | 0.35 | | | | 0.30 | 0.28 | 0.24 | | |
| Oper. time red. | | 1.00 | | 1.00 | | | | 1.00 | 1.00 | 1.00 | | |
| Wind dir. red. | | 0.70 | | 0.64 | | | | 0.64 | 0.64 | 0.70 | | |
| Total reduction | | 0.14 | | 0.23 | | | | 0.19 | 0.18 | 0.17 | | |
| Total, real | | 26 | | 104 | | | | 74 | 14 | 31 | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
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Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** T - H21

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:14 | 19:03 (5) | 06:10 | 05:25 | 05:22 | 05:59 | 06:48 | 18:54 (5) | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 15 | 19:18 (5) | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 26 | 19:20 (5) | 19:17 | 17:11 | 16:31 |
| 2 | 08:45 | 08:16 | 07:23 | 07:12 | 19:01 (5) | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | 18:52 (5) | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 19 | 19:20 (5) | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 28 | 19:20 (5) | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | 19:00 (5) | 06:06 | 05:23 | 05:24 | 06:02 | 06:51 | 18:52 (5) | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 21 | 19:21 (5) | 21:03 | 21:48 | 21:59 | 21:25 | 20:22 28 | 19:20 (5) | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 18:57 (5) | 06:04 | 05:23 | 05:24 | 06:03 | 06:53 | 18:51 (5) | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 24 | 19:21 (5) | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 28 | 19:19 (5) | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | 18:57 (5) | 06:03 | 05:22 | 05:25 | 06:05 | 06:54 | 18:52 (5) | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | 20:16 25 | 19:22 (5) | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 27 | 19:19 (5) | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 18:56 (5) | 06:01 | 05:21 | 05:26 | 06:06 | 06:56 | 18:52 (5) | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 26 | 19:22 (5) | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 26 | 19:18 (5) | 19:06 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 18:56 (5) | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 18:52 (5) | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 27 | 19:23 (5) | 21:10 | 21:52 | 21:57 | 21:18 | 20:12 25 | 19:17 (5) | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 18:54 (5) | 05:57 | 05:20 | 05:28 | 06:09 | 06:59 | 18:53 (5) | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | 20:21 28 | 19:22 (5) | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 23 | 19:16 (5) | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | 18:54 (5) | 05:55 | 05:20 | 05:29 | 06:11 | 07:01 | 18:53 (5) | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 28 | 19:22 (5) | 21:13 | 21:53 | 21:56 | 21:14 | 20:08 21 | 19:14 (5) | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 18:54 (5) | 05:54 | 05:19 | 05:30 | 06:13 | 07:02 | 18:54 (5) | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 28 | 19:22 (5) | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 19 | 19:13 (5) | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 18:55 (5) | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 18:55 (5) | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | 20:26 26 | 19:21 (5) | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 15 | 19:10 (5) | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | 06:50 | 18:55 (5) | 05:50 | 05:19 | 05:32 | 06:16 | 07:06 | 18:58 (5) | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 26 | 19:21 (5) | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 9 | 19:07 (5) | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:47 | 18:55 (5) | 05:49 | 05:18 | 05:33 | 06:17 | 07:07 | | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 24 | 19:19 (5) | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 06:45 | 18:56 (5) | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | 20:32 22 | 19:18 (5) | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 18:57 (5) | 05:46 | 05:18 | 05:35 | 06:20 | 07:11 | | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | 20:33 19 | 19:16 (5) | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | | 18:46 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | 18:58 (5) | 05:44 | 05:18 | 05:36 | 06:22 | 07:12 | | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 17 | 19:15 (5) | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 19:00 (5) | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | 20:37 12 | 19:12 (5) | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | | 05:41 | 05:18 | 05:39 | 06:25 | 07:15 | | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | 06:34 | | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | | 05:38 | 05:18 | 05:41 | 06:29 | 07:19 | | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | | 21:30 | 22:00 | 21:45 | 20:52 | 19:42 | | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | 06:28 | | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 | | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | | 21:33 | 22:00 | 21:42 | 20:48 | 19:38 | | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | | 05:35 | 05:19 | 05:45 | 06:33 | 07:23 | | 08:14 | 08:08 | 08:43 |
| | 17:08 | 18:05 | 18:54 | 20:47 | | 21:34 | 22:00 | 21:41 | 20:46 | 19:35 | | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | | 05:33 | 05:19 | 05:47 | 06:35 | 07:25 | | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | | 05:32 | 05:19 | 05:48 | 06:37 | 19:07 (5) | 07:27 | | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | | 21:37 | 22:00 | 21:38 | 20:41 4 | 19:11 (5) | 19:31 | | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 06:20 | | 05:31 | 05:20 | 05:50 | 06:38 | 19:03 (5) | 07:28 | | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | 20:52 | | 21:38 | 22:00 | 21:37 | 20:39 12 | 19:15 (5) | 19:28 | | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | | 05:30 | 05:20 | 05:51 | 06:40 | 19:00 (5) | 07:30 | | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 | 20:53 | | 21:40 | 22:00 | 21:36 | 20:37 17 | 19:17 (5) | 19:26 | | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | | 05:29 | 05:20 | 05:53 | 06:41 | 18:58 (5) | 07:32 | | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | | 21:41 | 22:00 | 21:34 | 20:35 20 | 19:18 (5) | 19:24 | | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 06:14 | | 05:28 | 05:21 | 05:54 | 06:43 | 18:56 (5) | 07:33 | | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 20:57 | | 21:42 | 22:00 | 21:33 | 20:33 23 | 19:19 (5) | 19:22 | | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | | 05:27 | 05:22 | 05:56 | 06:45 | 18:56 (5) | 07:35 | | 07:27 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:58 | | 21:43 | 22:00 | 21:31 | 20:31 24 | 19:20 (5) | 19:19 | | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 19:07 (5) | | | 05:26 | | 05:57 | 06:46 | 18:54 (5) | | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 7 19:14 (5) | | | 21:44 | | 21:29 | 20:28 26 | 19:20 (5) | | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | | 485 | 498 | 501 | 453 | 381 | | 332 | 267 | 244 |
| Total, worst case | | | 7 | 387 | | | | | 126 | 275 | | | | |
| Sun reduction | | | 0.24 | 0.35 | | | | | 0.30 | 0.28 | | | | |
| Oper. time red. | | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | | | | |
| Wind dir. red. | | | 0.65 | 0.65 | | | | | 0.65 | 0.65 | | | | |
| Total reduction | | | 0.16 | 0.23 | | | | | 0.19 | 0.18 | | | | |
| Total, real | | | 1 | 89 | | | | | 24 | 51 | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
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+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** U - H22

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | | May | June | July | August | | | September | | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:14 | | 19:12 (5) | 06:10 | 05:25 | 05:22 | 05:59 | | | 06:48 | | 19:00 (5) | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:24 | 18:16 | 20:10 | 5 | 19:17 (5) | 21:00 | 21:46 | 21:59 | 21:28 | | | 20:26 | 23 | 19:23 (5) | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | 07:12 | | 19:08 (5) | 06:08 | 05:24 | 05:23 | 06:00 | | | 06:50 | | 18:58 (5) | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 13 | 19:21 (5) | 21:02 | 21:47 | 21:59 | 21:26 | | | 20:24 | 24 | 19:22 (5) | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | | 19:06 (5) | 06:06 | 05:23 | 05:24 | 06:02 | | | 06:51 | | 18:58 (5) | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 | 17 | 19:23 (5) | 21:03 | 21:48 | 21:59 | 21:24 | | | 20:22 | 24 | 19:22 (5) | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | | 19:04 (5) | 06:04 | 05:23 | 05:24 | 06:03 | | | 06:53 | | 18:57 (5) | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 19 | 19:23 (5) | 21:05 | 21:49 | 21:58 | 21:23 | | | 20:19 | 24 | 19:21 (5) | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | | 19:03 (5) | 06:03 | 05:22 | 05:25 | 06:05 | | | 06:54 | | 18:58 (5) | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | 20:16 | 21 | 19:24 (5) | 21:07 | 21:50 | 21:58 | 21:21 | | | 20:17 | 23 | 19:21 (5) | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | | 19:02 (5) | 06:01 | 05:21 | 05:26 | 06:06 | | | 06:56 | | 18:58 (5) | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 23 | 19:25 (5) | 21:08 | 21:51 | 21:57 | 21:19 | | | 20:15 | 23 | 19:21 (5) | 19:05 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | | 19:02 (5) | 05:59 | 05:21 | 05:27 | 06:08 | | | 06:58 | | 18:58 (5) | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 23 | 19:25 (5) | 21:10 | 21:52 | 21:57 | 21:17 | | | 20:12 | 21 | 19:19 (5) | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | | 19:00 (5) | 05:57 | 05:20 | 05:28 | 06:09 | | | 06:59 | | 18:59 (5) | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | 20:21 | 24 | 19:24 (5) | 21:12 | 21:53 | 21:56 | 21:16 | | | 20:10 | 20 | 19:19 (5) | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | | 19:00 (5) | 05:55 | 05:20 | 05:29 | 06:11 | | | 07:01 | | 18:59 (5) | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 24 | 19:24 (5) | 21:13 | 21:53 | 21:56 | 21:14 | | | 20:08 | 17 | 19:16 (5) | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | | 19:00 (5) | 05:54 | 05:19 | 05:30 | 06:13 | | | 07:02 | | 19:01 (5) | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 24 | 19:24 (5) | 21:15 | 21:54 | 21:55 | 21:12 | | | 20:06 | 13 | 19:14 (5) | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | | 19:01 (5) | 05:52 | 05:19 | 05:31 | 06:14 | | | 07:04 | | 19:04 (5) | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | 20:26 | 23 | 19:24 (5) | 21:16 | 21:55 | 21:54 | 21:10 | | | 20:03 | 6 | 19:10 (5) | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | 06:50 | | 19:01 (5) | 05:50 | 05:19 | 05:32 | 06:16 | | | 07:06 | | | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 22 | 19:23 (5) | 21:18 | 21:56 | 21:53 | 21:08 | | | 20:01 | | | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:47 | | 19:01 (5) | 05:49 | 05:18 | 05:33 | 06:17 | | | 07:07 | | | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 20 | 19:21 (5) | 21:20 | 21:56 | 21:52 | 21:06 | | | 19:59 | | | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 06:45 | | 19:02 (5) | 05:47 | 05:18 | 05:34 | 06:19 | | | 07:09 | | | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 18 | 19:20 (5) | 21:21 | 21:57 | 21:51 | 21:04 | | | 19:56 | | | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | | 19:03 (5) | 05:46 | 05:18 | 05:35 | 06:20 | | | 07:11 | | | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | 20:33 | 16 | 19:19 (5) | 21:23 | 21:57 | 21:50 | 21:02 | | | 19:54 | | | 18:46 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | | 19:05 (5) | 05:44 | 05:18 | 05:36 | 06:22 | | | 07:12 | | | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 11 | 19:16 (5) | 21:24 | 21:58 | 21:49 | 21:00 | | | 19:52 | | | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | | | 05:43 | 05:18 | 05:38 | 06:24 | | | 07:14 | | | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | 20:37 | | | 21:26 | 21:58 | 21:48 | 20:58 | | | 19:49 | | | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | | | 05:41 | 05:18 | 05:39 | 06:25 | | | 07:15 | | | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | | | 21:27 | 21:59 | 21:47 | 20:56 | | | 19:47 | | | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | 06:34 | | | 05:40 | 05:18 | 05:40 | 06:27 | | | 07:17 | | | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | | | 21:29 | 21:59 | 21:46 | 20:54 | | | 19:45 | | | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | | | 05:38 | 05:18 | 05:41 | 06:29 | | | 07:19 | | | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | | | 21:30 | 21:59 | 21:45 | 20:52 | | | 19:42 | | | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | | | 05:37 | 05:18 | 05:43 | 06:30 | | | 07:20 | | | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | | | 21:32 | 22:00 | 21:44 | 20:50 | | | 19:40 | | | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | 06:28 | | | 05:36 | 05:18 | 05:44 | 06:32 | | | 07:22 | | | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | | | 21:33 | 22:00 | 21:42 | 20:48 | | | 19:38 | | | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | | | 05:35 | 05:19 | 05:45 | 06:33 | | | 07:23 | | | 08:14 | 08:08 | 08:43 |
| | 17:08 | 18:05 | 18:54 | 20:47 | | | 21:34 | 22:00 | 21:41 | 20:46 | | | 19:35 | | | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | | | 05:33 | 05:19 | 05:47 | 06:35 | | | 07:25 | | | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | | | 21:36 | 22:00 | 21:40 | 20:44 | | | 19:33 | | | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | | | 05:32 | 05:19 | 05:48 | 06:37 | | | 07:27 | | | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | | | 21:37 | 22:00 | 21:38 | 20:41 | | | 19:31 | | | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 06:20 | | | 05:31 | 05:20 | 05:50 | 06:38 | | 19:13 (5) | 07:28 | | | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | 20:52 | | | 21:38 | 22:00 | 21:37 | 20:39 | 2 | 19:15 (5) | 19:28 | | | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | | | 05:30 | 05:20 | 05:51 | 06:40 | | 19:07 (5) | 07:30 | | | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 | 20:53 | | | 21:40 | 22:00 | 21:36 | 20:37 | 11 | 19:18 (5) | 19:26 | | | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | | | 05:29 | 05:20 | 05:53 | 06:41 | | 19:05 (5) | 07:32 | | | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | | | 21:41 | 22:00 | 21:34 | 20:35 | 15 | 19:20 (5) | 19:24 | | | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 06:14 | | | 05:28 | 05:21 | 05:54 | 06:43 | | 19:03 (5) | 07:33 | | | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 20:57 | | | 21:42 | 22:00 | 21:33 | 20:33 | 18 | 19:21 (5) | 19:22 | | | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | | | 05:27 | 05:22 | 05:55 | 06:45 | | 19:02 (5) | 07:35 | | | 07:27 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:58 | | | 21:43 | 22:00 | 21:31 | 20:31 | 20 | 19:22 (5) | 19:19 | | | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | | | 05:26 | | 05:57 | 06:46 | | 19:00 (5) | | | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | | | 21:44 | | 21:29 | 20:28 | 22 | 19:22 (5) | | | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | | | 485 | 498 | 501 | 453 | | | 381 | | | 332 | 267 | 244 |
| Total, worst case | | | | | 303 | | | | | | 88 | | | 218 | | | | |
| Sun reduction | | | | | 0.35 | | | | | | 0.30 | | | 0.28 | | | | |
| Oper. time red. | | | | | 1.00 | | | | | | 1.00 | | | 1.00 | | | | |
| Wind dir. red. | | | | | 0.65 | | | | | | 0.65 | | | 0.65 | | | | |
| Total reduction | | | | | 0.23 | | | | | | 0.19 | | | 0.18 | | | | |
| Total, real | | | | | 70 | | | | | | 17 | | | 40 | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

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Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** V - H23

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | | May | June | July | August | | | September | | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:14 | | 06:10 | 05:25 | 05:22 | 05:58 | | | 06:48 | | 19:03 (5) | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:24 | 18:16 | 20:10 | | 21:00 | 21:46 | 21:59 | 21:28 | | | 20:26 | 21 | 19:24 (5) | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | 07:12 | 19:16 (5) | 06:08 | 05:24 | 05:23 | 06:00 | | | 06:50 | | 19:02 (5) | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 3 19:19 (5) | 21:02 | 21:47 | 21:59 | 21:26 | | | 20:24 | 22 | 19:24 (5) | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | 19:11 (5) | 06:06 | 05:23 | 05:24 | 06:02 | | | 06:51 | | 19:02 (5) | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 | 12 19:23 (5) | 21:03 | 21:48 | 21:59 | 21:24 | | | 20:22 | 22 | 19:24 (5) | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 19:08 (5) | 06:04 | 05:23 | 05:24 | 06:03 | | | 06:53 | | 19:01 (5) | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 16 19:24 (5) | 21:05 | 21:49 | 21:58 | 21:23 | | | 20:19 | 22 | 19:23 (5) | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | 19:07 (5) | 06:03 | 05:22 | 05:25 | 06:05 | | | 06:54 | | 19:01 (5) | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | 20:16 | 18 19:25 (5) | 21:07 | 21:50 | 21:58 | 21:21 | | | 20:17 | 22 | 19:23 (5) | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 19:06 (5) | 06:01 | 05:21 | 05:26 | 06:06 | | | 06:56 | | 19:02 (5) | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 20 19:26 (5) | 21:08 | 21:51 | 21:57 | 21:19 | | | 20:15 | 20 | 19:22 (5) | 19:05 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 19:05 (5) | 05:59 | 05:21 | 05:27 | 06:08 | | | 06:58 | | 19:02 (5) | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 22 19:27 (5) | 21:10 | 21:52 | 21:57 | 21:17 | | | 20:12 | 18 | 19:20 (5) | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 19:04 (5) | 05:57 | 05:20 | 05:28 | 06:09 | | | 06:59 | | 19:03 (5) | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | 20:21 | 22 19:26 (5) | 21:12 | 21:53 | 21:56 | 21:16 | | | 20:10 | 16 | 19:19 (5) | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | 19:04 (5) | 05:55 | 05:20 | 05:29 | 06:11 | | | 07:01 | | 19:04 (5) | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 22 19:26 (5) | 21:13 | 21:53 | 21:55 | 21:14 | | | 20:08 | 12 | 19:16 (5) | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 19:04 (5) | 05:54 | 05:19 | 05:30 | 06:12 | | | 07:02 | | 19:08 (5) | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 22 19:26 (5) | 21:15 | 21:54 | 21:55 | 21:12 | | | 20:06 | 5 | 19:13 (5) | 18:56 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 19:04 (5) | 05:52 | 05:19 | 05:31 | 06:14 | | | 07:04 | | | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | 20:26 | 22 19:26 (5) | 21:16 | 21:55 | 21:54 | 21:10 | | | 20:03 | | | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | 06:50 | 19:04 (5) | 05:50 | 05:19 | 05:32 | 06:16 | | | 07:06 | | | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21 19:25 (5) | 21:18 | 21:56 | 21:53 | 21:08 | | | 20:01 | | | 18:52 | 16:52 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:47 | 19:04 (5) | 05:49 | 05:18 | 05:33 | 06:17 | | | 07:07 | | | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 19 19:23 (5) | 21:20 | 21:56 | 21:52 | 21:06 | | | 19:59 | | | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 06:45 | 19:05 (5) | 05:47 | 05:18 | 05:34 | 06:19 | | | 07:09 | | | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 17 19:22 (5) | 21:21 | 21:57 | 21:51 | 21:04 | | | 19:56 | | | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 19:06 (5) | 05:46 | 05:18 | 05:35 | 06:20 | | | 07:11 | | | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | 20:33 | 15 19:21 (5) | 21:23 | 21:57 | 21:50 | 21:02 | | | 19:54 | | | 18:45 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | 19:08 (5) | 05:44 | 05:18 | 05:36 | 06:22 | | | 07:12 | | | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 10 19:18 (5) | 21:24 | 21:58 | 21:49 | 21:00 | | | 19:52 | | | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | | 05:43 | 05:18 | 05:38 | 06:24 | | | 07:14 | | | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | 20:37 | | 21:26 | 21:58 | 21:48 | 20:58 | | | 19:49 | | | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | | 05:41 | 05:18 | 05:39 | 06:25 | | | 07:15 | | | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | | 21:27 | 21:59 | 21:47 | 20:56 | | | 19:47 | | | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | 06:34 | | 05:40 | 05:18 | 05:40 | 06:27 | | | 07:17 | | | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | | 21:29 | 21:59 | 21:46 | 20:54 | | | 19:45 | | | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | | 05:38 | 05:18 | 05:41 | 06:29 | | | 07:19 | | | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | | 21:30 | 21:59 | 21:45 | 20:52 | | | 19:42 | | | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | | 05:37 | 05:18 | 05:43 | 06:30 | | | 07:20 | | | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | | 21:32 | 22:00 | 21:44 | 20:50 | | | 19:40 | | | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | 06:28 | | 05:36 | 05:18 | 05:44 | 06:32 | | | 07:22 | | | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:52 | 20:45 | | 21:33 | 22:00 | 21:42 | 20:48 | | | 19:38 | | | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | | 05:35 | 05:18 | 05:45 | 06:33 | | | 07:23 | | | 08:14 | 08:08 | 08:43 |
| | 17:08 | 18:05 | 18:54 | 20:47 | | 21:34 | 22:00 | 21:41 | 20:46 | | | 19:35 | | | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | | 05:33 | 05:19 | 05:47 | 06:35 | | | 07:25 | | | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | | 21:36 | 22:00 | 21:40 | 20:44 | | | 19:33 | | | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | | 05:32 | 05:19 | 05:48 | 06:37 | | | 07:27 | | | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | | 21:37 | 22:00 | 21:38 | 20:41 | | | 19:31 | | | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 06:20 | | 05:31 | 05:20 | 05:50 | 06:38 | | | 07:28 | | | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | 20:52 | | 21:38 | 22:00 | 21:37 | 20:39 | | | 19:28 | | | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | | 05:30 | 05:20 | 05:51 | 06:40 | 19:10 (5) | | 07:30 | | | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 | 20:53 | | 21:40 | 22:00 | 21:36 | 20:37 | 10 19:20 (5) | | 19:26 | | | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | | 05:29 | 05:20 | 05:53 | 06:41 | 19:08 (5) | | 07:32 | | | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | | 21:41 | 22:00 | 21:34 | 20:35 | 14 19:22 (5) | | 19:24 | | | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 06:14 | | 05:28 | 05:21 | 05:54 | 06:43 | 19:06 (5) | | 07:33 | | | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 20:57 | | 21:42 | 22:00 | 21:33 | 20:33 | 17 19:23 (5) | | 19:21 | | | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | | 05:27 | 05:22 | 05:55 | 06:45 | 19:05 (5) | | 07:35 | | | 07:27 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:58 | | 21:43 | 22:00 | 21:31 | 20:31 | 19 19:24 (5) | | 19:19 | | | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | | 05:26 | | 05:57 | 06:46 | 19:03 (5) | | | | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | | 21:44 | | 21:29 | 20:28 | 21 19:24 (5) | | | | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | | 485 | 498 | 501 | 453 | | | 381 | | | 332 | 267 | 244 |
| Total, worst case | | | | | 261 | | | | | 81 | | | 180 | | | | |
| Sun reduction | | | | | 0.35 | | | | | 0.30 | | | 0.28 | | | | |
| Oper. time red. | | | | | 1.00 | | | | | 1.00 | | | 1.00 | | | | |
| Wind dir. red. | | | | | 0.65 | | | | | 0.65 | | | 0.65 | | | | |
| Total reduction | | | | | 0.23 | | | | | 0.19 | | | 0.18 | | | | |
| Total, real | | | | | 60 | | | | | 16 | | | 33 | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

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IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** W - H24

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | | April | | May | June | July | August | September | | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | | 07:14 | | 19:02 (5) | 06:10 | 05:25 | 05:22 | 05:58 | 06:48 | | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:24 | 18:16 | | 20:09 | 19 | 19:21 (5) | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | | 07:12 | | 19:02 (5) | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | 19:05 (5) | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | | 20:11 | 20 | 19:22 (5) | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 5 19:10 (5) | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | | 07:10 | | 19:01 (5) | 06:06 | 05:23 | 05:24 | 06:02 | 06:51 | 19:02 (5) | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | | 20:13 | 21 | 19:22 (5) | 21:03 | 21:48 | 21:59 | 21:24 | 20:22 | 11 19:13 (5) | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | | 07:08 | | 19:00 (5) | 06:04 | 05:23 | 05:24 | 06:03 | 06:53 | 18:59 (5) | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | | 20:15 | 21 | 19:21 (5) | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 15 19:14 (5) | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | | 07:05 | | 19:01 (5) | 06:03 | 05:22 | 05:25 | 06:05 | 06:54 | 18:58 (5) | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | | 20:16 | 19 | 19:20 (5) | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 17 19:15 (5) | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | | 07:03 | | 19:01 (5) | 06:01 | 05:21 | 05:26 | 06:06 | 06:56 | 18:57 (5) | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | | 20:18 | 19 | 19:20 (5) | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 19 19:16 (5) | 19:05 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | | 07:01 | | 19:02 (5) | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 18:56 (5) | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:26 | | 20:20 | 17 | 19:19 (5) | 21:10 | 21:52 | 21:57 | 21:17 | 20:12 | 20 19:16 (5) | 19:03 | 17:00 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | | 06:59 | | 19:02 (5) | 05:57 | 05:20 | 05:28 | 06:09 | 06:59 | 18:56 (5) | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | | 20:21 | 15 | 19:17 (5) | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 20 19:16 (5) | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | | 06:56 | | 19:04 (5) | 05:55 | 05:20 | 05:29 | 06:11 | 07:01 | 18:55 (5) | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | | 20:23 | 11 | 19:15 (5) | 21:13 | 21:53 | 21:55 | 21:14 | 20:08 | 20 19:15 (5) | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | | 06:54 | | 19:07 (5) | 05:54 | 05:19 | 05:30 | 06:12 | 07:02 | 18:55 (5) | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | | 20:25 | 5 | 19:12 (5) | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 20 19:15 (5) | 18:56 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | | 06:52 | | | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 18:54 (5) | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | | 20:26 | | | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 19 19:13 (5) | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | | 06:50 | | | 05:50 | 05:19 | 05:32 | 06:16 | 07:06 | 18:55 (5) | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | | 20:28 | | | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18 19:13 (5) | 18:52 | 16:52 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | | 06:47 | | | 05:49 | 05:18 | 05:33 | 06:17 | 07:07 | 18:55 (5) | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | | 20:30 | | | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 16 19:11 (5) | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | | 06:45 | | | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 18:57 (5) | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:48 | 18:39 | | 20:32 | | | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 12 19:09 (5) | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | | 06:43 | | | 05:46 | 05:18 | 05:35 | 06:20 | 07:11 | 19:01 (5) | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | | 20:33 | | | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | 5 19:06 (5) | 18:45 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | | 06:41 | | | 05:44 | 05:18 | 05:36 | 06:22 | 07:12 | | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | | 20:35 | | | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | | 06:39 | | | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | | 20:37 | | | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | | 06:37 | | | 05:41 | 05:18 | 05:39 | 06:25 | 07:15 | | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | | 20:38 | | | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | | 06:34 | | | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | | 20:40 | | | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | | 06:32 | | | 05:38 | 05:18 | 05:41 | 06:29 | 07:19 | | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | | 20:42 | | | 21:30 | 21:59 | 21:45 | 20:52 | 19:42 | | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | | 06:30 | | | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | | 20:43 | | | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | | 06:28 | | | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 | | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:52 | | 20:45 | | | 21:33 | 22:00 | 21:42 | 20:48 | 19:38 | | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | | 06:26 | | | 05:35 | 05:18 | 05:45 | 06:33 | 07:23 | | 08:14 | 08:08 | 08:43 |
| | 17:08 | 18:05 | 18:54 | | 20:47 | | | 21:34 | 22:00 | 21:41 | 20:46 | 19:35 | | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | | 06:24 | | | 05:33 | 05:19 | 05:47 | 06:35 | 07:25 | | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | | 20:48 | | | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | | 06:22 | | | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | | 20:50 | | | 21:37 | 22:00 | 21:38 | 20:41 | 19:31 | | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | | 06:20 | | | 05:31 | 05:20 | 05:50 | 06:38 | 07:28 | | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | | 20:52 | | | 21:38 | 22:00 | 21:37 | 20:39 | 19:28 | | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | | 06:18 | | | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 | | 20:53 | | | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 18:12 (5) | 06:16 | | | 05:29 | 05:20 | 05:53 | 06:41 | 07:32 | | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 1 18:13 (5) | 20:55 | | | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 19:07 (5) | 06:14 | | | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 11 19:18 (5) | 20:57 | | | 21:42 | 22:00 | 21:33 | 20:33 | 19:21 | | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 19:05 (5) | 06:12 | | | 05:27 | 05:22 | 05:55 | 06:45 | 07:35 | | 07:26 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 15 19:20 (5) | 20:58 | | | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | 19:03 (5) | | | | 05:26 | | 05:57 | 06:46 | | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | 17 19:20 (5) | | | | 21:44 | | 21:29 | 20:28 | | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | | 416 | | | 485 | 498 | 501 | 453 | 381 | | 332 | 267 | 244 |
| Total, worst case | | | | 44 | | 167 | | | | | | | 217 | | | |
| Sun reduction | | | | 0.24 | | 0.35 | | | | | | | 0.28 | | | |
| Oper. time red. | | | | 1.00 | | 1.00 | | | | | | | 1.00 | | | |
| Wind dir. red. | | | | 0.65 | | 0.65 | | | | | | | 0.65 | | | |
| Total reduction | | | | 0.16 | | 0.23 | | | | | | | 0.19 | | | |
| Total, real | | | | 7 | | 39 | | | | | | | 40 | | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** X - H25

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:14 | 19:07 (5) 06:10 | 05:25 | 05:22 | 05:58 | 06:48 | 19:05 (5) 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:24 | 18:16 | 20:09 15 | 19:22 (5) 21:00 | 21:46 | 21:59 | 21:28 | 20:26 11 | 19:16 (5) 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | 07:12 | 19:06 (5) 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | 19:03 (5) 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 17 | 19:23 (5) 21:02 | 21:47 | 21:59 | 21:26 | 20:24 14 | 19:17 (5) 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | 19:05 (5) 06:06 | 05:23 | 05:24 | 06:02 | 06:51 | 19:01 (5) 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 18 | 19:23 (5) 21:03 | 21:48 | 21:59 | 21:24 | 20:22 17 | 19:18 (5) 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 19:03 (5) 06:04 | 05:23 | 05:24 | 06:03 | 06:53 | 19:00 (5) 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 20 | 19:23 (5) 21:05 | 21:49 | 21:58 | 21:23 | 20:19 18 | 19:18 (5) 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | 19:03 (5) 06:03 | 05:22 | 05:25 | 06:05 | 06:54 | 18:59 (5) 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | 20:16 20 | 19:23 (5) 21:07 | 21:50 | 21:58 | 21:21 | 20:17 20 | 19:19 (5) 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 19:03 (5) 06:01 | 05:21 | 05:26 | 06:06 | 06:56 | 18:59 (5) 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 20 | 19:23 (5) 21:08 | 21:51 | 21:57 | 21:19 | 20:15 20 | 19:19 (5) 19:05 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 19:03 (5) 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 18:58 (5) 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:26 | 20:20 20 | 19:23 (5) 21:10 | 21:52 | 21:57 | 21:17 | 20:12 20 | 19:18 (5) 19:03 | 17:00 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 19:03 (5) 05:57 | 05:20 | 05:28 | 06:09 | 06:59 | 18:58 (5) 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | 20:21 18 | 19:21 (5) 21:12 | 21:53 | 21:56 | 21:16 | 20:10 20 | 19:18 (5) 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | 19:03 (5) 05:55 | 05:20 | 05:29 | 06:11 | 07:01 | 18:58 (5) 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 17 | 19:20 (5) 21:13 | 21:53 | 21:55 | 21:14 | 20:08 19 | 19:17 (5) 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 19:05 (5) 05:54 | 05:19 | 05:30 | 06:12 | 07:02 | 18:59 (5) 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 14 | 19:19 (5) 21:15 | 21:54 | 21:55 | 21:12 | 20:06 17 | 19:16 (5) 18:56 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 19:06 (5) 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 18:59 (5) 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | 20:26 11 | 19:17 (5) 21:16 | 21:55 | 21:54 | 21:10 | 20:03 15 | 19:14 (5) 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | 06:50 | 19:10 (5) 05:50 | 05:19 | 05:32 | 06:16 | 07:06 | 19:01 (5) 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 3 | 19:13 (5) 21:18 | 21:56 | 21:53 | 21:08 | 20:01 11 | 19:12 (5) 18:52 | 16:52 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:47 | 05:49 | 05:18 | 05:33 | 06:17 | 07:07 | 19:03 (5) 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 5 | 19:08 (5) 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 06:45 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:48 | 18:39 | 20:32 | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:35 | 06:20 | 07:11 | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | 20:33 | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | 18:45 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | 05:44 | 05:18 | 05:36 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | 20:37 | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 | 05:18 | 05:39 | 06:25 | 07:15 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | 06:34 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 05:38 | 05:18 | 05:41 | 06:29 | 07:19 | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | 21:30 | 21:59 | 21:45 | 20:52 | 19:42 | 18:35 | 16:42 | 16:28 |
| 21 | 08:32 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | 06:28 | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:52 | 20:45 | 21:33 | 22:00 | 21:42 | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 05:35 | 05:18 | 05:45 | 06:33 | 07:23 | 08:14 | 08:08 | 08:43 |
| | 17:08 | 18:05 | 18:54 | 20:47 | 21:34 | 22:00 | 21:41 | 20:46 | 19:35 | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | 05:33 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:38 | 20:41 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 06:20 | 05:31 | 05:20 | 05:50 | 06:38 | 07:28 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | 20:52 | 21:38 | 22:00 | 21:37 | 20:39 | 19:28 | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 | 20:53 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:20 | 05:53 | 06:41 | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:21 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 19:13 (5) | 06:12 | 05:27 | 05:22 | 05:55 | 06:45 | 07:35 | 07:26 | 08:19 | 08:45 |
| | 17:21 | | 20:06 4 19:17 (5) | 20:58 | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 19:09 (5) | | 05:26 | | 05:57 | 06:46 19:09 (5) | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 11 19:20 (5) | | 21:44 | | 21:29 | 20:28 3 19:12 (5) | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 244 |
| Total, worst case | | | 15 | 193 | | | | 3 | 207 | | | |
| Sun reduction | | | 0.24 | 0.35 | | | | 0.30 | 0.28 | | | |
| Oper. time red. | | | 1.00 | 1.00 | | | | 1.00 | 1.00 | | | |
| Wind dir. red. | | | 0.65 | 0.65 | | | | 0.65 | 0.65 | | | |
| Total reduction | | | 0.16 | 0.23 | | | | 0.19 | 0.18 | | | |
| Total, real | | | 2 | 45 | | | | 1 | 38 | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
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Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** Y - H26

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | | May | June | July | August | | September | | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:14 | | 19:14 (5) | 06:10 | 05:25 | 05:22 | 05:58 | | 06:48 | 19:08 (5) | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:24 | 18:16 | 20:09 | 8 | 19:22 (5) | 21:00 | 21:46 | 21:59 | 21:28 | | 20:26 | 19:22 (5) | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | 07:12 | | 19:12 (5) | 06:08 | 05:24 | 05:23 | 06:00 | | 06:50 | 19:06 (5) | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 13 | 19:25 (5) | 21:02 | 21:47 | 21:59 | 21:26 | | 20:24 | 19:22 (5) | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | | 19:10 (5) | 06:06 | 05:23 | 05:24 | 06:02 | | 06:51 | 19:05 (5) | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 | 16 | 19:26 (5) | 21:03 | 21:48 | 21:59 | 21:24 | | 20:22 | 19:23 (5) | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | | 19:08 (5) | 06:04 | 05:23 | 05:24 | 06:03 | | 06:53 | 19:04 (5) | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 18 | 19:26 (5) | 21:05 | 21:49 | 21:58 | 21:23 | | 20:19 | 19:22 (5) | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | | 19:08 (5) | 06:03 | 05:22 | 05:25 | 06:05 | | 06:54 | 19:03 (5) | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | 20:16 | 18 | 19:26 (5) | 21:07 | 21:50 | 21:58 | 21:21 | | 20:17 | 19:23 (5) | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | | 19:07 (5) | 06:01 | 05:21 | 05:26 | 06:06 | | 06:56 | 19:04 (5) | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 20 | 19:27 (5) | 21:08 | 21:51 | 21:57 | 21:19 | | 20:15 | 19:23 (5) | 19:05 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | | 19:07 (5) | 05:59 | 05:21 | 05:27 | 06:08 | | 06:58 | 19:03 (5) | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:26 | 20:20 | 20 | 19:27 (5) | 21:10 | 21:52 | 21:57 | 21:17 | | 20:12 | 19:22 (5) | 19:03 | 17:00 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | | 19:06 (5) | 05:57 | 05:20 | 05:28 | 06:09 | | 06:59 | 19:03 (5) | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | 20:21 | 19 | 19:25 (5) | 21:12 | 21:53 | 21:56 | 21:16 | | 20:10 | 19:21 (5) | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | | 19:07 (5) | 05:55 | 05:20 | 05:29 | 06:11 | | 07:01 | 19:03 (5) | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 18 | 19:25 (5) | 21:13 | 21:53 | 21:55 | 21:14 | | 20:08 | 19:19 (5) | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | | 19:08 (5) | 05:54 | 05:19 | 05:30 | 06:12 | | 07:02 | 19:05 (5) | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 16 | 19:24 (5) | 21:15 | 21:54 | 21:55 | 21:12 | | 20:06 | 19:18 (5) | 18:56 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | | 19:09 (5) | 05:52 | 05:19 | 05:31 | 06:14 | | 07:04 | 19:06 (5) | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | 20:26 | 14 | 19:23 (5) | 21:16 | 21:55 | 21:54 | 21:10 | | 20:03 | 19:15 (5) | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | 06:50 | | 19:10 (5) | 05:50 | 05:19 | 05:32 | 06:16 | | 07:06 | | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 11 | 19:21 (5) | 21:18 | 21:56 | 21:53 | 21:08 | | 20:01 | | 18:52 | 16:52 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:47 | | 19:13 (5) | 05:49 | 05:18 | 05:33 | 06:17 | | 07:07 | | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 3 | 19:16 (5) | 21:20 | 21:56 | 21:52 | 21:06 | | 19:59 | | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 06:45 | | | 05:47 | 05:18 | 05:34 | 06:19 | | 07:09 | | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:48 | 18:39 | 20:32 | | | 21:21 | 21:57 | 21:51 | 21:04 | | 19:56 | | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | | | 05:46 | 05:18 | 05:35 | 06:20 | | 07:10 | | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | 20:33 | | | 21:23 | 21:57 | 21:50 | 21:02 | | 19:54 | | 18:45 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | | | 05:44 | 05:18 | 05:36 | 06:22 | | 07:12 | | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | | | 21:24 | 21:58 | 21:49 | 21:00 | | 19:52 | | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | | | 05:43 | 05:18 | 05:38 | 06:24 | | 07:14 | | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | 20:37 | | | 21:26 | 21:58 | 21:48 | 20:58 | | 19:49 | | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | | | 05:41 | 05:18 | 05:39 | 06:25 | | 07:15 | | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | | | 21:27 | 21:59 | 21:47 | 20:56 | | 19:47 | | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | 06:34 | | | 05:40 | 05:18 | 05:40 | 06:27 | | 07:17 | | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | | | 21:29 | 21:59 | 21:46 | 20:54 | | 19:45 | | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | | | 05:38 | 05:18 | 05:41 | 06:29 | | 07:19 | | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | | | 21:30 | 21:59 | 21:45 | 20:52 | | 19:42 | | 18:35 | 16:42 | 16:28 |
| 21 | 08:32 | 07:42 | 06:40 | 06:30 | | | 05:37 | 05:18 | 05:43 | 06:30 | | 07:20 | | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | | | 21:31 | 22:00 | 21:44 | 20:50 | | 19:40 | | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | 06:28 | | | 05:36 | 05:18 | 05:44 | 06:32 | | 07:22 | | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:52 | 20:45 | | | 21:33 | 22:00 | 21:42 | 20:48 | | 19:38 | | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:37 | 06:35 | 06:26 | | | 05:35 | 05:18 | 05:45 | 06:33 | | 07:23 | | 08:14 | 08:08 | 08:43 |
| | 17:08 | 18:05 | 18:54 | 20:47 | | | 21:34 | 22:00 | 21:41 | 20:46 | | 19:35 | | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | | | 05:33 | 05:19 | 05:47 | 06:35 | | 07:25 | | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | | | 21:36 | 22:00 | 21:40 | 20:44 | | 19:33 | | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | | | 05:32 | 05:19 | 05:48 | 06:37 | | 07:27 | | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | | | 21:37 | 22:00 | 21:38 | 20:41 | | 19:31 | | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 06:20 | | | 05:31 | 05:20 | 05:50 | 06:38 | | 07:28 | | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | 20:52 | | | 21:38 | 22:00 | 21:37 | 20:39 | | 19:28 | | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | | | 05:30 | 05:20 | 05:51 | 06:40 | | 07:30 | | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 | 20:53 | | | 21:40 | 22:00 | 21:36 | 20:37 | | 19:26 | | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | | | 05:29 | 05:20 | 05:53 | 06:41 | | 07:32 | | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | | | 21:41 | 22:00 | 21:34 | 20:35 | | 19:24 | | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 06:14 | | | 05:28 | 05:21 | 05:54 | 06:43 | | 07:33 | | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 20:57 | | | 21:42 | 22:00 | 21:33 | 20:33 | | 19:21 | | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | | | 05:27 | 05:22 | 05:55 | 06:45 | 19:13 (5) | 07:35 | | 07:26 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:58 | | | 21:43 | 22:00 | 21:31 | 20:31 | 5 19:18 (5) | 19:19 | | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | | | 05:26 | | 05:57 | 06:46 | 19:09 (5) | | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | | | 21:44 | | 21:29 | 20:28 | 11 19:20 (5) | | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | | | 485 | 498 | 501 | 453 | | 381 | | 332 | 267 | 244 |
| Total, worst case | | | | | 194 | | | | | | 16 | | 180 | | | |
| Sun reduction | | | | | 0.35 | | | | | | 0.30 | | 0.28 | | | |
| Oper. time red. | | | | | 1.00 | | | | | | 1.00 | | 1.00 | | | |
| Wind dir. red. | | | | | 0.65 | | | | | | 0.65 | | 0.65 | | | |
| Total reduction | | | | | 0.23 | | | | | | 0.19 | | 0.18 | | | |
| Total, real | | | | | 45 | | | | | | 3 | | 33 | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
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+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** Z - H27

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:14 | 06:10 | 05:25 | 05:22 | 05:58 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:24 | 18:16 | 20:09 | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | 07:12 | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | 06:06 | 05:23 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 | 21:03 | 21:48 | 21:59 | 21:24 | 20:22 | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:04 | 05:23 | 05:24 | 06:03 | 06:53 | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | 06:02 | 05:22 | 05:25 | 06:05 | 06:54 | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:21 | 05:26 | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 19:05 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:26 | 20:20 | 21:10 | 21:52 | 21:57 | 21:17 | 20:12 | 19:03 | 17:00 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 05:57 | 05:20 | 05:28 | 06:09 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | 20:21 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | 05:55 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 21:13 | 21:53 | 21:55 | 21:14 | 20:08 | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:19 | 05:30 | 06:12 | 07:02 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:56 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:33 | 20:26 | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:40 | 07:59 | 07:00 | 06:50 | 05:50 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:52 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:47 | 05:49 | 05:18 | 05:33 | 06:17 | 07:07 | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 06:45 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:48 | 18:39 | 20:32 | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:35 | 06:20 | 07:10 | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | 20:33 | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | 18:45 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | 05:44 | 05:18 | 05:36 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | 20:37 | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 | 05:18 | 05:39 | 06:25 | 07:15 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | 06:34 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 05:38 | 05:18 | 05:41 | 06:28 | 07:19 | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | 21:30 | 21:59 | 21:45 | 20:52 | 19:42 | 18:35 | 16:42 | 16:28 |
| 21 | 08:32 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | 21:31 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | 06:28 | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:52 | 20:45 | 21:33 | 22:00 | 21:42 | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:37 | 06:35 | 06:26 | 05:34 | 05:18 | 05:45 | 06:33 | 07:23 | 08:14 | 08:08 | 08:43 |
| | 17:08 | 18:05 | 18:54 | 20:47 | 21:34 | 22:00 | 21:41 | 20:46 | 19:35 | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | 05:33 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:38 | 20:41 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 06:20 | 05:31 | 05:19 | 05:50 | 06:38 | 07:28 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | 20:52 | 21:38 | 22:00 | 21:37 | 20:39 | 19:28 | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 | 20:53 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:20 | 05:53 | 06:41 | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:21 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:55 | 06:45 | 07:35 | 07:26 | 08:19 | 08:44 |
| | 17:21 | | 20:06 | 20:58 | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | 05:26 | | 05:57 | 06:46 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:44 | | 21:29 | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 244 |
| Total, worst case | | | | | | | | | | | | |
| Sun reduction | | | | | | | | | | | | |
| Oper. time red. | | | | | | | | | | | | |
| Wind dir. red. | | | | | | | | | | | | |
| Total reduction | | | | | | | | | | | | |
| Total, real | | | | | | | | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
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Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** AA - H28

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:14 | 06:10 | 05:25 | 05:22 | 05:58 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:24 | 18:16 | 20:09 | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | 07:12 | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | 06:06 | 05:23 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 | 21:03 | 21:48 | 21:59 | 21:24 | 20:22 | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:04 | 05:23 | 05:24 | 06:03 | 06:53 | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | 06:02 | 05:22 | 05:25 | 06:05 | 06:54 | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:21 | 05:26 | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 19:05 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:26 | 20:20 | 21:10 | 21:52 | 21:57 | 21:17 | 20:12 | 19:03 | 17:00 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 05:57 | 05:20 | 05:28 | 06:09 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | 20:21 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | 05:55 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:46 | 17:39 | 18:30 | 20:23 | 21:13 | 21:53 | 21:55 | 21:14 | 20:08 | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:19 | 05:30 | 06:12 | 07:02 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:56 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:33 | 20:26 | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:40 | 07:59 | 07:00 | 06:50 | 05:50 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:52 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:47 | 05:49 | 05:18 | 05:33 | 06:17 | 07:07 | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 06:45 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:48 | 18:39 | 20:32 | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:35 | 06:20 | 07:10 | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | 20:33 | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | 18:45 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | 05:44 | 05:18 | 05:36 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | 20:37 | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 | 05:18 | 05:39 | 06:25 | 07:15 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | 06:34 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 05:38 | 05:18 | 05:41 | 06:28 | 07:19 | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | 21:30 | 21:59 | 21:45 | 20:52 | 19:42 | 18:35 | 16:42 | 16:28 |
| 21 | 08:32 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | 21:31 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | 06:28 | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:52 | 20:45 | 21:33 | 22:00 | 21:42 | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:37 | 06:35 | 06:26 | 05:34 | 05:18 | 05:45 | 06:33 | 07:23 | 08:14 | 08:08 | 08:43 |
| | 17:08 | 18:05 | 18:54 | 20:47 | 21:34 | 22:00 | 21:41 | 20:46 | 19:35 | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | 05:33 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:38 | 20:41 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 06:20 | 05:31 | 05:19 | 05:50 | 06:38 | 07:28 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | 20:52 | 21:38 | 22:00 | 21:37 | 20:39 | 19:28 | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 | 20:53 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:20 | 05:53 | 06:41 | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:21 | 17:17 | 16:32 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:55 | 06:45 | 07:35 | 07:26 | 08:19 | 08:44 |
| | 17:21 | | 20:06 | 20:58 | 21:43 | 22:00 | 21:31 | 20:30 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | 05:26 | | 05:57 | 06:46 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:44 | | 21:29 | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 244 |
| Total, worst case | | | | | | | | | | | | |
| Sun reduction | | | | | | | | | | | | |
| Oper. time red. | | | | | | | | | | | | |
| Wind dir. red. | | | | | | | | | | | | |
| Total reduction | | | | | | | | | | | | |
| Total, real | | | | | | | | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
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IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** AB - H29

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:14 | 06:10 | 05:25 | 05:22 | 05:58 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:24 | 18:16 | 20:09 | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | 07:12 | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | 06:06 | 05:23 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 | 21:03 | 21:48 | 21:59 | 21:24 | 20:22 | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:04 | 05:23 | 05:24 | 06:03 | 06:53 | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | 06:02 | 05:22 | 05:25 | 06:05 | 06:54 | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:21 | 05:26 | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 19:05 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:26 | 20:20 | 21:10 | 21:52 | 21:57 | 21:17 | 20:12 | 19:03 | 17:00 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 05:57 | 05:20 | 05:28 | 06:09 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | 20:21 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | 05:55 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:46 | 17:39 | 18:30 | 20:23 | 21:13 | 21:53 | 21:55 | 21:14 | 20:08 | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:19 | 05:30 | 06:12 | 07:02 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:56 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:33 | 20:26 | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | 06:50 | 05:50 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:52 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:47 | 05:49 | 05:18 | 05:33 | 06:17 | 07:07 | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 06:45 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:48 | 18:39 | 20:32 | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:35 | 06:20 | 07:10 | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | 20:33 | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | 18:45 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | 05:44 | 05:18 | 05:36 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | 20:37 | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 | 05:18 | 05:39 | 06:25 | 07:15 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | 06:34 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 05:38 | 05:18 | 05:41 | 06:28 | 07:19 | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | 21:30 | 21:59 | 21:45 | 20:52 | 19:42 | 18:35 | 16:42 | 16:28 |
| 21 | 08:32 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | 06:28 | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:52 | 20:45 | 21:33 | 22:00 | 21:42 | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:37 | 06:35 | 06:26 | 05:34 | 05:18 | 05:45 | 06:33 | 07:23 | 08:14 | 08:08 | 08:43 |
| | 17:08 | 18:05 | 18:54 | 20:47 | 21:34 | 22:00 | 21:41 | 20:46 | 19:35 | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | 05:33 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:38 | 20:41 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 06:20 | 05:31 | 05:19 | 05:50 | 06:38 | 07:28 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | 20:52 | 21:38 | 22:00 | 21:37 | 20:39 | 19:28 | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 | 20:53 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:20 | 05:53 | 06:41 | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:21 | 17:17 | 16:32 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:55 | 06:45 | 07:35 | 07:26 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:58 | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | 05:26 | | 05:57 | 06:46 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:44 | | 21:29 | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 244 |
| Total, worst case | | | | | | | | | | | | |
| Sun reduction | | | | | | | | | | | | |
| Oper. time red. | | | | | | | | | | | | |
| Wind dir. red. | | | | | | | | | | | | |
| Total reduction | | | | | | | | | | | | |
| Total, real | | | | | | | | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

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Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** AC - H30

## Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:15 | 06:10 | 19:01 (7) 05:25 | 05:22 | 05:59 | 19:05 (7) 06:48 | 19:16 (6) 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | 21:00 | 18 19:19 (7) 21:46 | 21:59 | 21:28 | 31 19:36 (7) 20:26 | 15 19:31 (6) 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | 07:12 | 06:08 | 19:01 (7) 05:24 | 05:23 | 06:00 | 19:06 (7) 06:50 | 19:17 (6) 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 21:02 | 20 19:21 (7) 21:47 | 21:59 | 21:26 | 30 19:36 (7) 20:24 | 11 19:28 (6) 19:15 | 17:09 | 16:31 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | 06:06 | 18:59 (7) 05:24 | 05:24 | 06:02 | 19:05 (7) 06:51 | 19:21 (6) 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:20 | 20:13 | 21:03 | 23 19:22 (7) 21:48 | 21:59 | 21:25 | 30 19:35 (7) 20:22 | 4 19:25 (6) 19:12 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:04 | 18:58 (7) 05:23 | 05:24 | 06:03 | 19:06 (7) 06:53 | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 25 19:23 (7) 21:49 | 21:58 | 21:23 | 30 19:36 (7) 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | 06:03 | 18:57 (7) 05:22 | 05:25 | 06:05 | 19:06 (7) 06:54 | 07:43 | 07:37 | 08:26 |
| | 16:42 | 17:32 | 18:23 | 20:16 | 21:07 | 26 19:23 (7) 21:50 | 21:58 | 21:21 | 29 19:35 (7) 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 18:57 (7) 05:22 | 05:26 | 06:06 | 19:05 (7) 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:08 | 27 19:24 (7) 21:51 | 21:57 | 21:19 | 29 19:34 (7) 20:15 | 19:06 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 18:56 (7) 05:21 | 05:27 | 06:08 | 19:06 (7) 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 21:10 | 29 19:25 (7) 21:52 | 21:57 | 21:18 | 28 19:34 (7) 20:13 | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 05:57 | 18:55 (7) 05:20 | 05:28 | 06:09 | 19:06 (7) 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:38 | 18:28 | 20:21 | 21:12 | 30 19:25 (7) 21:53 | 21:56 | 21:16 | 26 19:32 (7) 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | 19:23 (6) 05:56 | 18:55 (7) 05:20 | 05:29 | 06:11 | 19:08 (7) 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 4 19:27 (6) 21:13 | 30 19:25 (7) 21:53 | 21:56 | 21:14 | 24 19:32 (7) 20:08 | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 19:19 (6) 05:54 | 18:55 (7) 05:20 | 05:30 | 06:13 | 19:08 (7) 07:03 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 11 19:30 (6) 21:15 | 30 19:25 (7) 21:54 | 21:55 | 21:12 | 22 19:30 (7) 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 19:17 (6) 05:52 | 18:55 (7) 05:19 | 05:31 | 06:14 | 19:10 (7) 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | 20:27 | 15 19:32 (6) 21:16 | 31 19:26 (7) 21:55 | 21:54 | 21:10 | 19 19:29 (7) 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | 06:50 | 19:16 (6) 05:51 | 18:55 (7) 05:19 | 05:32 | 06:16 | 19:10 (7) 07:06 | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 17 19:33 (6) 21:18 | 30 19:25 (7) 21:56 | 21:53 | 21:08 | 17 19:27 (7) 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:48 | 19:14 (6) 05:49 | 18:55 (7) 05:19 | 05:33 | 06:17 | 19:13 (7) 07:07 | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 19 19:33 (6) 21:20 | 31 19:26 (7) 21:56 | 21:52 | 21:06 | 12 19:25 (7) 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:56 | 06:56 | 06:45 | 19:14 (6) 05:47 | 18:55 (7) 05:18 | 05:34 | 06:19 | 07:09 | 07:59 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 19 19:33 (6) 21:21 | 30 19:25 (7) 21:57 | 21:51 | 21:04 | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 19:13 (6) 05:46 | 18:56 (7) 05:18 | 05:35 | 19:18 (7) 06:21 | 07:11 | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:41 | 20:33 | 20 19:33 (6) 21:23 | 29 19:25 (7) 21:57 | 21:50 | 5 19:23 (7) 21:02 | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | 19:13 (6) 05:44 | 18:56 (7) 05:18 | 05:37 | 19:15 (7) 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 20 19:33 (6) 21:24 | 29 19:25 (7) 21:58 | 21:49 | 11 19:26 (7) 21:00 | 19:52 | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 19:13 (6) 05:43 | 18:56 (7) 05:18 | 05:38 | 19:15 (7) 06:24 | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:59 | 17:54 | 18:44 | 20:37 | 20 19:33 (6) 21:26 | 28 19:24 (7) 21:58 | 21:48 | 13 19:28 (7) 20:58 | 19:49 | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 19:14 (6) 05:41 | 18:57 (7) 05:18 | 05:39 | 19:13 (7) 06:25 | 07:15 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 18 19:32 (6) 21:27 | 27 19:24 (7) 21:59 | 21:47 | 16 19:29 (7) 20:56 | 19:47 | 18:39 | 16:44 | 16:28 |
| 19 | 08:35 | 07:46 | 06:44 | 06:35 | 19:14 (6) 05:40 | 18:58 (7) 05:18 | 05:40 | 19:12 (7) 06:27 | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | 17 19:31 (6) 21:29 | 26 19:24 (7) 21:59 | 21:46 | 18 19:30 (7) 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 19:15 (6) 05:39 | 18:58 (7) 05:18 | 05:42 | 19:11 (7) 06:29 | 07:19 | 08:09 | 08:04 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | 15 19:30 (6) 21:30 | 25 19:23 (7) 22:00 | 21:45 | 20 19:31 (7) 20:52 | 19:42 | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | 19:16 (6) 05:37 | 18:59 (7) 05:18 | 05:43 | 19:10 (7) 06:30 | 19:23 (6) 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | 13 19:29 (6) 21:32 | 24 19:23 (7) 22:00 | 21:44 | 22 19:32 (7) 20:50 | 9 19:32 (6) 19:40 | 18:33 | 16:41 | 16:29 |
| 22 | 08:31 | 07:40 | 06:38 | 06:28 | 19:18 (6) 05:36 | 19:00 (7) 05:18 | 05:44 | 19:10 (7) 06:32 | 19:21 (6) 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | 8 19:26 (6) 21:33 | 22 19:22 (7) 22:00 | 21:42 | 23 19:33 (7) 20:48 | 13 19:34 (6) 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 05:35 | 19:01 (7) 05:19 | 05:46 | 19:09 (7) 06:33 | 19:19 (6) 07:24 | 08:14 | 08:08 | 08:43 |
| | 17:09 | 18:05 | 18:54 | 20:47 | 21:34 | 21 19:22 (7) 22:00 | 21:41 | 24 19:33 (7) 20:46 | 15 19:34 (6) 19:35 | 18:29 | 16:38 | 16:30 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | 05:33 | 19:02 (7) 05:19 | 05:47 | 19:08 (7) 06:35 | 19:18 (6) 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 21:36 | 19 19:21 (7) 22:00 | 21:40 | 26 19:34 (7) 20:44 | 17 19:35 (6) 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 19:03 (7) 05:19 | 05:48 | 19:08 (7) 06:37 | 19:16 (6) 07:27 | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 17 19:20 (7) 22:00 | 21:38 | 27 19:35 (7) 20:42 | 19 19:35 (6) 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 06:20 | 05:31 | 19:04 (7) 05:20 | 05:50 | 19:07 (7) 06:38 | 19:16 (6) 07:28 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:11 | 18:59 | 20:52 | 21:38 | 15 19:19 (7) 22:00 | 21:37 | 28 19:35 (7) 20:39 | 20 19:36 (6) 19:29 | 17:23 | 16:35 | 16:32 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 19:06 (7) 05:20 | 05:51 | 19:06 (7) 06:40 | 19:15 (6) 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:12 | 19:01 | 20:53 | 21:40 | 12 19:18 (7) 22:00 | 21:36 | 29 19:35 (7) 20:37 | 20 19:35 (6) 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 19:08 (7) 05:21 | 05:53 | 19:07 (7) 06:42 | 19:15 (6) 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 8 19:16 (7) 22:00 | 21:34 | 29 19:36 (7) 20:35 | 20 19:35 (6) 19:24 | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 06:14 | 19:08 (7) 05:28 | 05:21 | 05:54 | 19:06 (7) 06:43 | 19:15 (6) 07:33 | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 20:57 | 5 19:13 (7) 21:42 | 22:00 | 21:33 | 30 19:36 (7) 20:33 | 19 19:34 (6) 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 19:04 (7) 05:27 | 05:22 | 05:56 | 19:05 (7) 06:45 | 19:15 (6) 07:35 | 07:27 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:58 | 13 19:17 (7) 21:43 | 22:00 | 21:31 | 30 19:35 (7) 20:31 | 19 19:34 (6) 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | 05:26 | | 05:57 | 19:06 (7) 06:46 | 19:15 (6) | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:44 | | 21:29 | 30 19:36 (7) 20:28 | 17 19:32 (6) | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 244 |
| Total, worst case | | | | 234 | 682 | | 381 | 515 | 30 | | | |
| Sun reduction | | | | 0.35 | 0.37 | | 0.27 | 0.30 | 0.28 | | | |
| Oper. time red. | | | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Wind dir. red. | | | | 0.63 | 0.62 | | 0.62 | 0.62 | 0.63 | | | |
| Total reduction | | | | 0.22 | 0.23 | | 0.17 | 0.19 | 0.18 | | | |
| Total, real | | | | 53 | 156 | | 63 | 96 | 5 | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

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Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** AD - H31

## Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45<br>16:37 | 08:18<br>17:25 | 07:25<br>18:16 | 07:15<br>20:10 | 06:10<br>21:00 | 05:25<br>21:46 (9) | 05:22<br>21:59 | 05:59<br>21:28 (27) | 19:21 (7)<br>19:48 (7) | 06:48<br>20:26 | 07:37<br>19:17 | 07:30<br>17:11 | 08:21<br>16:31 |
| 2 | 08:44<br>16:38 | 08:16<br>17:26 | 07:23<br>18:18 | 07:12<br>20:11 | 06:08<br>21:02 | 05:24<br>21:47 (5) | 05:23<br>21:59 | 06:00<br>21:26 (26) | 19:22 (7)<br>19:48 (7) | 06:50<br>20:24 | 07:38<br>19:15 | 07:32<br>17:09 | 08:22<br>16:31 |
| 3 | 08:44<br>16:39 | 08:15<br>17:28 | 07:20<br>18:19 | 07:10<br>20:13 | 06:06<br>21:03 (3) | 05:24<br>21:48 | 05:24<br>21:59 | 06:02<br>21:25 (25) | 19:22 (7)<br>19:47 (7) | 06:51<br>20:22 | 07:40<br>19:12 | 07:34<br>17:08 | 08:24<br>16:30 |
| 4 | 08:44<br>16:40 | 08:13<br>17:30 | 07:18<br>18:21 | 07:08<br>20:15 | 06:04<br>21:05 (12) | 05:23<br>21:49 | 05:24<br>21:58 | 06:03<br>21:23 (24) | 19:23 (7)<br>19:47 (7) | 06:53<br>20:19 | 07:42<br>19:10 | 07:35<br>17:06 | 08:25<br>16:29 |
| 5 | 08:44<br>16:42 | 08:12<br>17:32 | 07:16<br>18:23 | 07:05<br>20:16 | 06:03<br>21:07 (16) | 05:22<br>21:50 | 05:25<br>21:58 | 06:05<br>21:21 (22) | 19:24 (7)<br>19:46 (7) | 06:54<br>20:17 | 07:43<br>19:08 | 07:37<br>17:04 | 08:26<br>16:29 |
| 6 | 08:44<br>16:43 | 08:10<br>17:34 | 07:14<br>18:25 | 07:03<br>20:18 | 06:01<br>21:08 (19) | 05:22<br>21:51 | 05:26<br>21:57 | 06:06<br>21:19 (20) | 19:24 (7)<br>19:44 (7) | 06:56<br>20:15 | 07:45<br>19:06 | 07:39<br>17:02 | 08:28<br>16:28 |
| 7 | 08:43<br>16:44 | 08:08<br>17:36 | 07:12<br>18:27 | 07:01<br>20:20 | 05:59<br>21:10 (21) | 05:21<br>21:52 | 05:27<br>21:57 | 06:08<br>21:18 (18) | 19:26 (7)<br>19:44 (7) | 06:58<br>20:13 | 07:47<br>19:03 | 07:41<br>17:01 | 08:29<br>16:28 |
| 8 | 08:43<br>16:45 | 08:06<br>17:38 | 07:09<br>18:28 | 06:59<br>20:21 | 05:57<br>21:12 (23) | 05:20<br>21:53 | 05:28<br>21:56 | 06:09<br>21:16 (14) | 19:27 (7)<br>19:41 (7) | 06:59<br>20:10 | 07:48<br>19:01 | 07:43<br>16:59 | 08:30<br>16:28 |
| 9 | 08:42<br>16:47 | 08:05<br>17:39 | 07:07<br>18:30 | 06:56<br>20:23 | 05:56<br>21:13 (24) | 05:20<br>21:53 | 05:29<br>21:55 | 06:11<br>21:14 (10) | 19:29 (7)<br>19:39 (7) | 07:01<br>20:08 | 07:50<br>18:59 | 07:44<br>16:57 | 08:31<br>16:27 |
| 10 | 08:42<br>16:48 | 08:03<br>17:41 | 07:05<br>18:32 | 06:54<br>20:25 | 05:54<br>21:15 (25) | 05:20<br>21:54 | 05:30<br>21:55 | 06:13<br>21:12 | | 07:03<br>20:06 | 07:52<br>18:57 | 07:46<br>16:56 | 08:32<br>16:27 |
| 11 | 08:41<br>16:49 | 08:01<br>17:43 | 07:03<br>18:34 | 06:52<br>20:27 | 05:52<br>21:16 (26) | 05:19<br>21:55 | 05:31<br>21:54 (7) | 19:31 (7)<br>19:38 (7) | 06:14<br>21:10 | 07:04<br>20:03 | 07:53<br>18:54 | 07:48<br>16:54 | 08:33<br>16:27 |
| 12 | 08:41<br>16:51 | 07:59<br>17:45 | 07:00<br>18:35 | 06:50<br>20:28 | 05:51<br>21:18 (27) | 05:19<br>21:56 | 05:32<br>21:53 (11) | 19:29 (7)<br>19:40 (7) | 06:16<br>21:08 | 07:06<br>20:01 | 07:55<br>18:52 | 07:50<br>16:53 | 08:34<br>16:27 |
| 13 | 08:40<br>16:52 | 07:57<br>17:47 | 06:58<br>18:37 | 06:48<br>20:30 (9) | 19:28 (6)<br>19:37 (6) | 05:19<br>21:20 (28) | 19:11 (7)<br>19:39 (7) | 05:33<br>21:52 (13) | 19:28 (7)<br>19:41 (7) | 06:17<br>21:06 | 07:07<br>19:59 | 07:57<br>18:50 | 07:51<br>16:51 | 08:35<br>16:27 |
| 14 | 08:39<br>16:54 | 07:55<br>17:49 | 06:56<br>18:39 | 06:45<br>20:32 (13) | 19:26 (6)<br>19:39 (6) | 05:47<br>21:21 (28) | 19:10 (7)<br>19:38 (7) | 05:34<br>21:51 (15) | 19:27 (7)<br>19:42 (7) | 06:19<br>21:04 | 07:09<br>19:56 | 07:59<br>18:48 | 07:53<br>16:50 | 08:36<br>16:27 |
| 15 | 08:38<br>16:55 | 07:54<br>17:50 | 06:54<br>18:41 | 06:43<br>20:33 (15) | 19:25 (6)<br>19:40 (6) | 05:46<br>21:23 (28) | 19:11 (7)<br>19:39 (7) | 05:35<br>21:50 (17) | 19:26 (7)<br>19:43 (7) | 06:21<br>21:02 | 07:11<br>19:54 | 08:00<br>18:46 | 07:55<br>16:48 | 08:37<br>16:27 |
| 16 | 08:37<br>16:57 | 07:52<br>17:52 | 06:51<br>18:42 | 06:41<br>20:35 (17) | 19:24 (6)<br>19:41 (6) | 05:44<br>21:24 (28) | 19:10 (7)<br>19:38 (7) | 05:37<br>21:49 (19) | 19:25 (7)<br>19:44 (7) | 06:22<br>21:00 | 07:12<br>19:52 | 08:02<br>18:43 | 07:57<br>16:47 | 08:38<br>16:27 |
| 17 | 08:37<br>16:59 | 07:50<br>17:54 | 06:49<br>18:44 | 06:39<br>20:37 (18) | 19:23 (6)<br>19:41 (6) | 05:43<br>21:26 (28) | 19:11 (7)<br>19:39 (7) | 05:38<br>21:48 (21) | 19:25 (7)<br>19:46 (7) | 06:24<br>20:58 | 07:14<br>19:49 | 08:04<br>18:41 | 07:58<br>16:45 | 08:39<br>16:27 |
| 18 | 08:36<br>17:00 | 07:48<br>17:56 | 06:47<br>18:46 | 06:37<br>20:38 (18) | 19:23 (6)<br>19:41 (6) | 05:41<br>21:27 (28) | 19:11 (7)<br>19:39 (7) | 05:39<br>21:47 (21) | 19:25 (7)<br>19:46 (7) | 06:25<br>20:56 (9) | 19:32 (6)<br>19:41 (6) | 07:15<br>19:47 | 08:05<br>18:39 | 08:00<br>16:44 | 08:40<br>16:28 |
| 19 | 08:35<br>17:02 | 07:46<br>17:58 | 06:44<br>18:47 | 06:35<br>20:40 (19) | 19:22 (6)<br>19:41 (6) | 05:40<br>21:29 (27) | 19:12 (7)<br>19:39 (7) | 05:40<br>21:46 (23) | 19:24 (7)<br>19:47 (7) | 06:27<br>20:54 (13) | 19:30 (6)<br>19:43 (6) | 07:17<br>19:45 | 08:07<br>18:37 | 08:02<br>16:43 | 08:40<br>16:28 |
| 20 | 08:34<br>17:03 | 07:44<br>18:00 | 06:42<br>18:49 | 06:32<br>20:42 (19) | 19:22 (6)<br>19:41 (6) | 05:39<br>21:30 (27) | 19:11 (7)<br>19:38 (7) | 05:42<br>21:45 (24) | 19:23 (7)<br>19:47 (7) | 06:29<br>20:52 (15) | 19:28 (6)<br>19:43 (6) | 07:19<br>19:42 | 08:09<br>18:35 | 08:03<br>16:42 | 08:41<br>16:28 |
| 21 | 08:33<br>17:05 | 07:42<br>18:01 | 06:40<br>18:51 | 06:30<br>20:43 (17) | 19:23 (6)<br>19:40 (6) | 05:37<br>21:32 (26) | 19:12 (7)<br>19:38 (7) | 05:43<br>21:44 (24) | 19:23 (7)<br>19:47 (7) | 06:30<br>20:50 (16) | 19:28 (6)<br>19:44 (6) | 07:20<br>19:40 | 08:11<br>18:33 | 08:05<br>16:40 | 08:42<br>16:29 |
| 22 | 08:31<br>17:07 | 07:40<br>18:03 | 06:38<br>18:53 | 06:28<br>20:45 (17) | 19:23 (6)<br>19:40 (6) | 05:36<br>21:33 (25) | 19:13 (7)<br>19:38 (7) | 05:44<br>21:42 (25) | 19:23 (7)<br>19:48 (7) | 06:32<br>20:48 (18) | 19:27 (6)<br>19:45 (6) | 07:22<br>19:38 | 08:12<br>18:31 | 08:07<br>16:39 | 08:42<br>16:29 |
| 23 | 08:30<br>17:09 | 07:38<br>18:05 | 06:35<br>18:54 | 06:26<br>20:47 (14) | 19:24 (6)<br>19:38 (6) | 05:35<br>21:34 (25) | 19:13 (7)<br>19:38 (7) | 05:46<br>21:41 (27) | 19:22 (7)<br>19:49 (7) | 06:33<br>20:46 (19) | 19:26 (6)<br>19:45 (6) | 07:24<br>19:35 | 08:14<br>18:29 | 08:08<br>16:38 | 08:43<br>16:30 |
| 24 | 08:29<br>17:10 | 07:35<br>18:07 | 06:33<br>18:56 | 06:24<br>20:48 (12) | 19:25 (6)<br>19:37 (6) | 05:33<br>21:36 (23) | 19:14 (7)<br>19:37 (7) | 05:47<br>21:40 (27) | 19:22 (7)<br>19:49 (7) | 06:35<br>20:44 (19) | 19:26 (6)<br>19:45 (6) | 07:25<br>19:33 | 08:16<br>18:27 | 08:10<br>16:37 | 08:43<br>16:30 |
| 25 | 08:28<br>17:12 | 07:33<br>18:09 | 06:31<br>18:58 | 06:22<br>20:50 (8) | 19:27 (6)<br>19:35 (6) | 05:32<br>21:37 (22) | 19:15 (7)<br>19:37 (7) | 05:48<br>21:38 (27) | 19:22 (7)<br>19:49 (7) | 06:37<br>20:42 (18) | 19:26 (6)<br>19:44 (6) | 07:27<br>19:31 | 07:18<br>17:25 | 08:12<br>16:36 | 08:43<br>16:31 |
| 26 | 08:26<br>17:14 | 07:31<br>18:11 | 06:28<br>18:59 | 06:20<br>20:52 | | 05:31<br>21:38 (20) | 19:16 (7)<br>19:36 (7) | 05:50<br>21:37 (27) | 19:22 (7)<br>19:49 (7) | 06:38<br>20:39 (18) | 19:26 (6)<br>19:44 (6) | 07:28<br>19:29 | 07:19<br>17:23 | 08:13<br>16:35 | 08:44<br>16:31 |
| 27 | 08:25<br>17:16 | 07:29<br>18:12 | 06:26<br>19:01 | 06:18<br>20:53 | | 05:30<br>21:40 (20) | 19:16 (7)<br>19:36 (7) | 05:51<br>21:36 (28) | 19:21 (7)<br>19:49 (7) | 06:40<br>20:37 (17) | 19:26 (6)<br>19:43 (6) | 07:30<br>19:26 | 07:21<br>17:21 | 08:15<br>16:34 | 08:44<br>16:32 |
| 28 | 08:24<br>17:17 | 07:27<br>18:14 | 06:24<br>19:03 | 06:16<br>20:55 | | 05:29<br>21:41 (18) | 19:17 (7)<br>19:35 (7) | 05:53<br>21:34 (28) | 19:22 (7)<br>19:50 (7) | 06:42<br>20:35 (15) | 19:27 (6)<br>19:42 (6) | 07:32<br>19:24 | 07:23<br>17:19 | 08:16<br>16:33 | 08:44<br>16:33 |
| 29 | 08:22<br>17:19 | | 07:21<br>20:04 | 06:14<br>20:57 | | 05:28<br>21:42 (16) | 19:18 (7)<br>19:34 (7) | 05:54<br>21:33 (28) | 19:21 (7)<br>19:49 (7) | 06:43<br>20:33 (13) | 19:27 (6)<br>19:40 (6) | 07:33<br>19:22 | 07:25<br>17:17 | 08:18<br>16:33 | 08:44<br>16:34 |
| 30 | 08:21<br>17:21 | | 07:19<br>20:06 | 06:12<br>20:58 | | 05:27<br>21:43 (14) | 19:19 (7)<br>19:33 (7) | 05:56<br>21:31 (28) | 19:21 (7)<br>19:49 (7) | 06:45<br>20:31 (9) | 19:29 (6)<br>19:38 (6) | 07:35<br>19:19 | 07:27<br>17:15 | 08:19<br>16:32 | 08:45<br>16:35 |
| 31 | 08:19<br>17:23 | | 07:17<br>20:08 | | | 05:26<br>21:44 (12) | 19:20 (7)<br>19:32 (7) | 05:57<br>21:29 (27) | 19:22 (7)<br>19:49 (7) | 06:46<br>20:28 | | | 07:28<br>17:13 | | 08:45<br>16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 244 |
| Total, worst case | | | | 196 | 639 | 14 | 467 | 385 | | | | |
| Sun reduction | | | | 0.35 | 0.37 | 0.30 | 0.27 | 0.30 | | | | |
| Oper. time red. | | | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | |
| Wind dir. red. | | | | 0.62 | 0.60 | 0.60 | 0.60 | 0.61 | | | | |
| Total reduction | | | | 0.22 | 0.22 | 0.18 | 0.16 | 0.18 | | | | |
| Total, real | | | | 43 | 142 | 3 | 75 | 70 | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** AE - H33

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | | June | | July | | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:15 | 06:10 | | 05:25 | | 20:08 (8) | 05:22 | 20:16 (8) | 05:59 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | 21:00 | | 21:46 | 21 | 20:29 (8) | 21:59 | 17 20:33 (8) | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | 07:12 | 06:08 | | 05:24 | | 20:08 (8) | 05:23 | 20:15 (8) | 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 21:02 | | 21:47 | 21 | 20:29 (8) | 21:59 | 18 20:33 (8) | 21:26 | 20:24 | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | 06:06 | | 05:24 | | 20:08 (8) | 05:24 | 20:16 (8) | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 | 21:03 | | 21:48 | 21 | 20:29 (8) | 21:59 | 18 20:34 (8) | 21:24 | 20:22 | 19:12 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:04 | | 05:23 | | 20:09 (8) | 05:24 | 20:16 (8) | 06:03 | 06:53 | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | | 21:49 | 20 | 20:29 (8) | 21:58 | 18 20:34 (8) | 21:23 | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | 06:03 | | 05:22 | | 20:09 (8) | 05:25 | 20:16 (8) | 06:05 | 06:54 | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | 20:16 | 21:07 | | 21:50 | 20 | 20:29 (8) | 21:58 | 19 20:35 (8) | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | | 05:22 | | 20:10 (8) | 05:26 | 20:15 (8) | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:08 | | 21:51 | 19 | 20:29 (8) | 21:57 | 19 20:34 (8) | 21:19 | 20:15 | 19:06 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | | 05:21 | | 20:10 (8) | 05:27 | 20:15 (8) | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 21:10 | | 21:52 | 19 | 20:29 (8) | 21:57 | 20 20:35 (8) | 21:17 | 20:12 | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 05:57 | | 05:20 | | 20:10 (8) | 05:28 | 20:15 (8) | 06:09 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | 20:21 | 21:12 | | 21:53 | 19 | 20:29 (8) | 21:56 | 21 20:36 (8) | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | 05:56 | | 05:20 | | 20:10 (8) | 05:29 | 20:15 (8) | 06:11 | 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 21:13 | | 21:53 | 18 | 20:28 (8) | 21:55 | 21 20:36 (8) | 21:14 | 20:08 | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | | 05:20 | | 20:11 (8) | 05:30 | 20:15 (8) | 06:13 | 07:02 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | | 21:54 | 18 | 20:29 (8) | 21:55 | 21 20:36 (8) | 21:12 | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | | 05:19 | | 20:12 (8) | 05:31 | 20:15 (8) | 06:14 | 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | 20:26 | 21:16 | | 21:55 | 17 | 20:29 (8) | 21:54 | 22 20:37 (8) | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:40 | 07:59 | 07:00 | 06:50 | 05:50 | | 05:19 | | 20:12 (8) | 05:32 | 20:15 (8) | 06:16 | 07:06 | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | | 21:56 | 17 | 20:29 (8) | 21:53 | 22 20:37 (8) | 21:08 | 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:47 | 05:49 | | 05:19 | | 20:12 (8) | 05:33 | 20:15 (8) | 06:17 | 07:07 | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 21:20 | | 21:56 | 16 | 20:28 (8) | 21:52 | 22 20:37 (8) | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 06:45 | 05:47 | | 05:18 | | 20:13 (8) | 05:34 | 20:15 (8) | 06:19 | 07:09 | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 21:21 | | 21:57 | 15 | 20:28 (8) | 21:51 | 22 20:37 (8) | 21:04 | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | | 05:18 | | 20:13 (8) | 05:35 | 20:15 (8) | 06:21 | 07:11 | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:41 | 20:33 | 21:23 | | 21:57 | 16 | 20:29 (8) | 21:50 | 22 20:37 (8) | 21:02 | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | 05:44 | 20:12 (8) | 05:18 | | 20:14 (8) | 05:37 | 20:15 (8) | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 9 20:21 (8) | 21:58 | 15 | 20:29 (8) | 21:49 | 22 20:37 (8) | 21:00 | 19:52 | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 20:11 (8) | 05:18 | | 20:14 (8) | 05:38 | 20:16 (8) | 06:24 | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:59 | 17:54 | 18:44 | 20:37 | 21:26 | 12 20:23 (8) | 21:58 | 15 | 20:29 (8) | 21:48 | 22 20:38 (8) | 20:58 | 19:49 | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 | 20:10 (8) | 05:18 | | 20:14 (8) | 05:39 | 20:16 (8) | 06:25 | 07:15 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 14 20:24 (8) | 21:59 | 15 | 20:29 (8) | 21:47 | 22 20:38 (8) | 20:56 | 19:47 | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | 06:34 | 05:40 | 20:09 (8) | 05:18 | | 20:15 (8) | 05:40 | 20:16 (8) | 06:27 | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | 21:29 | 17 20:26 (8) | 21:59 | 14 | 20:29 (8) | 21:46 | 22 20:38 (8) | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 05:39 | 20:08 (8) | 05:18 | | 20:15 (8) | 05:42 | 20:16 (8) | 06:29 | 07:19 | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | 21:30 | 18 20:26 (8) | 21:59 | 14 | 20:29 (8) | 21:45 | 21 20:37 (8) | 20:52 | 19:42 | 18:35 | 16:42 | 16:28 |
| 21 | 08:32 | 07:42 | 06:40 | 06:30 | 05:37 | 20:07 (8) | 05:18 | | 20:16 (8) | 05:43 | 20:17 (8) | 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | 21:31 | 19 20:26 (8) | 22:00 | 14 | 20:30 (8) | 21:44 | 20 20:37 (8) | 20:50 | 19:40 | 18:33 | 16:40 | 16:29 |
| 22 | 08:31 | 07:40 | 06:38 | 06:28 | 05:36 | 20:07 (8) | 05:18 | | 20:16 (8) | 05:44 | 20:18 (8) | 06:32 | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | 21:33 | 20 20:27 (8) | 22:00 | 14 | 20:30 (8) | 21:42 | 19 20:37 (8) | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 05:35 | 20:07 (8) | 05:19 | | 20:16 (8) | 05:46 | 20:18 (8) | 06:33 | 07:24 | 08:14 | 08:08 | 08:43 |
| | 17:09 | 18:05 | 18:54 | 20:47 | 21:34 | 21 20:28 (8) | 22:00 | 14 | 20:30 (8) | 21:41 | 19 20:37 (8) | 20:46 | 19:35 | 18:29 | 16:38 | 16:30 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | 05:33 | 20:07 (8) | 05:19 | | 20:15 (8) | 05:47 | 20:18 (8) | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 21:36 | 21 20:28 (8) | 22:00 | 15 | 20:30 (8) | 21:40 | 18 20:36 (8) | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 20:07 (8) | 05:19 | | 20:16 (8) | 05:48 | 20:20 (8) | 06:37 | 07:27 | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 21 20:28 (8) | 22:00 | 15 | 20:31 (8) | 21:38 | 16 20:36 (8) | 20:41 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 06:20 | 05:31 | 20:07 (8) | 05:20 | | 20:16 (8) | 05:50 | 20:21 (8) | 06:38 | 07:28 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | 20:52 | 21:38 | 22 20:29 (8) | 22:00 | 15 | 20:31 (8) | 21:37 | 13 20:34 (8) | 20:39 | 19:28 | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 20:07 (8) | 05:20 | | 20:16 (8) | 05:51 | 20:22 (8) | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:12 | 19:01 | 20:53 | 21:40 | 22 20:29 (8) | 22:00 | 16 | 20:32 (8) | 21:36 | 10 20:32 (8) | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 20:07 (8) | 05:21 | | 20:16 (8) | 05:53 | 20:25 (8) | 06:42 | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22 20:29 (8) | 22:00 | 15 | 20:31 (8) | 21:34 | 6 20:31 (8) | 20:35 | 19:24 | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 06:14 | 05:28 | 20:07 (8) | 05:21 | | 20:16 (8) | 05:54 | | 06:43 | 07:33 | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 20:57 | 21:42 | 22 20:29 (8) | 22:00 | 16 | 20:32 (8) | 21:33 | | 20:33 | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 20:07 (8) | 05:22 | | 20:16 (8) | 05:56 | | 06:45 | 07:35 | 07:26 | 08:19 | 08:44 |
| | 17:21 | | 20:06 | 20:58 | 21:43 | 22 20:29 (8) | 22:00 | 16 | 20:32 (8) | 21:31 | | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | 05:26 | 20:07 (8) | | | | 05:57 | | 06:46 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:44 | 22 20:29 (8) | | | | 21:29 | | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | | 498 | | | 501 | | 453 | 381 | 332 | 267 | 244 |
| Total, worst case | | | | | | 304 | | 500 | | 532 | | | | | | |
| Sun reduction | | | | | | 0.37 | | 0.30 | | 0.27 | | | | | | |
| Oper. time red. | | | | | | 1.00 | | 1.00 | | 1.00 | | | | | | |
| Wind dir. red. | | | | | | 0.57 | | 0.57 | | 0.57 | | | | | | |
| Total reduction | | | | | | 0.21 | | 0.17 | | 0.15 | | | | | | |
| Total, real | | | | | | 64 | | 85 | | 81 | | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
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Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** AF - H34

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:15 | 06:10 | 05:25 | 05:22 | 05:59 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | 07:12 | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:31 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | 06:06 | 05:24 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 | 21:03 | 21:48 | 21:59 | 21:24 | 20:22 | 19:12 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:04 | 05:23 | 05:25 | 06:03 | 06:53 | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | 06:03 | 05:22 | 05:25 | 06:05 | 06:54 | 07:43 | 07:37 | 08:26 |
| | 16:42 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:22 | 05:26 | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 19:06 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 21:10 | 21:52 | 21:57 | 21:17 | 20:13 | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 05:57 | 05:20 | 05:28 | 06:09 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:38 | 18:28 | 20:21 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | 05:56 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 21:13 | 21:53 | 21:55 | 21:14 | 20:08 | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:20 | 05:30 | 06:13 | 07:03 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | 20:26 | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:40 | 07:59 | 07:00 | 06:50 | 05:51 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:48 | 05:49 | 05:19 | 05:33 | 06:17 | 07:07 | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 06:45 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:59 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:35 | 06:21 | 07:11 | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:41 | 20:33 | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | 05:44 | 05:18 | 05:37 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:59 | 17:54 | 18:44 | 20:37 | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 | 05:18 | 05:39 | 06:25 | 07:15 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:28 |
| 19 | 08:35 | 07:46 | 06:44 | 06:35 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 05:39 | 05:18 | 05:42 | 06:29 | 07:19 | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | 21:30 | 21:59 | 21:45 | 20:52 | 19:42 | 18:35 | 16:42 | 16:28 |
| 21 | 08:32 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | 21:31 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:41 | 16:29 |
| 22 | 08:31 | 07:40 | 06:38 | 06:28 | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | 21:33 | 22:00 | 21:42 | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 05:35 | 05:19 | 05:46 | 06:33 | 07:24 | 08:14 | 08:08 | 08:43 |
| | 17:09 | 18:05 | 18:54 | 20:47 | 21:34 | 22:00 | 21:41 | 20:46 | 19:35 | 18:29 | 16:38 | 16:30 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | 05:33 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:38 | 20:41 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 06:20 | 05:31 | 05:20 | 05:50 | 06:38 | 07:28 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:11 | 18:59 | 20:52 | 21:38 | 22:00 | 21:37 | 20:39 | 19:28 | 17:23 | 16:35 | 16:32 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:12 | 19:01 | 20:53 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:21 | 05:53 | 06:42 | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:56 | 06:45 | 07:35 | 07:27 | 08:19 | 08:44 |
| | 17:21 | | 20:06 | 20:58 | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | 05:26 | | 05:57 | 06:46 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:44 | | 21:29 | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 245 |
| Total, worst case | | | | | | | | | | | | |
| Sun reduction | | | | | | | | | | | | |
| Oper. time red. | | | | | | | | | | | | |
| Wind dir. red. | | | | | | | | | | | | |
| Total reduction | | | | | | | | | | | | |
| Total, real | | | | | | | | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
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+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** AG - H35

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:15 | 06:10 | 05:25 | 05:22 | 05:59 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | 07:12 | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:31 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | 06:06 | 05:24 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 | 21:03 | 21:48 | 21:59 | 21:24 | 20:22 | 19:12 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:04 | 05:23 | 05:24 | 06:03 | 06:53 | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | 06:03 | 05:22 | 05:25 | 06:05 | 06:54 | 07:43 | 07:37 | 08:26 |
| | 16:42 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:22 | 05:26 | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 19:06 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 21:10 | 21:52 | 21:57 | 21:17 | 20:13 | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 05:57 | 05:20 | 05:28 | 06:09 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:38 | 18:28 | 20:21 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | 05:56 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 21:13 | 21:53 | 21:55 | 21:14 | 20:08 | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:20 | 05:30 | 06:13 | 07:03 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | 20:26 | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:40 | 07:59 | 07:00 | 06:50 | 05:51 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:48 | 05:49 | 05:19 | 05:33 | 06:17 | 07:07 | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 06:45 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:35 | 06:21 | 07:11 | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:41 | 20:33 | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | 05:44 | 05:18 | 05:37 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:59 | 17:54 | 18:44 | 20:37 | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 | 05:18 | 05:39 | 06:25 | 07:15 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:28 |
| 19 | 08:35 | 07:46 | 06:44 | 06:34 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 05:39 | 05:18 | 05:42 | 06:29 | 07:19 | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | 21:30 | 21:59 | 21:45 | 20:52 | 19:42 | 18:35 | 16:42 | 16:28 |
| 21 | 08:32 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | 21:31 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:40 | 16:29 |
| 22 | 08:31 | 07:40 | 06:38 | 06:28 | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | 21:33 | 22:00 | 21:42 | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 05:35 | 05:19 | 05:46 | 06:33 | 07:24 | 08:14 | 08:08 | 08:43 |
| | 17:09 | 18:05 | 18:54 | 20:47 | 21:34 | 22:00 | 21:41 | 20:46 | 19:35 | 18:29 | 16:38 | 16:30 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | 05:33 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:38 | 20:41 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 06:20 | 05:31 | 05:20 | 05:50 | 06:38 | 07:28 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:11 | 18:59 | 20:52 | 21:38 | 22:00 | 21:37 | 20:39 | 19:28 | 17:23 | 16:35 | 16:32 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:12 | 19:01 | 20:53 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:21 | 05:53 | 06:42 | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:56 | 06:45 | 07:35 | 07:27 | 08:19 | 08:44 |
| | 17:21 | | 20:06 | 20:58 | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | 05:26 | | 05:57 | 06:46 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:44 | | 21:29 | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 245 |
| Total, worst case | | | | | | | | | | | | |
| Sun reduction | | | | | | | | | | | | |
| Oper. time red. | | | | | | | | | | | | |
| Wind dir. red. | | | | | | | | | | | | |
| Total reduction | | | | | | | | | | | | |
| Total, real | | | | | | | | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
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kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** AH - H36

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:15 | 06:10 | 05:25 | 05:22 | 05:59 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | 07:12 | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:31 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | 06:06 | 05:24 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 | 21:03 | 21:48 | 21:59 | 21:24 | 20:22 | 19:12 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:04 | 05:23 | 05:25 | 06:03 | 06:53 | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | 06:03 | 05:22 | 05:25 | 06:05 | 06:54 | 07:43 | 07:37 | 08:26 |
| | 16:42 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:22 | 05:26 | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 19:06 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 21:10 | 21:52 | 21:57 | 21:17 | 20:13 | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 05:57 | 05:20 | 05:28 | 06:09 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:38 | 18:28 | 20:21 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | 05:56 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 21:13 | 21:53 | 21:55 | 21:14 | 20:08 | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:20 | 05:30 | 06:13 | 07:03 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | 20:26 | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:40 | 07:59 | 07:00 | 06:50 | 05:51 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:48 | 05:49 | 05:19 | 05:33 | 06:17 | 07:07 | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 06:45 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:59 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:35 | 06:21 | 07:11 | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:41 | 20:33 | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | 05:44 | 05:18 | 05:37 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:59 | 17:54 | 18:44 | 20:37 | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | 18:41 | 16:46 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 | 05:18 | 05:39 | 06:25 | 07:15 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:28 |
| 19 | 08:35 | 07:46 | 06:44 | 06:35 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 05:39 | 05:18 | 05:42 | 06:29 | 07:19 | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | 21:30 | 21:59 | 21:45 | 20:52 | 19:42 | 18:35 | 16:42 | 16:28 |
| 21 | 08:32 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | 21:31 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:41 | 16:29 |
| 22 | 08:31 | 07:40 | 06:38 | 06:28 | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | 21:33 | 22:00 | 21:42 | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 05:35 | 05:19 | 05:46 | 06:33 | 07:24 | 08:14 | 08:08 | 08:43 |
| | 17:09 | 18:05 | 18:54 | 20:47 | 21:34 | 22:00 | 21:41 | 20:46 | 19:35 | 18:29 | 16:38 | 16:30 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | 05:33 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:38 | 20:41 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 06:20 | 05:31 | 05:20 | 05:50 | 06:38 | 07:28 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:11 | 18:59 | 20:52 | 21:38 | 22:00 | 21:37 | 20:39 | 19:28 | 17:23 | 16:35 | 16:32 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:12 | 19:01 | 20:53 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:21 | 05:53 | 06:42 | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:56 | 06:45 | 07:35 | 07:27 | 08:19 | 08:44 |
| | 17:21 | | 20:06 | 20:58 | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | 05:26 | | 05:57 | 06:46 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:44 | | 21:29 | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 245 |
| Total, worst case | | | | | | | | | | | | |
| Sun reduction | | | | | | | | | | | | |
| Oper. time red. | | | | | | | | | | | | |
| Wind dir. red. | | | | | | | | | | | | |
| Total reduction | | | | | | | | | | | | |
| Total, real | | | | | | | | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
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Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** AI - H37

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:15 | 06:10 | 05:25 | 05:22 | 05:59 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | 07:12 | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:31 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | 06:06 | 05:24 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:20 | 20:13 | 21:03 | 21:48 | 21:59 | 21:25 | 20:22 | 19:12 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:05 | 05:23 | 05:25 | 06:03 | 06:53 | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | 06:03 | 05:22 | 05:25 | 06:05 | 06:55 | 07:43 | 07:37 | 08:26 |
| | 16:42 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:22 | 05:26 | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 19:06 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 21:10 | 21:52 | 21:57 | 21:18 | 20:13 | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 05:57 | 05:21 | 05:28 | 06:09 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:38 | 18:28 | 20:21 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | 05:56 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 21:13 | 21:53 | 21:55 | 21:14 | 20:08 | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:20 | 05:30 | 06:13 | 07:03 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:50 | 17:43 | 18:34 | 20:27 | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | 06:50 | 05:51 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:48 | 05:49 | 05:19 | 05:33 | 06:17 | 07:07 | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 06:45 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:59 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:35 | 06:21 | 07:11 | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:41 | 20:33 | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | 05:44 | 05:18 | 05:37 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:59 | 17:54 | 18:44 | 20:37 | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | 18:41 | 16:46 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 | 05:18 | 05:39 | 06:25 | 07:15 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:28 |
| 19 | 08:35 | 07:46 | 06:44 | 06:35 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 05:39 | 05:18 | 05:42 | 06:29 | 07:19 | 08:09 | 08:03 | 08:41 |
| | 17:04 | 18:00 | 18:49 | 20:42 | 21:30 | 21:59 | 21:45 | 20:52 | 19:42 | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:41 | 16:29 |
| 22 | 08:31 | 07:40 | 06:38 | 06:28 | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | 21:33 | 22:00 | 21:42 | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 05:35 | 05:19 | 05:46 | 06:33 | 07:24 | 08:14 | 08:08 | 08:43 |
| | 17:09 | 18:05 | 18:54 | 20:47 | 21:34 | 22:00 | 21:41 | 20:46 | 19:35 | 18:29 | 16:38 | 16:30 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | 05:33 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:38 | 20:42 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 06:20 | 05:31 | 05:20 | 05:50 | 06:38 | 07:28 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:11 | 18:59 | 20:52 | 21:38 | 22:00 | 21:37 | 20:39 | 19:29 | 17:23 | 16:35 | 16:32 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:12 | 19:01 | 20:53 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:21 | 05:53 | 06:42 | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:34 | 16:33 |
| 29 | 08:22 | | 07:21 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:56 | 06:45 | 07:35 | 07:27 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:58 | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | 05:26 | | 05:57 | 06:46 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:44 | | 21:29 | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 245 |
| Total, worst case | | | | | | | | | | | | |
| Sun reduction | | | | | | | | | | | | |
| Oper. time red. | | | | | | | | | | | | |
| Wind dir. red. | | | | | | | | | | | | |
| Total reduction | | | | | | | | | | | | |
| Total, real | | | | | | | | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

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Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** AJ - H38

## Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:15 | 06:10 | 07:04 (6) | 05:25 | 05:23 | 05:59 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | 21:00 18 | 07:22 (6) | 21:46 | 22:00 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:45 | 08:17 | 07:23 | 07:12 | 06:08 | 07:05 (6) | 05:25 | 05:23 | 06:00 | 06:50 | 07:39 | 07:32 | 08:22 |
| | 16:38 | 17:27 | 18:18 | 20:11 | 21:02 15 | 07:20 (6) | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:10 | 16:31 |
| 3 | 08:45 | 08:15 | 07:21 | 07:10 | 06:07 | 07:06 (6) | 05:24 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:20 | 20:13 | 21:04 12 | 07:18 (6) | 21:48 | 21:59 | 21:25 | 20:22 | 19:13 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:05 | 07:08 (6) | 05:23 | 05:25 | 06:03 | 06:53 | 07:42 | 07:36 | 08:25 |
| | 16:41 | 17:30 | 18:21 | 20:15 | 21:05 7 | 07:15 (6) | 21:49 | 21:59 | 21:23 | 20:20 | 19:10 | 17:06 | 16:30 |
| 5 | 08:44 | 08:12 | 07:16 | 07:06 | 06:03 | | 05:22 | 05:25 | 06:05 | 06:55 | 07:44 | 07:37 | 08:26 |
| | 16:42 | 17:32 | 18:23 | 20:17 | 21:07 | | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | | 05:22 | 05:26 | 06:07 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:09 | | 21:51 | 21:58 | 21:19 | 20:15 | 19:06 | 17:03 | 16:29 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 21:10 | | 21:52 | 21:57 | 21:18 | 20:13 | 19:04 | 17:01 | 16:28 |
| 8 | 08:43 | 08:07 | 07:10 | 06:59 | 05:57 | | 05:21 | 05:28 | 06:10 | 07:00 | 07:49 | 07:43 | 08:30 |
| | 16:46 | 17:38 | 18:29 | 20:22 | 21:12 | | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:57 | 05:56 | | 05:20 | 05:29 | 06:11 | 07:17 (6) | 07:01 | 07:50 | 07:45 | 08:31 |
| | 16:47 | 17:40 | 18:30 | 20:23 | 21:13 | | 21:54 | 21:56 | 21:14 9 | 07:26 (6) | 20:08 | 18:59 | 16:58 | 16:28 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | | 05:20 | 05:30 | 06:13 | 07:15 (6) | 07:03 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | | 21:54 | 21:55 | 21:12 13 | 07:28 (6) | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | | 05:19 | 05:31 | 06:14 | 07:13 (6) | 07:04 | 07:54 | 07:48 | 08:34 |
| | 16:50 | 17:43 | 18:34 | 20:27 | 21:17 | | 21:55 | 21:54 | 21:10 16 | 07:29 (6) | 20:04 | 18:55 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:01 | 06:50 | 05:51 | | 05:19 | 05:32 | 06:16 | 07:12 (6) | 07:06 | 07:55 | 07:50 | 08:35 |
| | 16:51 | 17:45 | 18:36 | 20:28 | 21:18 | | 21:56 | 21:53 | 21:08 19 | 07:31 (6) | 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:58 | 06:58 | 06:48 | 05:49 | | 05:19 | 05:33 | 06:18 | 07:11 (6) | 07:08 | 07:57 | 07:52 | 08:36 |
| | 16:53 | 17:47 | 18:37 | 20:30 | 21:20 | | 21:56 | 21:52 | 21:06 20 | 07:31 (6) | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:56 | 06:56 | 06:46 | 05:48 | | 05:19 | 05:34 | 06:19 | 07:10 (6) | 07:09 | 07:59 | 07:53 | 08:37 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 21:21 | | 21:57 | 21:52 | 21:04 22 | 07:32 (6) | 19:57 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | | 05:18 | 05:36 | 06:21 | 07:09 (6) | 07:11 | 08:00 | 07:55 | 08:37 |
| | 16:56 | 17:51 | 18:41 | 20:33 | 21:23 | | 21:58 | 21:51 | 21:02 23 | 07:32 (6) | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 08:38 | 07:52 | 06:52 | 06:41 | 05:44 | | 05:18 | 05:37 | 06:22 | 07:09 (6) | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:53 | 18:42 | 20:35 | 21:24 | | 21:58 | 21:50 | 21:00 23 | 07:32 (6) | 19:52 | 18:44 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | | 05:18 | 05:38 | 06:24 | 07:08 (6) | 07:14 | 08:04 | 07:59 | 08:39 |
| | 16:59 | 17:54 | 18:44 | 20:37 | 21:26 | | 21:59 | 21:49 | 20:58 24 | 07:32 (6) | 19:50 | 18:41 | 16:46 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 07:10 (6) | 05:42 | | 05:18 | 05:39 | 06:26 | 07:09 (6) | 07:16 | 08:06 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:39 10 07:20 (6) | 21:27 | | 21:59 | 21:47 | 20:56 23 | 07:32 (6) | 19:47 | 18:39 | 16:44 | 16:28 |
| 19 | 08:35 | 07:46 | 06:45 | 06:35 07:08 (6) | 05:40 | | 05:18 | 05:40 | 06:27 | 07:08 (6) | 07:17 | 08:07 | 08:02 | 08:41 |
| | 17:02 | 17:58 | 18:48 | 20:40 14 07:22 (6) | 21:29 | | 21:59 | 21:46 | 20:54 23 | 07:31 (6) | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:33 07:06 (6) | 05:39 | | 05:18 | 05:42 | 06:29 | 07:09 (6) | 07:19 | 08:09 | 08:04 | 08:41 |
| | 17:04 | 18:00 | 18:49 | 20:42 18 07:24 (6) | 21:30 | | 22:00 | 21:45 | 20:52 22 | 07:31 (6) | 19:43 | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 07:05 (6) | 05:37 | | 05:18 | 05:43 | 06:30 | 07:09 (6) | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:02 | 18:51 | 20:44 19 07:24 (6) | 21:32 | | 22:00 | 21:44 | 20:50 20 | 07:29 (6) | 19:40 | 18:33 | 16:41 | 16:29 |
| 22 | 08:32 | 07:40 | 06:38 | 06:28 07:04 (6) | 05:36 | | 05:19 | 05:44 | 06:32 | 07:10 (6) | 07:22 | 08:13 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 21 07:25 (6) | 21:33 | | 22:00 | 21:43 | 20:48 19 | 07:29 (6) | 19:38 | 18:31 | 16:40 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 07:03 (6) | 05:35 | | 05:19 | 05:46 | 06:34 | 07:10 (6) | 07:24 | 08:14 | 08:09 | 08:43 |
| | 17:09 | 18:05 | 18:54 | 20:47 22 07:25 (6) | 21:35 | | 22:00 | 21:41 | 20:46 17 | 07:27 (6) | 19:36 | 18:29 | 16:38 | 16:30 |
| 24 | 08:29 | 07:36 | 06:33 | 06:24 07:03 (6) | 05:34 | | 05:19 | 05:47 | 06:35 | 07:12 (6) | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:11 | 18:07 | 18:56 | 20:49 22 07:25 (6) | 21:36 | | 22:00 | 21:40 | 20:44 14 | 07:26 (6) | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:34 | 06:31 | 06:22 07:02 (6) | 05:32 | | 05:19 | 05:49 | 06:37 | 07:13 (6) | 07:27 | 07:18 | 08:12 | 08:44 |
| | 17:12 | 18:09 | 18:58 | 20:50 23 07:25 (6) | 21:37 | | 22:00 | 21:39 | 20:42 10 | 07:23 (6) | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:27 | 07:31 | 06:29 | 06:20 07:02 (6) | 05:31 | | 05:20 | 05:50 | 06:39 | | 07:29 | 07:20 | 08:13 | 08:44 |
| | 17:14 | 18:11 | 19:00 | 20:52 23 07:25 (6) | 21:39 | | 22:00 | 21:37 | 20:40 | | 19:29 | 17:23 | 16:35 | 16:32 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 07:02 (6) | 05:30 | | 05:20 | 05:51 | 06:40 | | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:13 | 19:01 | 20:54 22 07:24 (6) | 21:40 | | 22:00 | 21:36 | 20:37 | | 19:26 | 17:21 | 16:35 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 07:02 (6) | 05:29 | | 05:21 | 05:53 | 06:42 | | 07:32 | 07:23 | 08:17 | 08:44 |
| | 17:18 | 18:14 | 19:03 | 20:55 22 07:24 (6) | 21:41 | | 22:00 | 21:34 | 20:35 | | 19:24 | 17:19 | 16:34 | 16:33 |
| 29 | 08:23 | | 07:22 | 06:14 07:02 (6) | 05:28 | | 05:21 | 05:54 | 06:43 | | 07:34 | 07:25 | 08:18 | 08:45 |
| | 17:19 | | 20:05 | 20:57 21 07:23 (6) | 21:42 | | 22:00 | 21:33 | 20:33 | | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 07:02 (6) | 05:27 | | 05:22 | 05:56 | 06:45 | | 07:35 | 07:27 | 08:20 | 08:45 |
| | 17:21 | | 20:06 | 20:59 20 07:22 (6) | 21:44 | | 22:00 | 21:31 | 20:31 | | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:20 | | 07:17 | | 05:26 | | | 05:57 | 06:47 | | | 07:29 | | 08:45 |
| | 17:23 | | 20:08 | | 21:45 | | | 21:30 | 20:29 | | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 244 |
| Total, worst case | | | | 257 | 52 | | | 317 | | | | |
| Sun reduction | | | | 0.35 | 0.37 | | | 0.30 | | | | |
| Oper. time red. | | | | 1.00 | 1.00 | | | 1.00 | | | | |
| Wind dir. red. | | | | 0.68 | 0.68 | | | 0.68 | | | | |
| Total reduction | | | | 0.24 | 0.25 | | | 0.20 | | | | |
| Total, real | | | | 62 | 13 | | | 64 | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

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Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** AK - H39

## Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45<br>16:37 | 08:18<br>17:25 | 07:25<br>18:16 | 07:15<br>20:10 | 06:10<br>21:00 28 | 06:51 (6)<br>07:19 (6)<br>21:46 8 | 05:25<br>06:09 (3)<br>05:23 | 06:09 (3)<br>06:28 (3)<br>21:28 19 | 05:59<br>07:01 (6)<br>25 | 06:48<br>07:26 (6)<br>20:26 | 07:37<br>19:17 | 07:30<br>17:11 | 08:21<br>16:31 |
| 2 | 08:45<br>16:38 | 08:17<br>17:27 | 07:23<br>18:18 | 07:12<br>20:11 | 06:08<br>21:02 29 | 06:50 (6)<br>07:19 (6)<br>21:47 10 | 05:25<br>06:08 (3)<br>05:23 | 06:10 (3)<br>06:28 (3)<br>21:26 18 | 06:00<br>07:01 (6)<br>26 | 06:50<br>07:27 (6)<br>20:24 | 07:39<br>19:15 | 07:32<br>17:10 | 08:22<br>16:31 |
| 3 | 08:45<br>16:39 | 08:15<br>17:28 | 07:21<br>18:20 | 07:10<br>20:13 | 06:07<br>21:04 30 | 06:49 (6)<br>07:19 (6)<br>21:48 12 | 05:24<br>06:08 (3)<br>05:24 | 06:10 (3)<br>06:28 (3)<br>21:59 18 | 06:02<br>07:00 (6)<br>27 | 06:51<br>07:27 (6)<br>20:22 | 07:40<br>19:13 | 07:34<br>17:08 | 08:24<br>16:30 |
| 4 | 08:44<br>16:41 | 08:13<br>17:30 | 07:18<br>18:21 | 07:08<br>20:15 | 06:05<br>21:05 29 | 06:49 (6)<br>07:18 (6)<br>21:49 13 | 05:23<br>06:07 (3)<br>05:25<br>06:20 (3)<br>21:59 17 | 06:11 (3)<br>06:28 (3)<br>21:23 28 | 06:03<br>07:00 (6)<br>07:28 (6) | 06:53<br>20:20 | 07:42<br>19:10 | 07:36<br>17:06 | 08:25<br>16:30 |
| 5 | 08:44<br>16:42 | 08:12<br>17:32 | 07:16<br>18:23 | 07:06<br>20:17 | 06:03<br>21:07 29 | 06:50 (6)<br>07:19 (6)<br>21:50 14 | 05:22<br>06:06 (3)<br>05:25<br>06:20 (3)<br>21:58 17 | 06:11 (3)<br>06:28 (3)<br>21:21 29 | 06:05<br>06:59 (6)<br>07:28 (6) | 06:55<br>20:17 | 07:43<br>19:08 | 07:37<br>17:04 | 08:26<br>16:29 |
| 6 | 08:44<br>16:43 | 08:10<br>17:34 | 07:14<br>18:25 | 07:03<br>20:18 | 06:01<br>21:09 29 | 06:49 (6)<br>07:18 (6)<br>21:51 16 | 05:22<br>06:06 (3)<br>05:26<br>06:22 (3)<br>21:58 16 | 06:12 (3)<br>06:28 (3)<br>21:19 29 | 06:06<br>06:59 (6)<br>07:28 (6) | 06:56<br>20:15 | 07:45<br>19:06 | 07:39<br>17:02 | 08:28<br>16:29 |
| 7 | 08:43<br>16:44 | 08:08<br>17:36 | 07:12<br>18:27 | 07:01<br>20:20 | 05:59<br>21:10 29 | 06:49 (6)<br>07:18 (6)<br>21:52 17 | 05:21<br>06:05 (3)<br>05:27<br>06:22 (3)<br>21:57 15 | 06:13 (3)<br>06:28 (3)<br>21:18 29 | 06:08<br>06:59 (6)<br>07:28 (6) | 06:58<br>20:13 | 07:47<br>19:03 | 07:41<br>17:01 | 08:29<br>16:28 |
| 8 | 08:43<br>16:45 | 08:07<br>17:38 | 07:10<br>18:29 | 06:59<br>20:22 | 05:57<br>21:12 28 | 06:50 (6)<br>07:18 (6)<br>21:53 18 | 05:21<br>06:05 (3)<br>05:28<br>06:23 (3)<br>21:56 14 | 06:13 (3)<br>06:27 (3)<br>21:16 29 | 06:10<br>06:59 (6)<br>07:28 (6) | 06:59<br>20:10 | 07:49<br>19:01 | 07:43<br>16:59 | 08:30<br>16:28 |
| 9 | 08:42<br>16:47 | 08:05<br>17:40 | 07:07<br>18:30 | 06:57<br>20:23 | 05:56<br>21:13 27 | 06:50 (6)<br>07:17 (6)<br>21:54 17 | 05:20<br>06:06 (3)<br>05:29<br>06:23 (3)<br>21:56 12 | 06:14 (3)<br>06:26 (3)<br>21:14 29 | 06:11<br>06:59 (6)<br>07:28 (6) | 07:01<br>20:08 | 07:50<br>18:59 | 07:45<br>16:57 | 08:31<br>16:28 |
| 10 | 08:42<br>16:48 | 08:03<br>17:41 | 07:05<br>18:32 | 06:54<br>20:25 | 05:54<br>21:15 26 | 06:50 (6)<br>07:16 (6)<br>21:54 18 | 05:20<br>06:05 (3)<br>05:30<br>06:23 (3)<br>21:55 11 | 06:15 (3)<br>06:26 (3)<br>21:12 29 | 06:13<br>06:59 (6)<br>07:28 (6) | 07:03<br>20:06 | 07:52<br>18:57 | 07:46<br>16:56 | 08:32<br>16:27 |
| 11 | 08:41<br>16:50 | 08:01<br>17:43 | 07:03<br>18:34 | 06:52<br>20:27 | 05:52<br>21:17 25 | 06:51 (6)<br>07:16 (6)<br>21:55 19 | 05:19<br>06:05 (3)<br>05:31<br>06:24 (3)<br>21:54 9 | 06:16 (3)<br>06:25 (3)<br>21:10 28 | 06:14<br>06:59 (6)<br>07:27 (6) | 07:04<br>20:04 | 07:54<br>18:55 | 07:48<br>16:54 | 08:34<br>16:27 |
| 12 | 08:41<br>16:51 | 07:59<br>17:45 | 07:01<br>18:36 | 06:50<br>20:28 | 05:51<br>21:18 24 | 06:51 (6)<br>07:15 (6)<br>21:56 19 | 05:19<br>06:05 (3)<br>05:32<br>06:24 (3)<br>21:53 5 | 06:18 (3)<br>06:23 (3)<br>21:08 28 | 06:16<br>06:59 (6)<br>07:27 (6) | 07:06<br>20:01 | 07:55<br>18:52 | 07:50<br>16:53 | 08:35<br>16:27 |
| 13 | 08:40<br>16:53 | 07:58<br>17:47 | 06:58<br>18:37 | 06:48<br>20:30 | 05:49<br>21:20 22 | 06:52 (6)<br>07:14 (6)<br>21:56 19 | 05:19<br>06:06 (3)<br>05:33<br>06:25 (3)<br>21:52 | 06:18<br>21:06 28 | 06:59 (6)<br>07:27 (7) | 07:08<br>19:59 | 07:57<br>18:50 | 07:52<br>16:51 | 08:36<br>16:27 |
| 14 | 08:39<br>16:54 | 07:56<br>17:49 | 06:56<br>18:39 | 06:46<br>20:32 | 05:48<br>21:21 20 | 06:53 (6)<br>07:13 (6)<br>21:57 20 | 05:19<br>06:05 (3)<br>05:34<br>06:25 (3)<br>21:52 | 06:19<br>21:04 30 | 07:00 (6)<br>07:30 (7) | 07:09<br>19:57 | 07:59<br>18:48 | 07:53<br>16:50 | 08:37<br>16:27 |
| 15 | 08:38<br>16:56 | 07:54<br>17:51 | 06:54<br>18:41 | 06:43<br>20:33 | 05:46<br>21:23 18 | 06:54 (6)<br>07:12 (6)<br>21:58 20 | 05:18<br>06:05 (3)<br>05:36<br>06:25 (3)<br>21:51 | 06:21<br>21:02 31 | 07:00 (6)<br>07:31 (7) | 07:11<br>19:54 | 08:00<br>18:46 | 07:55<br>16:48 | 08:37<br>16:27 |
| 16 | 08:38<br>16:57 | 07:52<br>17:52 | 06:52<br>18:42 | 06:41<br>20:35 | 05:44<br>21:24 15 | 06:56 (6)<br>07:11 (6)<br>21:58 20 | 05:18<br>06:05 (3)<br>05:37<br>06:25 (3)<br>21:50 | 06:22<br>21:00 30 | 07:02 (6)<br>07:32 (7) | 07:12<br>19:52 | 08:02<br>18:44 | 07:57<br>16:47 | 08:38<br>16:27 |
| 17 | 08:37<br>16:59 | 07:50<br>17:54 | 06:49<br>18:44 | 06:39<br>20:37 10 | 07:13 (7)<br>05:43<br>07:23 (7)<br>21:26 11 | 06:57 (6)<br>07:08 (6)<br>21:59 21 | 05:18<br>06:05 (3)<br>05:38<br>06:26 (3)<br>21:49 | 06:24<br>20:58 30 | 07:02 (6)<br>07:32 (7) | 07:14<br>19:50 | 08:04<br>18:41 | 07:59<br>16:46 | 08:39<br>16:27 |
| 18 | 08:36<br>17:00 | 07:48<br>17:56 | 06:47<br>18:46 | 06:37<br>20:39 14 | 07:11 (7)<br>05:42<br>07:25 (7)<br>21:27 4 | 07:01 (6)<br>07:05 (6)<br>21:59 20 | 05:18<br>06:06 (3)<br>05:39<br>06:26 (3)<br>21:47 | 06:26<br>20:56 29 | 07:04 (6)<br>07:33 (7) | 07:16<br>19:47 | 08:06<br>18:39 | 08:00<br>16:44 | 08:40<br>16:28 |
| 19 | 08:35<br>17:02 | 07:46<br>17:58 | 06:45<br>18:48 | 06:35<br>20:40 16 | 07:10 (7)<br>05:40<br>07:26 (7)<br>21:29 | 05:18<br>21:59 20 | 06:06 (3)<br>05:40<br>06:26 (3)<br>21:46 | 06:27<br>20:54 26 | 07:06 (6)<br>07:32 (7) | 07:17<br>19:45 | 08:07<br>18:37 | 08:02<br>16:43 | 08:41<br>16:28 |
| 20 | 08:34<br>17:04 | 07:44<br>18:00 | 06:42<br>18:49 | 06:33<br>20:42 17 | 07:09 (7)<br>05:39<br>07:26 (7)<br>21:30 | 05:18<br>22:00 20 | 06:07 (3)<br>05:42<br>06:27 (3)<br>21:45 | 06:29<br>20:52 19 | 07:13 (7)<br>07:32 (7) | 07:19<br>19:43 | 08:09<br>18:35 | 08:04<br>16:42 | 08:41<br>16:28 |
| 21 | 08:33<br>17:05 | 07:42<br>18:02 | 06:40<br>18:51 | 06:30<br>20:44 19 | 07:08 (7)<br>05:37<br>07:27 (7)<br>21:32 | 05:18<br>22:00 20 | 06:07 (3)<br>05:43<br>06:27 (3)<br>21:44 | 06:30<br>20:50 20 | 07:12 (7)<br>07:32 (7) | 07:20<br>19:40 | 08:11<br>18:33 | 08:05<br>16:41 | 08:42<br>16:29 |
| 22 | 08:32<br>17:07 | 07:40<br>18:03 | 06:38<br>18:53 | 06:28<br>20:45 19 | 07:08 (7)<br>05:36<br>07:27 (7)<br>21:33 | 05:19<br>22:00 20 | 06:07 (3)<br>05:44<br>06:27 (3)<br>21:43 | 06:32<br>20:48 18 | 07:13 (7)<br>07:31 (7) | 07:22<br>19:38 | 08:13<br>18:31 | 08:07<br>16:40 | 08:42<br>16:29 |
| 23 | 08:30<br>17:09 | 07:38<br>18:05 | 06:35<br>18:54 | 06:26<br>20:47 20 | 07:07 (7)<br>05:35<br>07:27 (7)<br>21:34 | 05:19<br>22:00 20 | 06:07 (3)<br>05:46<br>06:27 (3)<br>21:41 | 06:34<br>20:46 17 | 07:13 (7)<br>07:30 (7) | 07:24<br>19:36 | 08:14<br>18:29 | 08:09<br>16:38 | 08:43<br>16:30 |
| 24 | 08:29<br>17:10 | 07:36<br>18:07 | 06:33<br>18:56 | 06:24<br>20:49 26 | 07:00 (6)<br>05:34<br>07:26 (7)<br>21:36 | 05:19<br>22:00 20 | 06:08 (3)<br>05:47<br>06:28 (3)<br>21:40 | 06:35<br>20:44 15 | 07:14 (7)<br>07:29 (7) | 07:25<br>19:33 | 08:16<br>18:27 | 08:10<br>16:37 | 08:43<br>16:30 |
| 25 | 08:28<br>17:12 | 07:34<br>18:09 | 06:31<br>18:58 | 06:22<br>20:50 29 | 06:57 (6)<br>05:32<br>07:26 (7)<br>21:37 | 05:19<br>22:00 21 | 06:07 (3)<br>05:49<br>06:28 (3)<br>21:39 | 06:37<br>20:42 13 | 07:14 (7)<br>07:27 (7) | 07:27<br>19:31 | 07:18<br>17:25 | 08:12<br>16:36 | 08:44<br>16:31 |
| 26 | 08:27<br>17:14 | 07:31<br>18:11 | 06:29<br>19:00 | 06:20<br>20:52 30 | 06:55 (6)<br>05:31<br>07:25 (7)<br>21:39 | 05:20<br>22:00 20 | 06:07 (3)<br>05:50<br>06:27 (3)<br>21:37 8 | 07:10 (6)<br>06:38<br>07:18 (6)<br>20:40 9 | 07:17 (7)<br>07:26 (7) | 07:29<br>19:29 | 07:20<br>17:23 | 08:13<br>16:35 | 08:44<br>16:32 |
| 27 | 08:25<br>17:16 | 07:29<br>18:13 | 06:26<br>19:01 | 06:18<br>20:54 30 | 06:54 (6)<br>05:30<br>07:24 (7)<br>21:40 | 05:20<br>22:00 20 | 06:08 (3)<br>05:51<br>06:28 (3)<br>21:36 13 | 07:07 (6)<br>06:40<br>07:20 (6)<br>20:37 | 07:30<br>19:26 | 07:21<br>17:21 | 08:15<br>16:35 | 08:44<br>16:32 |
| 28 | 08:24<br>17:18 | 07:27<br>18:14 | 06:24<br>19:03 | 06:16<br>20:55 31 | 06:52 (6)<br>05:29<br>07:23 (7)<br>21:41 | 05:21<br>22:00 20 | 06:08 (3)<br>05:53<br>06:28 (3)<br>21:34 16 | 07:06 (6)<br>06:42<br>07:22 (6)<br>20:35 | 07:32<br>19:24 | 07:23<br>17:19 | 08:17<br>16:34 | 08:44<br>16:33 |
| 29 | 08:23<br>17:19 | | 07:22<br>20:05 | 06:14<br>20:57 30 | 06:51 (6)<br>05:28<br>07:21 (7)<br>21:42 | 05:21<br>22:00 19 | 06:09 (3)<br>05:54<br>06:28 (3)<br>21:33 19 | 07:04 (6)<br>06:43<br>07:23 (6)<br>20:33 | 07:34<br>19:22 | 07:25<br>17:17 | 08:18<br>16:33 | 08:45<br>16:34 |
| 30 | 08:21<br>17:21 | | 07:19<br>20:06 | 06:12<br>20:59 28 | 06:50 (6)<br>05:27<br>07:18 (7)<br>21:43 | 05:22<br>22:00 19 | 06:09 (3)<br>05:56<br>06:28 (3)<br>21:31 21 | 07:04 (6)<br>06:45<br>07:25 (6)<br>20:31 | 07:35<br>19:19 | 07:27<br>17:15 | 08:20<br>16:32 | 08:45<br>16:35 |
| 31 | 08:20<br>17:23 | | 07:17<br>20:08 | | 05:26<br>06:12 (3)<br>21:45 2<br>06:14 (3) | | 05:57<br>21:30 23 | 07:02 (6)<br>06:47<br>07:25 (6)<br>20:29 | | 07:29<br>17:13 | | 08:45<br>16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 244 |
| Total, worst case | | | | 319 | 425 | 540 | 271 | 651 | | | | |
| Sun reduction | | | | 0.35 | 0.37 | 0.30 | 0.27 | 0.30 | | | | |
| Oper. time red. | | | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | |
| Wind dir. red. | | | | 0.68 | 0.68 | 0.69 | 0.69 | 0.68 | | | | |
| Total reduction | | | | 0.24 | 0.25 | 0.21 | 0.18 | 0.20 | | | | |
| Total, real | | | | 77 | 108 | 113 | 50 | 132 | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

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Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** AL - H40

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | | June | | July | | August | | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:15 | 06:10 | | 05:25 | 06:32 (6) | 05:23 | | 05:59 | 06:34 (6) | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | 21:00 | | 21:46 | 3 06:35 (6) | 22:00 | | 21:28 | 16 06:50 (6) | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:45 | 08:17 | 07:23 | 07:12 | 06:08 | | 05:25 | | 05:23 | | 06:00 | 06:36 (6) | 06:50 | 07:39 | 07:32 | 08:22 |
| | 16:38 | 17:27 | 18:18 | 20:11 | 21:02 | | 21:47 | | 21:59 | | 21:26 | 14 06:50 (6) | 20:24 | 19:15 | 17:10 | 16:31 |
| 3 | 08:45 | 08:15 | 07:21 | 07:10 | 06:07 | | 05:24 | | 05:24 | | 06:02 | 06:37 (6) | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:20 | 20:13 | 21:04 | | 21:48 | | 21:59 | | 21:25 | 11 06:48 (6) | 20:22 | 19:13 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:05 | | 05:23 | | 05:25 | | 06:03 | 06:40 (6) | 06:53 | 07:42 | 07:36 | 08:25 |
| | 16:41 | 17:30 | 18:21 | 20:15 | 21:05 | | 21:49 | | 21:59 | | 21:23 | 6 06:46 (6) | 20:20 | 19:10 | 17:06 | 16:30 |
| 5 | 08:44 | 08:12 | 07:16 | 07:06 | 06:03 | | 05:22 | | 05:26 | | 06:05 | | 06:55 | 07:44 | 07:37 | 08:26 |
| | 16:42 | 17:32 | 18:23 | 20:17 | 21:07 | | 21:50 | | 21:58 | | 21:21 | | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | | 05:22 | | 05:26 | | 06:07 | | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:09 | | 21:51 | | 21:58 | | 21:19 | | 20:15 | 19:06 | 17:03 | 16:29 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | | 05:21 | | 05:27 | | 06:08 | | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 21:10 | | 21:52 | | 21:57 | | 21:18 | | 20:13 | 19:04 | 17:01 | 16:28 |
| 8 | 08:43 | 08:07 | 07:10 | 06:59 | 05:58 | | 05:21 | | 05:28 | | 06:10 | | 07:00 | 07:49 | 07:43 | 08:30 |
| | 16:46 | 17:38 | 18:29 | 20:22 | 21:12 | | 21:53 | | 21:56 | | 21:16 | | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:57 | 05:56 | 06:28 (6) | 05:20 | | 05:29 | | 06:11 | | 07:01 | 07:50 | 07:45 | 08:31 |
| | 16:47 | 17:40 | 18:30 | 20:23 | 21:13 | 8 06:36 (6) | 21:54 | | 21:56 | | 21:14 | | 20:08 | 18:59 | 16:58 | 16:28 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 06:26 (6) | 05:20 | | 05:30 | | 06:13 | | 07:03 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 12 06:38 (6) | 21:54 | | 21:55 | | 21:12 | | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 06:25 (6) | 05:19 | | 05:31 | | 06:14 | | 07:04 | 07:54 | 07:48 | 08:34 |
| | 16:50 | 17:43 | 18:34 | 20:27 | 21:17 | 15 06:40 (6) | 21:55 | | 21:54 | | 21:10 | | 20:04 | 18:55 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:01 | 06:50 | 05:51 | 06:24 (6) | 05:19 | | 05:32 | 06:38 (6) | 06:16 | | 07:06 | 07:55 | 07:50 | 08:35 |
| | 16:51 | 17:45 | 18:36 | 20:28 | 21:18 | 16 06:40 (6) | 21:56 | | 21:53 | 6 06:44 (6) | 21:08 | | 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:58 | 06:58 | 06:48 | 05:49 | 06:23 (6) | 05:19 | | 05:33 | 06:37 (6) | 06:18 | | 07:08 | 07:57 | 07:52 | 08:36 |
| | 16:53 | 17:47 | 18:37 | 20:30 | 21:20 | 18 06:41 (6) | 21:56 | | 21:52 | 9 06:46 (6) | 21:06 | | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:56 | 06:56 | 06:46 | 05:48 | 06:22 (6) | 05:19 | | 05:34 | 06:36 (6) | 06:19 | | 07:09 | 07:59 | 07:53 | 08:37 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 21:21 | 19 06:41 (6) | 21:57 | | 21:52 | 11 06:47 (6) | 21:04 | | 19:57 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | 06:22 (6) | 05:18 | | 05:36 | 06:36 (6) | 06:21 | | 07:11 | 08:00 | 07:55 | 08:37 |
| | 16:56 | 17:51 | 18:41 | 20:33 | 21:23 | 20 06:42 (6) | 21:58 | | 21:51 | 13 06:49 (6) | 21:02 | | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 08:38 | 07:52 | 06:52 | 06:41 | 05:44 | 06:22 (6) | 05:18 | | 05:37 | 06:35 (6) | 06:22 | | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:53 | 18:42 | 20:35 | 21:24 | 21 06:43 (6) | 21:58 | | 21:50 | 15 06:50 (6) | 21:00 | | 19:52 | 18:44 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 06:21 (6) | 05:18 | | 05:38 | 06:34 (6) | 06:24 | | 07:14 | 08:04 | 07:59 | 08:39 |
| | 16:59 | 17:54 | 18:44 | 20:37 | 21:26 | 21 06:42 (6) | 21:59 | | 21:49 | 16 06:50 (6) | 20:58 | | 19:50 | 18:41 | 16:46 | 16:28 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:42 | 06:22 (6) | 05:18 | | 05:39 | 06:34 (6) | 06:26 | | 07:16 | 08:06 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:39 | 21:27 | 21 06:43 (6) | 21:59 | | 21:47 | 17 06:51 (6) | 20:56 | | 19:47 | 18:39 | 16:44 | 16:28 |
| 19 | 08:35 | 07:46 | 06:45 | 06:35 | 05:40 | 06:22 (6) | 05:18 | | 05:40 | 06:33 (6) | 06:27 | | 07:17 | 08:07 | 08:02 | 08:41 |
| | 17:02 | 17:58 | 18:48 | 20:40 | 21:29 | 21 06:43 (6) | 21:59 | | 21:46 | 18 06:51 (6) | 20:54 | | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:33 | 05:39 | 06:22 (6) | 05:18 | | 05:42 | 06:33 (6) | 06:29 | | 07:19 | 08:09 | 08:04 | 08:41 |
| | 17:04 | 18:00 | 18:49 | 20:42 | 21:30 | 21 06:43 (6) | 22:00 | | 21:45 | 18 06:51 (6) | 20:52 | | 19:43 | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | 05:37 | 06:22 (6) | 05:18 | | 05:43 | 06:33 (6) | 06:30 | | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:02 | 18:51 | 20:44 | 21:32 | 20 06:42 (6) | 22:00 | | 21:44 | 20 06:53 (6) | 20:50 | | 19:40 | 18:33 | 16:41 | 16:29 |
| 22 | 08:32 | 07:40 | 06:38 | 06:28 | 05:36 | 06:22 (6) | 05:19 | | 05:44 | 06:33 (6) | 06:32 | | 07:22 | 08:13 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | 21:33 | 20 06:42 (6) | 22:00 | | 21:43 | 20 06:53 (6) | 20:48 | | 19:38 | 18:31 | 16:40 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 05:35 | 06:23 (6) | 05:19 | | 05:46 | 06:32 (6) | 06:34 | | 07:24 | 08:14 | 08:09 | 08:43 |
| | 17:09 | 18:05 | 18:54 | 20:47 | 21:35 | 19 06:42 (6) | 22:00 | | 21:41 | 21 06:53 (6) | 20:46 | | 19:36 | 18:29 | 16:38 | 16:30 |
| 24 | 08:29 | 07:36 | 06:33 | 06:24 | 05:34 | 06:23 (6) | 05:19 | | 05:47 | 06:32 (6) | 06:35 | | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:11 | 18:07 | 18:56 | 20:49 | 21:36 | 19 06:42 (6) | 22:00 | | 21:40 | 21 06:53 (6) | 20:44 | | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:34 | 06:31 | 06:22 | 05:32 | 06:24 (6) | 05:20 | | 05:49 | 06:32 (6) | 06:37 | | 07:27 | 07:18 | 08:12 | 08:44 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 17 06:41 (6) | 22:00 | | 21:39 | 21 06:53 (6) | 20:42 | | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:27 | 07:31 | 06:29 | 06:20 | 05:31 | 06:25 (6) | 05:20 | | 05:50 | 06:32 (6) | 06:39 | | 07:29 | 07:20 | 08:13 | 08:44 |
| | 17:14 | 18:11 | 19:00 | 20:52 | 21:39 | 16 06:41 (6) | 22:00 | | 21:37 | 21 06:53 (6) | 20:40 | | 19:29 | 17:23 | 16:35 | 16:32 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 06:25 (6) | 05:20 | | 05:51 | 06:32 (6) | 06:40 | | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:13 | 19:01 | 20:54 | 21:40 | 15 06:40 (6) | 22:00 | | 21:36 | 21 06:53 (6) | 20:37 | | 19:26 | 17:21 | 16:35 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 06:26 (6) | 05:21 | | 05:53 | 06:33 (6) | 06:42 | | 07:32 | 07:23 | 08:17 | 08:44 |
| | 17:18 | 18:14 | 19:03 | 20:55 | 21:41 | 14 06:40 (6) | 22:00 | | 21:34 | 20 06:53 (6) | 20:35 | | 19:24 | 17:19 | 16:34 | 16:33 |
| 29 | 08:23 | | 07:22 | 06:14 | 05:28 | 06:27 (6) | 05:21 | | 05:54 | 06:33 (6) | 06:43 | | 07:34 | 07:25 | 08:18 | 08:45 |
| | 17:19 | | 20:05 | 20:57 | 21:42 | 12 06:39 (6) | 22:00 | | 21:33 | 19 06:52 (6) | 20:33 | | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 06:28 (6) | 05:22 | | 05:56 | 06:34 (6) | 06:45 | | 07:35 | 07:27 | 08:20 | 08:45 |
| | 17:21 | | 20:06 | 20:59 | 21:43 | 10 06:38 (6) | 22:00 | | 21:31 | 18 06:52 (6) | 20:31 | | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:20 | | 07:17 | | 05:26 | 06:30 (6) | | | 05:57 | 06:34 (6) | 06:47 | | | 07:29 | | 08:45 |
| | 17:23 | | 20:08 | | 21:45 | 7 06:37 (6) | | | 21:30 | 17 06:51 (6) | 20:29 | | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | | 498 | | 501 | | 453 | | 381 | 332 | 267 | 245 |
| Total, worst case | | | | | | 382 | | 3 | | 342 | | 47 | | | | |
| Sun reduction | | | | | | 0.37 | | 0.30 | | 0.27 | | 0.30 | | | | |
| Oper. time red. | | | | | | 1.00 | | 1.00 | | 1.00 | | 1.00 | | | | |
| Wind dir. red. | | | | | | 0.69 | | 0.69 | | 0.69 | | 0.69 | | | | |
| Total reduction | | | | | | 0.26 | | 0.21 | | 0.19 | | 0.21 | | | | |
| Total, real | | | | | | 98 | | 1 | | 64 | | 10 | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

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Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** AM - H41

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:15 | 06:10 | 05:25 | 05:22 | 05:59 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | 21:00 | 21:46 | 22:00 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:45 | 08:16 | 07:23 | 07:12 | 06:08 | 05:25 | 05:23 | 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:27 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:31 |
| 3 | 08:44 | 08:15 | 07:21 | 07:10 | 06:06 | 05:24 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:20 | 20:13 | 21:04 | 21:48 | 21:59 | 21:25 | 20:22 | 19:13 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:05 | 05:23 | 05:25 | 06:03 | 06:53 | 07:42 | 07:36 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 19:10 | 17:06 | 16:30 |
| 5 | 08:44 | 08:12 | 07:16 | 07:06 | 06:03 | 05:22 | 05:25 | 06:05 | 06:55 | 07:43 | 07:37 | 08:26 |
| | 16:42 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:22 | 05:26 | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 19:06 | 17:02 | 16:29 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 21:10 | 21:52 | 21:57 | 21:18 | 20:13 | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:07 | 07:10 | 06:59 | 05:57 | 05:21 | 05:28 | 06:10 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:38 | 18:28 | 20:22 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:57 | 05:56 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:45 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 21:13 | 21:53 | 21:56 | 21:14 | 20:08 | 18:59 | 16:57 | 16:28 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:20 | 05:30 | 06:13 | 07:03 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:54 | 07:48 | 08:33 |
| | 16:50 | 17:43 | 18:34 | 20:27 | 21:17 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:01 | 06:50 | 05:51 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:35 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:48 | 05:49 | 05:19 | 05:33 | 06:18 | 07:07 | 07:57 | 07:52 | 08:36 |
| | 16:53 | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:56 | 06:56 | 06:45 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:59 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 21:21 | 21:57 | 21:51 | 21:04 | 19:57 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:35 | 06:21 | 07:11 | 08:00 | 07:55 | 08:37 |
| | 16:56 | 17:51 | 18:41 | 20:33 | 21:23 | 21:58 | 21:51 | 21:02 | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 08:38 | 07:52 | 06:51 | 06:41 | 05:44 | 05:18 | 05:37 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:50 | 21:00 | 19:52 | 18:44 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:59 | 08:39 |
| | 16:59 | 17:54 | 18:44 | 20:37 | 21:26 | 21:59 | 21:48 | 20:58 | 19:50 | 18:41 | 16:46 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 | 05:18 | 05:39 | 06:26 | 07:16 | 08:06 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:28 |
| 19 | 08:35 | 07:46 | 06:45 | 06:35 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:48 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:33 | 05:39 | 05:18 | 05:42 | 06:29 | 07:19 | 08:09 | 08:04 | 08:41 |
| | 17:04 | 18:00 | 18:49 | 20:42 | 21:30 | 22:00 | 21:45 | 20:52 | 19:43 | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:02 | 18:51 | 20:43 | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:41 | 16:29 |
| 22 | 08:32 | 07:40 | 06:38 | 06:28 | 05:36 | 05:19 | 05:44 | 06:32 | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | 21:33 | 22:00 | 21:43 | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 05:35 | 05:19 | 05:46 | 06:34 | 07:24 | 08:14 | 08:09 | 08:43 |
| | 17:09 | 18:05 | 18:54 | 20:47 | 21:34 | 22:00 | 21:41 | 20:46 | 19:36 | 18:29 | 16:38 | 16:30 |
| 24 | 08:29 | 07:36 | 06:33 | 06:24 | 05:34 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:49 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | 07:18 | 08:12 | 08:44 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:39 | 20:42 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:27 | 07:31 | 06:28 | 06:20 | 05:31 | 05:20 | 05:50 | 06:38 | 07:29 | 07:20 | 08:13 | 08:44 |
| | 17:14 | 18:11 | 18:59 | 20:52 | 21:38 | 22:00 | 21:37 | 20:39 | 19:29 | 17:23 | 16:35 | 16:32 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:12 | 19:01 | 20:54 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:21 | 05:53 | 06:42 | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:18 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:34 | 16:33 |
| 29 | 08:22 | | 07:22 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | 07:25 | 08:18 | 08:45 |
| | 17:19 | | 20:05 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:56 | 06:45 | 07:35 | 07:27 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:59 | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:20 | | 07:17 | | 05:26 | | 05:57 | 06:47 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:45 | | 21:30 | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 245 |
| Total, worst case | | | | | | | | | | | | |
| Sun reduction | | | | | | | | | | | | |
| Oper. time red. | | | | | | | | | | | | |
| Wind dir. red. | | | | | | | | | | | | |
| Total reduction | | | | | | | | | | | | |
| Total, real | | | | | | | | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** AN - H42

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:15 | 06:10 | 05:25 | 05:22 | 05:59 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | 21:00 | 21:46 | 22:00 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:45 | 08:16 | 07:23 | 07:12 | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:27 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:31 |
| 3 | 08:44 | 08:15 | 07:21 | 07:10 | 06:06 | 05:24 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:20 | 20:13 | 21:04 | 21:48 | 21:59 | 21:25 | 20:22 | 19:12 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:05 | 05:23 | 05:25 | 06:03 | 06:53 | 07:42 | 07:36 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:06 | 06:03 | 05:22 | 05:25 | 06:05 | 06:55 | 07:43 | 07:37 | 08:26 |
| | 16:42 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:22 | 05:26 | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 19:06 | 17:02 | 16:29 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 21:10 | 21:52 | 21:57 | 21:18 | 20:13 | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:07 | 07:10 | 06:59 | 05:57 | 05:21 | 05:28 | 06:10 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:38 | 18:28 | 20:22 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:57 | 05:56 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 21:13 | 21:53 | 21:56 | 21:14 | 20:08 | 18:59 | 16:57 | 16:28 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:20 | 05:30 | 06:13 | 07:03 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:50 | 17:43 | 18:34 | 20:27 | 21:17 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:01 | 06:50 | 05:51 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:48 | 05:49 | 05:19 | 05:33 | 06:17 | 07:07 | 07:57 | 07:52 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:56 | 06:56 | 06:45 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:59 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:35 | 06:21 | 07:11 | 08:00 | 07:55 | 08:37 |
| | 16:56 | 17:51 | 18:41 | 20:33 | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 08:38 | 07:52 | 06:51 | 06:41 | 05:44 | 05:18 | 05:37 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | 18:44 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:59 | 17:54 | 18:44 | 20:37 | 21:26 | 21:58 | 21:48 | 20:58 | 19:50 | 18:41 | 16:46 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 | 05:18 | 05:39 | 06:26 | 07:16 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:28 |
| 19 | 08:35 | 07:46 | 06:45 | 06:35 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:48 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 05:39 | 05:18 | 05:42 | 06:29 | 07:19 | 08:09 | 08:04 | 08:41 |
| | 17:04 | 18:00 | 18:49 | 20:42 | 21:30 | 22:00 | 21:45 | 20:52 | 19:43 | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:02 | 18:51 | 20:43 | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:41 | 16:29 |
| 22 | 08:31 | 07:40 | 06:38 | 06:28 | 05:36 | 05:19 | 05:44 | 06:32 | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | 21:33 | 22:00 | 21:43 | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 05:35 | 05:19 | 05:46 | 06:34 | 07:24 | 08:14 | 08:09 | 08:43 |
| | 17:09 | 18:05 | 18:54 | 20:47 | 21:34 | 22:00 | 21:41 | 20:46 | 19:36 | 18:29 | 16:38 | 16:30 |
| 24 | 08:29 | 07:36 | 06:33 | 06:24 | 05:34 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:49 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | 07:18 | 08:12 | 08:44 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:39 | 20:42 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:27 | 07:31 | 06:28 | 06:20 | 05:31 | 05:20 | 05:50 | 06:38 | 07:29 | 07:20 | 08:13 | 08:44 |
| | 17:14 | 18:11 | 18:59 | 20:52 | 21:38 | 22:00 | 21:37 | 20:39 | 19:29 | 17:23 | 16:35 | 16:32 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:12 | 19:01 | 20:54 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:21 | 05:53 | 06:42 | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:34 | 16:33 |
| 29 | 08:22 | | 07:22 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:05 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:56 | 06:45 | 07:35 | 07:27 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:59 | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:20 | | 07:17 | | 05:26 | | 05:57 | 06:46 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:45 | | 21:30 | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 245 |
| Total, worst case | | | | | | | | | | | | |
| Sun reduction | | | | | | | | | | | | |
| Oper. time red. | | | | | | | | | | | | |
| Wind dir. red. | | | | | | | | | | | | |
| Total reduction | | | | | | | | | | | | |
| Total, real | | | | | | | | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** AO - H44

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:15 | 06:10 | 05:25 | 05:22 | 05:59 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:45 | 08:16 | 07:23 | 07:12 | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:27 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:31 |
| 3 | 08:44 | 08:15 | 07:21 | 07:10 | 06:06 | 05:24 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:20 | 20:13 | 21:04 | 21:48 | 21:59 | 21:25 | 20:22 | 19:12 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:05 | 05:23 | 05:25 | 06:03 | 06:53 | 07:42 | 07:36 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:06 | 06:03 | 05:22 | 05:25 | 06:05 | 06:55 | 07:43 | 07:37 | 08:26 |
| | 16:42 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:22 | 05:26 | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 19:06 | 17:02 | 16:29 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 21:10 | 21:52 | 21:57 | 21:18 | 20:13 | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 05:57 | 05:21 | 05:28 | 06:10 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:38 | 18:28 | 20:21 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:57 | 05:56 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 21:13 | 21:53 | 21:56 | 21:14 | 20:08 | 18:59 | 16:57 | 16:28 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:20 | 05:30 | 06:13 | 07:03 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:50 | 17:43 | 18:34 | 20:27 | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | 06:50 | 05:51 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:48 | 05:49 | 05:19 | 05:33 | 06:17 | 07:07 | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:56 | 06:56 | 06:45 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:59 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:35 | 06:21 | 07:11 | 08:00 | 07:55 | 08:37 |
| | 16:56 | 17:51 | 18:41 | 20:33 | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | 05:44 | 05:18 | 05:37 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | 18:44 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:59 | 17:54 | 18:44 | 20:37 | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | 18:41 | 16:46 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 | 05:18 | 05:39 | 06:25 | 07:16 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:28 |
| 19 | 08:35 | 07:46 | 06:45 | 06:35 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:48 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 05:39 | 05:18 | 05:42 | 06:29 | 07:19 | 08:09 | 08:04 | 08:41 |
| | 17:04 | 18:00 | 18:49 | 20:42 | 21:30 | 22:00 | 21:45 | 20:52 | 19:43 | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:02 | 18:51 | 20:43 | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:41 | 16:29 |
| 22 | 08:31 | 07:40 | 06:38 | 06:28 | 05:36 | 05:19 | 05:44 | 06:32 | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | 21:33 | 22:00 | 21:43 | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 05:35 | 05:19 | 05:46 | 06:34 | 07:24 | 08:14 | 08:09 | 08:43 |
| | 17:09 | 18:05 | 18:54 | 20:47 | 21:34 | 22:00 | 21:41 | 20:46 | 19:36 | 18:29 | 16:38 | 16:30 |
| 24 | 08:29 | 07:36 | 06:33 | 06:24 | 05:34 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | 07:18 | 08:12 | 08:44 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:38 | 20:42 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:27 | 07:31 | 06:28 | 06:20 | 05:31 | 05:20 | 05:50 | 06:38 | 07:29 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:11 | 18:59 | 20:52 | 21:38 | 22:00 | 21:37 | 20:39 | 19:29 | 17:23 | 16:35 | 16:32 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:12 | 19:01 | 20:54 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:21 | 05:53 | 06:42 | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:34 | 16:33 |
| 29 | 08:22 | | 07:22 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:05 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:56 | 06:45 | 07:35 | 07:27 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:59 | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | 05:26 | | 05:57 | 06:46 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:45 | | 21:29 | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 245 |
| Total, worst case | | | | | | | | | | | | |
| Sun reduction | | | | | | | | | | | | |
| Oper. time red. | | | | | | | | | | | | |
| Wind dir. red. | | | | | | | | | | | | |
| Total reduction | | | | | | | | | | | | |
| Total, real | | | | | | | | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** AP - H45

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:15 | 06:10 | 05:25 | 05:22 | 05:59 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:45 | 08:16 | 07:23 | 07:12 | 06:08 | 05:25 | 05:23 | 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:27 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:31 |
| 3 | 08:44 | 08:15 | 07:21 | 07:10 | 06:06 | 05:24 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:20 | 20:13 | 21:04 | 21:48 | 21:59 | 21:25 | 20:22 | 19:12 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:05 | 05:23 | 05:25 | 06:03 | 06:53 | 07:42 | 07:36 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 19:10 | 17:06 | 16:30 |
| 5 | 08:44 | 08:12 | 07:16 | 07:06 | 06:03 | 05:22 | 05:25 | 06:05 | 06:55 | 07:43 | 07:37 | 08:26 |
| | 16:42 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:22 | 05:26 | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 19:06 | 17:02 | 16:29 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 21:10 | 21:52 | 21:57 | 21:18 | 20:13 | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:06 | 07:10 | 06:59 | 05:57 | 05:21 | 05:28 | 06:10 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:38 | 18:28 | 20:21 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:57 | 05:56 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 21:13 | 21:53 | 21:56 | 21:14 | 20:08 | 18:59 | 16:57 | 16:28 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:20 | 05:30 | 06:13 | 07:03 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:50 | 17:43 | 18:34 | 20:27 | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:01 | 06:50 | 05:51 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:48 | 05:49 | 05:19 | 05:33 | 06:18 | 07:07 | 07:57 | 07:52 | 08:35 |
| | 16:53 | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:56 | 06:56 | 06:45 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:59 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:36 | 06:21 | 07:11 | 08:00 | 07:55 | 08:37 |
| | 16:56 | 17:51 | 18:41 | 20:33 | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | 05:44 | 05:18 | 05:37 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | 18:44 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:59 | 17:54 | 18:44 | 20:37 | 21:26 | 21:58 | 21:48 | 20:58 | 19:50 | 18:41 | 16:46 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 | 05:18 | 05:39 | 06:26 | 07:16 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:28 |
| 19 | 08:35 | 07:46 | 06:45 | 06:35 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:48 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 05:39 | 05:18 | 05:42 | 06:29 | 07:19 | 08:09 | 08:04 | 08:41 |
| | 17:04 | 18:00 | 18:49 | 20:42 | 21:30 | 22:00 | 21:45 | 20:52 | 19:43 | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:02 | 18:51 | 20:43 | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:41 | 16:29 |
| 22 | 08:31 | 07:40 | 06:38 | 06:28 | 05:36 | 05:19 | 05:44 | 06:32 | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | 21:33 | 22:00 | 21:43 | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 05:35 | 05:19 | 05:46 | 06:34 | 07:24 | 08:14 | 08:09 | 08:43 |
| | 17:09 | 18:05 | 18:54 | 20:47 | 21:34 | 22:00 | 21:41 | 20:46 | 19:36 | 18:29 | 16:38 | 16:30 |
| 24 | 08:29 | 07:36 | 06:33 | 06:24 | 05:34 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:38 | 20:42 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:27 | 07:31 | 06:28 | 06:20 | 05:31 | 05:20 | 05:50 | 06:38 | 07:29 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:11 | 18:59 | 20:52 | 21:38 | 22:00 | 21:37 | 20:39 | 19:29 | 17:23 | 16:35 | 16:32 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:12 | 19:01 | 20:54 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:21 | 05:53 | 06:42 | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:34 | 16:33 |
| 29 | 08:22 | | 07:22 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:05 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:56 | 06:45 | 07:35 | 07:27 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:59 | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | 05:26 | | 05:57 | 06:47 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:45 | | 21:29 | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 245 |
| Total, worst case | | | | | | | | | | | | |
| Sun reduction | | | | | | | | | | | | |
| Oper. time red. | | | | | | | | | | | | |
| Wind dir. red. | | | | | | | | | | | | |
| Total reduction | | | | | | | | | | | | |
| Total, real | | | | | | | | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** AQ - H46

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:15 | 06:10 | 05:25 | 05:22 | 05:59 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:45 | 08:16 | 07:23 | 07:12 | 06:08 | 05:25 | 05:23 | 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:27 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:31 |
| 3 | 08:44 | 08:15 | 07:21 | 07:10 | 06:06 | 05:24 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:20 | 20:13 | 21:03 | 21:48 | 21:59 | 21:25 | 20:22 | 19:12 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:05 | 05:23 | 05:25 | 06:03 | 06:53 | 07:42 | 07:36 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 19:10 | 17:06 | 16:30 |
| 5 | 08:44 | 08:12 | 07:16 | 07:06 | 06:03 | 05:22 | 05:25 | 06:05 | 06:55 | 07:43 | 07:37 | 08:26 |
| | 16:42 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:22 | 05:26 | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 19:06 | 17:02 | 16:29 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 21:10 | 21:52 | 21:57 | 21:18 | 20:13 | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 05:57 | 05:21 | 05:28 | 06:10 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:38 | 18:28 | 20:21 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:57 | 05:56 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 21:13 | 21:53 | 21:56 | 21:14 | 20:08 | 18:59 | 16:57 | 16:28 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:20 | 05:30 | 06:13 | 07:03 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:50 | 17:43 | 18:34 | 20:27 | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:01 | 06:50 | 05:51 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:48 | 05:49 | 05:19 | 05:33 | 06:18 | 07:07 | 07:57 | 07:51 | 08:35 |
| | 16:53 | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:56 | 06:56 | 06:45 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:59 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:35 | 06:21 | 07:11 | 08:00 | 07:55 | 08:37 |
| | 16:56 | 17:51 | 18:41 | 20:33 | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | 05:44 | 05:18 | 05:37 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | 18:44 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:59 | 17:54 | 18:44 | 20:37 | 21:26 | 21:58 | 21:48 | 20:58 | 19:50 | 18:41 | 16:46 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 | 05:18 | 05:39 | 06:26 | 07:16 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:28 |
| 19 | 08:35 | 07:46 | 06:45 | 06:35 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:48 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 05:39 | 05:18 | 05:42 | 06:29 | 07:19 | 08:09 | 08:04 | 08:41 |
| | 17:04 | 18:00 | 18:49 | 20:42 | 21:30 | 21:59 | 21:45 | 20:52 | 19:43 | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:02 | 18:51 | 20:43 | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:41 | 16:29 |
| 22 | 08:31 | 07:40 | 06:38 | 06:28 | 05:36 | 05:19 | 05:44 | 06:32 | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | 21:33 | 22:00 | 21:42 | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 05:35 | 05:19 | 05:46 | 06:34 | 07:24 | 08:14 | 08:08 | 08:43 |
| | 17:09 | 18:05 | 18:54 | 20:47 | 21:34 | 22:00 | 21:41 | 20:46 | 19:36 | 18:29 | 16:38 | 16:30 |
| 24 | 08:29 | 07:36 | 06:33 | 06:24 | 05:34 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:38 | 20:42 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:27 | 07:31 | 06:28 | 06:20 | 05:31 | 05:20 | 05:50 | 06:38 | 07:29 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:11 | 18:59 | 20:52 | 21:38 | 22:00 | 21:37 | 20:39 | 19:29 | 17:23 | 16:35 | 16:32 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:12 | 19:01 | 20:54 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:21 | 05:53 | 06:42 | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:34 | 16:33 |
| 29 | 08:22 | | 07:22 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:05 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:56 | 06:45 | 07:35 | 07:27 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:59 | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | 05:26 | | 05:57 | 06:47 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:44 | | 21:29 | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 245 |
| Total, worst case | | | | | | | | | | | | |
| Sun reduction | | | | | | | | | | | | |
| Oper. time red. | | | | | | | | | | | | |
| Wind dir. red. | | | | | | | | | | | | |
| Total reduction | | | | | | | | | | | | |
| Total, real | | | | | | | | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** AR - H47

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:15 | 06:10 | 05:25 | 05:22 | 05:59 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:45 | 08:16 | 07:23 | 07:12 | 06:08 | 05:25 | 05:23 | 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:27 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:31 |
| 3 | 08:44 | 08:15 | 07:21 | 07:10 | 06:06 | 05:24 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:20 | 20:13 | 21:04 | 21:48 | 21:59 | 21:25 | 20:22 | 19:12 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:05 | 05:23 | 05:25 | 06:03 | 06:53 | 07:42 | 07:36 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:06 | 06:03 | 05:22 | 05:25 | 06:05 | 06:55 | 07:43 | 07:37 | 08:26 |
| | 16:42 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:22 | 05:26 | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 19:06 | 17:02 | 16:29 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 21:10 | 21:52 | 21:57 | 21:18 | 20:13 | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 05:57 | 05:21 | 05:28 | 06:10 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:38 | 18:28 | 20:21 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:57 | 05:56 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 21:13 | 21:53 | 21:56 | 21:14 | 20:08 | 18:59 | 16:57 | 16:28 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:20 | 05:30 | 06:13 | 07:03 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:50 | 17:43 | 18:34 | 20:27 | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | 06:50 | 05:51 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:48 | 05:49 | 05:19 | 05:33 | 06:17 | 07:07 | 07:57 | 07:51 | 08:35 |
| | 16:53 | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:56 | 06:56 | 06:45 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:59 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:35 | 06:21 | 07:11 | 08:00 | 07:55 | 08:37 |
| | 16:56 | 17:51 | 18:41 | 20:33 | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | 05:44 | 05:18 | 05:37 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | 18:44 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:59 | 17:54 | 18:44 | 20:37 | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | 18:41 | 16:46 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 | 05:18 | 05:39 | 06:26 | 07:16 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:28 |
| 19 | 08:35 | 07:46 | 06:45 | 06:35 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:48 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 05:39 | 05:18 | 05:42 | 06:29 | 07:19 | 08:09 | 08:04 | 08:41 |
| | 17:04 | 18:00 | 18:49 | 20:42 | 21:30 | 22:00 | 21:45 | 20:52 | 19:43 | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:02 | 18:51 | 20:43 | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:41 | 16:29 |
| 22 | 08:31 | 07:40 | 06:38 | 06:28 | 05:36 | 05:19 | 05:44 | 06:32 | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | 21:33 | 22:00 | 21:42 | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 05:35 | 05:19 | 05:46 | 06:34 | 07:24 | 08:14 | 08:08 | 08:43 |
| | 17:09 | 18:05 | 18:54 | 20:47 | 21:34 | 22:00 | 21:41 | 20:46 | 19:36 | 18:29 | 16:38 | 16:30 |
| 24 | 08:29 | 07:36 | 06:33 | 06:24 | 05:34 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:38 | 20:42 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:27 | 07:31 | 06:28 | 06:20 | 05:31 | 05:20 | 05:50 | 06:38 | 07:29 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:11 | 18:59 | 20:52 | 21:38 | 22:00 | 21:37 | 20:39 | 19:29 | 17:23 | 16:35 | 16:32 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:12 | 19:01 | 20:54 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:21 | 05:53 | 06:42 | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:34 | 16:33 |
| 29 | 08:22 | | 07:22 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:05 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:56 | 06:45 | 07:35 | 07:27 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:59 | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | 05:26 | | 05:57 | 06:46 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:45 | | 21:29 | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 245 |
| Total, worst case | | | | | | | | | | | | |
| Sun reduction | | | | | | | | | | | | |
| Oper. time red. | | | | | | | | | | | | |
| Wind dir. red. | | | | | | | | | | | | |
| Total reduction | | | | | | | | | | | | |
| Total, real | | | | | | | | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** AS - H48

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:15 | 06:10 | 05:25 | 05:22 | 05:59 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:45 | 08:16 | 07:23 | 07:12 | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:27 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:31 |
| 3 | 08:44 | 08:15 | 07:21 | 07:10 | 06:06 | 05:24 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:20 | 20:13 | 21:04 | 21:48 | 21:59 | 21:25 | 20:22 | 19:12 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:05 | 05:23 | 05:25 | 06:03 | 06:53 | 07:42 | 07:36 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:06 | 06:03 | 05:22 | 05:25 | 06:05 | 06:55 | 07:43 | 07:37 | 08:26 |
| | 16:42 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:22 | 05:26 | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 19:06 | 17:02 | 16:29 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 21:10 | 21:52 | 21:57 | 21:18 | 20:13 | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 05:57 | 05:21 | 05:28 | 06:10 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:38 | 18:28 | 20:21 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:57 | 05:56 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 21:13 | 21:53 | 21:56 | 21:14 | 20:08 | 18:59 | 16:57 | 16:28 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:20 | 05:30 | 06:13 | 07:03 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:50 | 17:43 | 18:34 | 20:27 | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | 06:50 | 05:51 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:48 | 05:49 | 05:19 | 05:33 | 06:17 | 07:07 | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:56 | 06:56 | 06:45 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:59 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:35 | 06:21 | 07:11 | 08:00 | 07:55 | 08:37 |
| | 16:56 | 17:51 | 18:41 | 20:33 | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | 05:44 | 05:18 | 05:37 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | 18:44 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:59 | 17:54 | 18:44 | 20:37 | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | 18:41 | 16:46 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 | 05:18 | 05:39 | 06:25 | 07:16 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:28 |
| 19 | 08:35 | 07:46 | 06:45 | 06:35 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:48 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 05:39 | 05:18 | 05:42 | 06:29 | 07:19 | 08:09 | 08:04 | 08:41 |
| | 17:04 | 18:00 | 18:49 | 20:42 | 21:30 | 22:00 | 21:45 | 20:52 | 19:43 | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:02 | 18:51 | 20:43 | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:41 | 16:29 |
| 22 | 08:31 | 07:40 | 06:38 | 06:28 | 05:36 | 05:19 | 05:44 | 06:32 | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | 21:33 | 22:00 | 21:43 | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 05:35 | 05:19 | 05:46 | 06:34 | 07:24 | 08:14 | 08:08 | 08:43 |
| | 17:09 | 18:05 | 18:54 | 20:47 | 21:34 | 22:00 | 21:41 | 20:46 | 19:36 | 18:29 | 16:38 | 16:30 |
| 24 | 08:29 | 07:36 | 06:33 | 06:24 | 05:34 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:38 | 20:42 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:27 | 07:31 | 06:28 | 06:20 | 05:31 | 05:20 | 05:50 | 06:38 | 07:29 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:11 | 18:59 | 20:52 | 21:38 | 22:00 | 21:37 | 20:39 | 19:29 | 17:23 | 16:35 | 16:32 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:12 | 19:01 | 20:54 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:21 | 05:53 | 06:42 | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:34 | 16:33 |
| 29 | 08:22 | | 07:22 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:05 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:56 | 06:45 | 07:35 | 07:27 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:59 | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | 05:26 | | 05:57 | 06:46 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:45 | | 21:29 | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 245 |
| Total, worst case | | | | | | | | | | | | |
| Sun reduction | | | | | | | | | | | | |
| Oper. time red. | | | | | | | | | | | | |
| Wind dir. red. | | | | | | | | | | | | |
| Total reduction | | | | | | | | | | | | |
| Total, real | | | | | | | | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** AT - H49

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:15 | 06:10 | 05:25 | 05:22 | 05:59 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:45 | 08:16 | 07:23 | 07:12 | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:27 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:31 |
| 3 | 08:44 | 08:15 | 07:21 | 07:10 | 06:06 | 05:24 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:20 | 20:13 | 21:03 | 21:48 | 21:59 | 21:25 | 20:22 | 19:12 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:05 | 05:23 | 05:25 | 06:03 | 06:53 | 07:42 | 07:36 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:06 | 06:03 | 05:22 | 05:25 | 06:05 | 06:55 | 07:43 | 07:37 | 08:26 |
| | 16:42 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:22 | 05:26 | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 19:06 | 17:02 | 16:29 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 21:10 | 21:52 | 21:57 | 21:18 | 20:13 | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 05:57 | 05:21 | 05:28 | 06:10 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:38 | 18:28 | 20:21 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | 05:56 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 21:13 | 21:53 | 21:56 | 21:14 | 20:08 | 18:59 | 16:57 | 16:28 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:20 | 05:30 | 06:13 | 07:03 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:50 | 17:43 | 18:34 | 20:27 | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | 06:50 | 05:51 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:48 | 05:49 | 05:19 | 05:33 | 06:17 | 07:07 | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:56 | 06:56 | 06:45 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:59 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:35 | 06:21 | 07:11 | 08:00 | 07:55 | 08:37 |
| | 16:56 | 17:51 | 18:41 | 20:33 | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | 05:44 | 05:18 | 05:37 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | 18:44 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:59 | 17:54 | 18:44 | 20:37 | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | 18:41 | 16:46 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 | 05:18 | 05:39 | 06:25 | 07:16 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:28 |
| 19 | 08:35 | 07:46 | 06:45 | 06:35 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 05:39 | 05:18 | 05:42 | 06:29 | 07:19 | 08:09 | 08:04 | 08:41 |
| | 17:04 | 18:00 | 18:49 | 20:42 | 21:30 | 21:59 | 21:45 | 20:52 | 19:43 | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:02 | 18:51 | 20:43 | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:41 | 16:29 |
| 22 | 08:31 | 07:40 | 06:38 | 06:28 | 05:36 | 05:19 | 05:44 | 06:32 | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | 21:33 | 22:00 | 21:42 | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 05:35 | 05:19 | 05:46 | 06:34 | 07:24 | 08:14 | 08:08 | 08:43 |
| | 17:09 | 18:05 | 18:54 | 20:47 | 21:34 | 22:00 | 21:41 | 20:46 | 19:36 | 18:29 | 16:38 | 16:30 |
| 24 | 08:29 | 07:36 | 06:33 | 06:24 | 05:34 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:38 | 20:42 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:27 | 07:31 | 06:28 | 06:20 | 05:31 | 05:20 | 05:50 | 06:38 | 07:29 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:11 | 18:59 | 20:52 | 21:38 | 22:00 | 21:37 | 20:39 | 19:29 | 17:23 | 16:35 | 16:32 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:12 | 19:01 | 20:54 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:21 | 05:53 | 06:42 | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:34 | 16:33 |
| 29 | 08:22 | | 07:22 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:05 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:56 | 06:45 | 07:35 | 07:27 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:59 | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | 05:26 | | 05:57 | 06:46 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:44 | | 21:29 | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 245 |
| Total, worst case | | | | | | | | | | | | |
| Sun reduction | | | | | | | | | | | | |
| Oper. time red. | | | | | | | | | | | | |
| Wind dir. red. | | | | | | | | | | | | |
| Total reduction | | | | | | | | | | | | |
| Total, real | | | | | | | | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** AU - H50

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:15 | 06:10 | 05:25 | 05:22 | 05:59 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | 07:12 | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:31 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | 06:06 | 05:24 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 | 21:03 | 21:48 | 21:59 | 21:24 | 20:22 | 19:12 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:04 | 05:23 | 05:25 | 06:03 | 06:53 | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | 06:03 | 05:22 | 05:25 | 06:05 | 06:54 | 07:43 | 07:37 | 08:26 |
| | 16:42 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:22 | 05:26 | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 19:06 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 21:10 | 21:52 | 21:57 | 21:17 | 20:13 | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 05:57 | 05:20 | 05:28 | 06:09 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:38 | 18:28 | 20:21 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | 05:56 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 21:13 | 21:53 | 21:55 | 21:14 | 20:08 | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:20 | 05:30 | 06:13 | 07:03 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | 20:26 | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:40 | 07:59 | 07:00 | 06:50 | 05:51 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:48 | 05:49 | 05:19 | 05:33 | 06:17 | 07:07 | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 06:45 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:59 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:35 | 06:21 | 07:11 | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:41 | 20:33 | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | 05:44 | 05:18 | 05:37 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:59 | 17:54 | 18:44 | 20:37 | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | 18:41 | 16:46 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 | 05:18 | 05:39 | 06:25 | 07:15 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:28 |
| 19 | 08:35 | 07:46 | 06:44 | 06:35 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 05:39 | 05:18 | 05:42 | 06:29 | 07:19 | 08:09 | 08:03 | 08:41 |
| | 17:04 | 18:00 | 18:49 | 20:42 | 21:30 | 21:59 | 21:45 | 20:52 | 19:42 | 18:35 | 16:42 | 16:28 |
| 21 | 08:32 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | 21:31 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:41 | 16:29 |
| 22 | 08:31 | 07:40 | 06:38 | 06:28 | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | 21:33 | 22:00 | 21:42 | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 05:35 | 05:19 | 05:46 | 06:33 | 07:24 | 08:14 | 08:08 | 08:43 |
| | 17:09 | 18:05 | 18:54 | 20:47 | 21:34 | 22:00 | 21:41 | 20:46 | 19:35 | 18:29 | 16:38 | 16:30 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | 05:33 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:38 | 20:41 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 06:20 | 05:31 | 05:20 | 05:50 | 06:38 | 07:28 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:11 | 18:59 | 20:52 | 21:38 | 22:00 | 21:37 | 20:39 | 19:29 | 17:23 | 16:35 | 16:32 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:12 | 19:01 | 20:53 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:21 | 05:53 | 06:42 | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:34 | 16:33 |
| 29 | 08:22 | | 07:21 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:56 | 06:45 | 07:35 | 07:27 | 08:19 | 08:44 |
| | 17:21 | | 20:06 | 20:58 | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | 05:26 | | 05:57 | 06:46 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:44 | | 21:29 | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 245 |
| Total, worst case | | | | | | | | | | | | |
| Sun reduction | | | | | | | | | | | | |
| Oper. time red. | | | | | | | | | | | | |
| Wind dir. red. | | | | | | | | | | | | |
| Total reduction | | | | | | | | | | | | |
| Total, real | | | | | | | | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

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Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** AV - H60

## Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | | April | May | June | July | August | September | | October | | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | | 07:15 | 06:10 | 05:25 | 05:22 | 05:59 | 06:48 | | 07:37 | | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | | 20:10 | 21:00 | 21:46 | 22:00 | 21:28 | 20:26 | | 19:17 | 9 | 17:11 | 16:31 |
| 2 | 08:45 | 08:17 | 07:23 | | 07:12 | 06:08 | 05:25 | 05:23 | 06:00 | 06:50 | | 07:39 | | 07:32 | 08:23 |
| | 16:38 | 17:27 | 18:18 | | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | | 19:15 | | 17:10 | 16:31 |
| 3 | 08:45 | 08:15 | 07:21 | | 07:10 | 06:06 | 05:24 | 05:24 | 06:02 | 06:51 | | 07:40 | | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:20 | | 20:13 | 21:04 | 21:48 | 21:59 | 21:25 | 20:22 | | 19:13 | | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:19 | | 07:08 | 06:05 | 05:23 | 05:25 | 06:03 | 06:53 | | 07:42 | | 07:36 | 08:25 |
| | 16:40 | 17:30 | 18:21 | | 20:15 | 21:05 | 21:49 | 21:59 | 21:23 | 20:20 | | 19:10 | | 17:06 | 16:30 |
| 5 | 08:44 | 08:12 | 07:16 | | 07:06 | 06:03 | 05:22 | 05:25 | 06:05 | 06:55 | | 07:44 | | 07:38 | 08:27 |
| | 16:42 | 17:32 | 18:23 | | 20:17 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | | 19:08 | | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | | 07:03 | 06:01 | 05:22 | 05:26 | 06:06 | 06:56 | | 07:45 | | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | | 20:18 | 21:09 | 21:51 | 21:58 | 21:20 | 20:15 | | 19:06 | | 17:02 | 16:29 |
| 7 | 08:43 | 08:08 | 07:12 | | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | | 07:47 | | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | | 20:20 | 21:10 | 21:52 | 21:57 | 21:18 | 20:13 | | 19:04 | | 17:01 | 16:28 |
| 8 | 08:43 | 08:07 | 07:10 | | 06:59 | 05:57 | 05:21 | 05:28 | 06:10 | 07:00 | | 07:49 | | 07:43 | 08:30 |
| | 16:45 | 17:38 | 18:29 | | 20:22 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | | 19:01 | | 16:59 | 16:28 |
| 9 | 08:43 | 08:05 | 07:07 | | 06:57 | 05:56 | 05:20 | 05:29 | 06:11 | 07:01 | | 07:50 | | 07:45 | 08:31 |
| | 16:47 | 17:40 | 18:30 | | 20:23 | 21:14 | 21:54 | 21:56 | 21:14 | 20:08 | | 18:59 | | 16:57 | 16:28 |
| 10 | 08:42 | 08:03 | 07:05 | | 06:54 | 05:54 | 05:20 | 05:30 | 06:13 | 07:03 | | 07:52 | | 07:46 | 08:33 |
| | 16:48 | 17:41 | 18:32 | | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | | 18:57 | | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | | 07:54 | | 07:48 | 08:34 |
| | 16:50 | 17:43 | 18:34 | | 20:27 | 21:17 | 21:55 | 21:54 | 21:10 | 20:04 | | 18:55 | | 16:54 | 16:27 |
| 12 | 08:41 | 08:00 | 07:01 | 07:53 (1) | 06:50 | 05:51 | 05:19 | 05:32 | 06:16 | 07:06 | | 07:55 | | 07:50 | 08:35 |
| | 16:51 | 17:45 | 18:36 | 5 07:58 (1) | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | | 18:52 | | 16:53 | 16:27 |
| 13 | 08:40 | 07:58 | 06:58 | 07:49 (1) | 06:48 | 05:49 | 05:19 | 05:33 | 06:18 | 07:08 | | 07:57 | | 07:52 | 08:36 |
| | 16:53 | 17:47 | 18:37 | 11 08:00 (1) | 20:30 | 21:20 | 21:57 | 21:53 | 21:07 | 19:59 | | 18:50 | | 16:51 | 16:27 |
| 14 | 08:39 | 07:56 | 06:56 | 07:47 (1) | 06:46 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | | 07:59 | | 07:53 | 08:37 |
| | 16:54 | 17:49 | 18:39 | 15 08:02 (1) | 20:32 | 21:21 | 21:57 | 21:52 | 21:05 | 19:57 | | 18:48 | | 16:50 | 16:27 |
| 15 | 08:39 | 07:54 | 06:54 | 07:46 (1) | 06:43 | 05:46 | 05:18 | 05:35 | 06:21 | 07:11 | | 08:00 | | 07:55 | 08:38 |
| | 16:56 | 17:51 | 18:41 | 17 08:03 (1) | 20:34 | 21:23 | 21:58 | 21:51 | 21:03 | 19:54 | | 18:46 | | 16:48 | 16:27 |
| 16 | 08:38 | 07:52 | 06:52 | 07:44 (1) | 06:41 | 05:44 | 05:18 | 05:37 | 06:22 | 07:12 | | 08:02 | | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 19 08:03 (1) | 20:35 | 21:24 | 21:58 | 21:50 | 21:01 | 19:52 | | 18:44 | | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 07:44 (1) | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | | 08:04 | | 07:59 | 08:39 |
| | 16:59 | 17:54 | 18:44 | 19 08:03 (1) | 20:37 | 21:26 | 21:59 | 21:49 | 20:59 | 19:50 | | 18:41 | | 16:46 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 07:43 (1) | 06:37 | 05:41 | 05:18 | 05:39 | 06:26 | 07:16 | | 08:06 | | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20 08:03 (1) | 20:39 | 21:27 | 21:59 | 21:48 | 20:57 | 19:47 | | 18:39 | | 16:44 | 16:28 |
| 19 | 08:35 | 07:46 | 06:45 | 07:43 (1) | 06:35 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:36 (1) | 08:07 | | 08:02 | 08:41 |
| | 17:02 | 17:58 | 18:48 | 19 08:02 (1) | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 3 08:39 (1) | 18:37 | | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 07:43 (1) | 06:33 | 05:39 | 05:18 | 05:42 | 06:29 | 07:19 | 08:32 (1) | 08:09 | | 08:04 | 08:41 |
| | 17:04 | 18:00 | 18:49 | 19 08:02 (1) | 20:42 | 21:30 | 22:00 | 21:45 | 20:52 | 19:43 | 11 08:43 (1) | 18:35 | | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 07:44 (1) | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:21 | 08:30 (1) | 08:11 | | 08:05 | 08:42 |
| | 17:05 | 18:02 | 18:51 | 17 08:01 (1) | 20:44 | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | 14 08:44 (1) | 18:33 | | 16:41 | 16:29 |
| 22 | 08:32 | 07:40 | 06:38 | 07:44 (1) | 06:28 | 05:36 | 05:19 | 05:44 | 06:32 | 07:22 | 08:28 (1) | 08:13 | | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 15 07:59 (1) | 20:45 | 21:33 | 22:00 | 21:43 | 20:48 | 19:38 | 17 08:45 (1) | 18:31 | | 16:40 | 16:29 |
| 23 | 08:31 | 07:38 | 06:35 | 07:45 (1) | 06:26 | 05:35 | 05:19 | 05:46 | 06:34 | 07:24 | 08:28 (1) | 08:14 | | 08:09 | 08:43 |
| | 17:09 | 18:05 | 18:54 | 12 07:57 (1) | 20:47 | 21:35 | 22:00 | 21:41 | 20:46 | 19:36 | 18 08:46 (1) | 18:29 | | 16:38 | 16:30 |
| 24 | 08:29 | 07:36 | 06:33 | 07:48 (1) | 06:24 | 05:34 | 05:19 | 05:47 | 06:35 | 07:25 | 08:26 (1) | 08:16 | | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 6 07:54 (1) | 20:49 | 21:36 | 22:01 | 21:40 | 20:44 | 19:33 | 20 08:46 (1) | 18:27 | | 16:37 | 16:30 |
| 25 | 08:28 | 07:34 | 06:31 | | 06:22 | 05:32 | 05:19 | 05:49 | 06:37 | 07:27 | 08:26 (1) | 07:18 | | 08:12 | 08:44 |
| | 17:12 | 18:09 | 18:58 | | 20:50 | 21:37 | 22:01 | 21:39 | 20:42 | 19:31 | 20 08:46 (1) | 17:25 | | 16:36 | 16:31 |
| 26 | 08:27 | 07:32 | 06:29 | | 06:20 | 05:31 | 05:20 | 05:50 | 06:38 | 07:29 | 08:26 (1) | 07:20 | | 08:14 | 08:44 |
| | 17:14 | 18:11 | 19:00 | | 20:52 | 21:39 | 22:01 | 21:37 | 20:40 | 19:29 | 20 08:46 (1) | 17:23 | | 16:35 | 16:32 |
| 27 | 08:25 | 07:29 | 06:26 | | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 08:26 (1) | 07:21 | | 08:15 | 08:44 |
| | 17:16 | 18:13 | 19:01 | | 20:54 | 21:40 | 22:01 | 21:36 | 20:37 | 19:26 | 19 08:45 (1) | 17:21 | | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | | 06:16 | 05:29 | 05:21 | 05:53 | 06:42 | 07:32 | 08:26 (1) | 07:23 | | 08:17 | 08:45 |
| | 17:18 | 18:14 | 19:03 | | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 18 08:44 (1) | 17:19 | | 16:34 | 16:33 |
| 29 | 08:23 | | 07:22 | | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:34 | 08:27 (1) | 07:25 | | 08:18 | 08:45 |
| | 17:19 | | 20:05 | | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:22 | 16 08:43 (1) | 17:17 | | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | | 06:12 | 05:27 | 05:22 | 05:56 | 06:45 | 07:35 | 08:28 (1) | 07:27 | | 08:20 | 08:45 |
| | 17:21 | | 20:06 | | 20:59 | 21:44 | 22:00 | 21:31 | 20:31 | 19:19 | 13 08:41 (1) | 17:15 | | 16:32 | 16:35 |
| 31 | 08:20 | | 07:17 | | | 05:26 | | 05:57 | 06:47 | | | 07:29 | | | 08:45 |
| | 17:23 | | 20:08 | | | 21:45 | | 21:30 | 20:29 | | | 17:13 | | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | | 416 | 485 | 498 | 501 | 453 | 381 | | 332 | | 267 | 244 |
| Total, worst case | | | | 194 | | | | | | | 189 | | 9 | | |
| Sun reduction | | | | 0.24 | | | | | | | 0.28 | | 0.24 | | |
| Oper. time red. | | | | 1.00 | | | | | | | 1.00 | | 1.00 | | |
| Wind dir. red. | | | | 0.59 | | | | | | | 0.59 | | 0.59 | | |
| Total reduction | | | | 0.14 | | | | | | | 0.17 | | 0.14 | | |
| Total, real | | | | 28 | | | | | | | 32 | | 1 | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
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Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** AW - H61

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:15 | 06:10 | 05:25 | 05:23 | 05:59 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | 21:00 | 21:46 | 22:00 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:45 | 08:17 | 07:23 | 07:12 | 06:08 | 05:25 | 05:23 | 06:00 | 06:50 | 07:39 | 07:32 | 08:22 |
| | 16:38 | 17:27 | 18:18 | 20:12 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:10 | 16:31 |
| 3 | 08:45 | 08:15 | 07:21 | 07:10 | 06:07 | 05:24 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:20 | 20:13 | 21:04 | 21:48 | 21:59 | 21:25 | 20:22 | 19:13 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:19 | 07:08 | 06:05 | 05:23 | 05:25 | 06:03 | 06:53 | 07:42 | 07:36 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:59 | 21:23 | 20:20 | 19:10 | 17:06 | 16:30 |
| 5 | 08:44 | 08:12 | 07:16 | 07:06 | 06:03 | 05:22 | 05:25 | 06:05 | 06:55 | 07:44 | 07:38 | 08:27 |
| | 16:42 | 17:32 | 18:23 | 20:17 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:22 | 05:26 | 06:07 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:09 | 21:51 | 21:58 | 21:20 | 20:15 | 19:06 | 17:03 | 16:29 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 21:10 | 21:52 | 21:57 | 21:18 | 20:13 | 19:04 | 17:01 | 16:28 |
| 8 | 08:43 | 08:07 | 07:10 | 06:59 | 05:57 | 05:21 | 05:28 | 06:10 | 07:00 | 07:49 | 07:43 | 08:30 |
| | 16:45 | 17:38 | 18:29 | 20:22 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:43 | 08:05 | 07:07 | 06:57 | 05:56 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:45 | 08:31 |
| | 16:47 | 17:40 | 18:30 | 20:23 | 21:14 | 21:54 | 21:56 | 21:14 | 20:08 | 18:59 | 16:58 | 16:28 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:20 | 05:30 | 06:13 | 07:03 | 07:52 | 07:46 | 08:33 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:54 | 07:48 | 08:34 |
| | 16:50 | 17:43 | 18:34 | 20:27 | 21:17 | 21:55 | 21:54 | 21:10 | 20:04 | 18:55 | 16:54 | 16:27 |
| 12 | 08:41 | 08:00 | 07:01 | 06:50 | 05:51 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:35 |
| | 16:51 | 17:45 | 18:36 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:58 | 06:58 | 06:48 | 05:49 | 05:19 | 05:33 | 06:18 | 07:08 | 07:57 | 07:52 | 08:36 |
| | 16:53 | 17:47 | 18:37 | 20:30 | 21:20 | 21:57 | 21:53 | 21:07 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:56 | 06:56 | 06:46 | 05:48 | 05:18 | 05:34 | 06:19 | 07:09 | 07:59 | 07:53 | 08:37 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 21:21 | 21:57 | 21:52 | 21:05 | 19:57 | 18:48 | 16:50 | 16:27 |
| 15 | 08:39 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:36 | 06:21 | 07:11 | 08:00 | 07:55 | 08:38 |
| | 16:56 | 17:51 | 18:41 | 20:34 | 21:23 | 21:58 | 21:51 | 21:03 | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 08:38 | 07:52 | 06:52 | 06:41 | 05:44 | 05:18 | 05:37 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:53 | 18:43 | 20:35 | 21:24 | 21:58 | 21:50 | 21:01 | 19:52 | 18:44 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:59 | 08:39 |
| | 16:59 | 17:54 | 18:44 | 20:37 | 21:26 | 21:59 | 21:49 | 20:59 | 19:50 | 18:41 | 16:46 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:42 | 05:18 | 05:39 | 06:26 | 07:16 | 08:06 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:39 | 21:27 | 21:59 | 21:48 | 20:57 | 19:47 | 18:39 | 16:44 | 16:28 |
| 19 | 08:35 | 07:46 | 06:45 | 06:35 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:41 |
| | 17:02 | 17:58 | 18:48 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:33 | 05:39 | 05:18 | 05:42 | 06:29 | 07:19 | 08:09 | 08:04 | 08:41 |
| | 17:04 | 18:00 | 18:49 | 20:42 | 21:30 | 22:00 | 21:45 | 20:52 | 19:43 | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:21 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:02 | 18:51 | 20:44 | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:41 | 16:29 |
| 22 | 08:32 | 07:40 | 06:38 | 06:28 | 05:36 | 05:19 | 05:44 | 06:32 | 07:22 | 08:13 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | 21:33 | 22:00 | 21:43 | 20:48 | 19:38 | 18:31 | 16:40 | 16:29 |
| 23 | 08:31 | 07:38 | 06:35 | 06:26 | 05:35 | 05:19 | 05:46 | 06:34 | 07:24 | 08:14 | 08:09 | 08:43 |
| | 17:09 | 18:05 | 18:55 | 20:47 | 21:35 | 22:00 | 21:41 | 20:46 | 19:36 | 18:29 | 16:38 | 16:30 |
| 24 | 08:29 | 07:36 | 06:33 | 06:24 | 05:34 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:49 | 21:36 | 22:01 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:34 | 06:31 | 06:22 | 05:32 | 05:19 | 05:49 | 06:37 | 07:27 | 07:18 | 08:12 | 08:44 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:01 | 21:39 | 20:42 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:27 | 07:32 | 06:29 | 06:20 | 05:31 | 05:20 | 05:50 | 06:39 | 07:29 | 07:20 | 08:14 | 08:44 |
| | 17:14 | 18:11 | 19:00 | 20:52 | 21:39 | 22:01 | 21:37 | 20:40 | 19:29 | 17:23 | 16:35 | 16:32 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:13 | 19:01 | 20:54 | 21:40 | 22:01 | 21:36 | 20:37 | 19:26 | 17:21 | 16:35 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:21 | 05:53 | 06:42 | 07:32 | 07:23 | 08:17 | 08:45 |
| | 17:18 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:34 | 16:33 |
| 29 | 08:23 | | 07:22 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:34 | 07:25 | 08:18 | 08:45 |
| | 17:19 | | 20:05 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:56 | 06:45 | 07:35 | 07:27 | 08:20 | 08:45 |
| | 17:21 | | 20:06 | 20:59 | 21:44 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:20 | | 07:17 | | 05:26 | | 05:57 | 06:47 | | 07:29 | | 08:45 |
| | 17:23 | | 20:08 | | 21:45 | | 21:30 | 20:29 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 244 |
| Total, worst case | | | | | | | | | | | | |
| Sun reduction | | | | | | | | | | | | |
| Oper. time red. | | | | | | | | | | | | |
| Wind dir. red. | | | | | | | | | | | | |
| Total reduction | | | | | | | | | | | | |
| Total, real | | | | | | | | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
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Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** AX - H62

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:15 | 06:10 | 05:25 | 05:23 | 05:59 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | 21:00 | 21:46 | 22:00 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:45 | 08:17 | 07:23 | 07:13 | 06:08 | 05:25 | 05:23 | 06:00 | 06:50 | 07:39 | 07:32 | 08:23 |
| | 16:38 | 17:27 | 18:18 | 20:12 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:10 | 16:31 |
| 3 | 08:45 | 08:15 | 07:21 | 07:10 | 06:07 | 05:24 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:20 | 20:13 | 21:04 | 21:48 | 21:59 | 21:25 | 20:22 | 19:13 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:19 | 07:08 | 06:05 | 05:23 | 05:25 | 06:03 | 06:53 | 07:42 | 07:36 | 08:25 |
| | 16:41 | 17:30 | 18:22 | 20:15 | 21:05 | 21:49 | 21:59 | 21:23 | 20:20 | 19:10 | 17:06 | 16:30 |
| 5 | 08:44 | 08:12 | 07:16 | 07:06 | 06:03 | 05:22 | 05:25 | 06:05 | 06:55 | 07:44 | 07:38 | 08:27 |
| | 16:42 | 17:32 | 18:23 | 20:17 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:22 | 05:26 | 06:07 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:09 | 21:51 | 21:58 | 21:20 | 20:15 | 19:06 | 17:03 | 16:29 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 21:10 | 21:52 | 21:57 | 21:18 | 20:13 | 19:04 | 17:01 | 16:28 |
| 8 | 08:43 | 08:07 | 07:10 | 06:59 | 05:57 | 05:21 | 05:28 | 06:10 | 07:00 | 07:49 | 07:43 | 08:30 |
| | 16:46 | 17:38 | 18:29 | 20:22 | 21:12 | 21:53 | 21:56 | 21:16 | 20:11 | 19:01 | 16:59 | 16:28 |
| 9 | 08:43 | 08:05 | 07:07 | 06:57 | 05:56 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:45 | 08:31 |
| | 16:47 | 17:40 | 18:30 | 20:23 | 21:14 | 21:54 | 21:56 | 21:14 | 20:08 | 18:59 | 16:58 | 16:28 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:20 | 05:30 | 06:13 | 07:03 | 07:52 | 07:46 | 08:33 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:54 | 07:48 | 08:34 |
| | 16:50 | 17:43 | 18:34 | 20:27 | 21:17 | 21:55 | 21:54 | 21:10 | 20:04 | 18:55 | 16:54 | 16:27 |
| 12 | 08:41 | 08:00 | 07:01 | 06:50 | 05:51 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:35 |
| | 16:51 | 17:45 | 18:36 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:58 | 06:58 | 06:48 | 05:49 | 05:19 | 05:33 | 06:18 | 07:08 | 07:57 | 07:52 | 08:36 |
| | 16:53 | 17:47 | 18:37 | 20:30 | 21:20 | 21:57 | 21:53 | 21:07 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:56 | 06:56 | 06:46 | 05:48 | 05:19 | 05:34 | 06:19 | 07:09 | 07:59 | 07:53 | 08:37 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 21:21 | 21:57 | 21:52 | 21:05 | 19:57 | 18:48 | 16:50 | 16:27 |
| 15 | 08:39 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:36 | 06:21 | 07:11 | 08:01 | 07:55 | 08:38 |
| | 16:56 | 17:51 | 18:41 | 20:34 | 21:23 | 21:58 | 21:51 | 21:03 | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 08:38 | 07:52 | 06:52 | 06:41 | 05:44 | 05:18 | 05:37 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:53 | 18:43 | 20:35 | 21:24 | 21:58 | 21:50 | 21:01 | 19:52 | 18:44 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:59 | 08:39 |
| | 16:59 | 17:54 | 18:44 | 20:37 | 21:26 | 21:59 | 21:49 | 20:59 | 19:50 | 18:42 | 16:46 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:42 | 05:18 | 05:39 | 06:26 | 07:16 | 08:06 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:39 | 21:27 | 21:59 | 21:48 | 20:57 | 19:47 | 18:39 | 16:44 | 16:28 |
| 19 | 08:35 | 07:46 | 06:45 | 06:35 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:41 |
| | 17:02 | 17:58 | 18:48 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:33 | 05:39 | 05:18 | 05:42 | 06:29 | 07:19 | 08:09 | 08:04 | 08:41 |
| | 17:04 | 18:00 | 18:49 | 20:42 | 21:30 | 22:00 | 21:45 | 20:52 | 19:43 | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:21 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:02 | 18:51 | 20:44 | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:41 | 16:29 |
| 22 | 08:32 | 07:40 | 06:38 | 06:28 | 05:36 | 05:19 | 05:44 | 06:32 | 07:22 | 08:13 | 08:07 | 08:42 |
| | 17:07 | 18:04 | 18:53 | 20:45 | 21:33 | 22:00 | 21:43 | 20:48 | 19:38 | 18:31 | 16:40 | 16:29 |
| 23 | 08:31 | 07:38 | 06:35 | 06:26 | 05:35 | 05:19 | 05:46 | 06:34 | 07:24 | 08:14 | 08:09 | 08:43 |
| | 17:09 | 18:05 | 18:55 | 20:47 | 21:35 | 22:00 | 21:41 | 20:46 | 19:36 | 18:29 | 16:38 | 16:30 |
| 24 | 08:29 | 07:36 | 06:33 | 06:24 | 05:34 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:11 | 18:07 | 18:56 | 20:49 | 21:36 | 22:01 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:34 | 06:31 | 06:22 | 05:32 | 05:19 | 05:49 | 06:37 | 07:27 | 07:18 | 08:12 | 08:44 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:01 | 21:39 | 20:42 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:27 | 07:32 | 06:29 | 06:20 | 05:31 | 05:20 | 05:50 | 06:39 | 07:29 | 07:20 | 08:14 | 08:44 |
| | 17:14 | 18:11 | 19:00 | 20:52 | 21:39 | 22:01 | 21:37 | 20:40 | 19:29 | 17:23 | 16:35 | 16:32 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:13 | 19:01 | 20:54 | 21:40 | 22:01 | 21:36 | 20:37 | 19:26 | 17:21 | 16:35 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:21 | 05:53 | 06:42 | 07:32 | 07:23 | 08:17 | 08:45 |
| | 17:18 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:34 | 16:33 |
| 29 | 08:23 | | 07:22 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:34 | 07:25 | 08:18 | 08:45 |
| | 17:19 | | 20:05 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:56 | 06:45 | 07:35 | 07:27 | 08:20 | 08:45 |
| | 17:21 | | 20:06 | 20:59 | 21:44 | 22:00 | 21:31 | 20:31 | 19:20 | 17:15 | 16:32 | 16:35 |
| 31 | 08:20 | | 07:17 | | 05:26 | | 05:57 | 06:47 | | 07:29 | | 08:45 |
| | 17:23 | | 20:08 | | 21:45 | | 21:30 | 20:29 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 244 |
| Total, worst case | | | | | | | | | | | | |
| Sun reduction | | | | | | | | | | | | |
| Oper. time red. | | | | | | | | | | | | |
| Wind dir. red. | | | | | | | | | | | | |
| Total reduction | | | | | | | | | | | | |
| Total, real | | | | | | | | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** AY - H63

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | | April | | May | June |
|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | | 07:15 | | 06:10 | 05:25 |
| | 16:37 | 17:25 | 18:16 | | 20:10 | | 21:00 | 21:46 |
| 2 | 08:45 | 08:17 | 07:23 | | 07:12 | | 06:08 | 05:24 |
| | 16:38 | 17:26 | 18:18 | | 20:11 | | 21:02 | 21:47 |
| 3 | 08:45 | 08:15 | 07:21 | | 07:10 | | 07:38 (15) 06:06 | 05:23 |
| | 16:39 | 17:28 | 18:20 | | 20:13 | 6 | 07:44 (15) 21:04 | 21:48 |
| 4 | 08:44 | 08:13 | 07:18 | | 07:08 | | 07:35 (15) 06:04 | 05:23 |
| | 16:40 | 17:30 | 18:21 | | 20:15 | 10 | 07:45 (15) 21:05 | 21:49 |
| 5 | 08:44 | 08:12 | 07:16 | | 07:05 | | 07:33 (15) 06:03 | 05:22 |
| | 16:41 | 17:32 | 18:23 | | 20:16 | 13 | 07:46 (15) 21:07 | 21:50 |
| 6 | 08:44 | 08:10 | 07:14 | | 07:03 | | 07:33 (15) 06:01 | 05:21 |
| | 16:43 | 17:34 | 18:25 | | 20:18 | 14 | 07:47 (15) 21:09 | 21:51 |
| 7 | 08:43 | 08:08 | 07:12 | 08:06 (19) | 07:01 | | 07:32 (15) 05:59 | 05:21 |
| | 16:44 | 17:36 | 18:27 | 9 08:15 (19) | 20:20 | 15 | 07:47 (15) 21:10 | 21:52 |
| 8 | 08:43 | 08:07 | 07:10 | 08:03 (19) | 06:59 | | 07:31 (15) 05:57 | 05:20 |
| | 16:45 | 17:37 | 18:28 | 15 08:18 (19) | 20:22 | 15 | 07:46 (15) 21:12 | 21:53 |
| 9 | 08:43 | 08:05 | 07:07 | 08:00 (19) | 06:56 | | 07:31 (15) 05:55 | 05:20 |
| | 16:47 | 17:39 | 18:30 | 19 08:19 (19) | 20:23 | 15 | 07:46 (15) 21:13 | 21:54 |
| 10 | 08:42 | 08:03 | 07:05 | 07:59 (19) | 06:54 | | 07:32 (15) 05:54 | 05:19 |
| | 16:48 | 17:41 | 18:32 | 21 08:20 (19) | 20:25 | 13 | 07:45 (15) 21:15 | 21:54 |
| 11 | 08:41 | 08:01 | 07:03 | 07:58 (19) | 06:52 | | 07:33 (15) 05:52 | 05:19 |
| | 16:49 | 17:43 | 18:34 | 23 08:21 (19) | 20:27 | 11 | 07:44 (15) 21:17 | 21:55 |
| 12 | 08:41 | 07:59 | 07:01 | 07:56 (19) | 06:50 | | 07:35 (15) 05:50 | 05:19 |
| | 16:51 | 17:45 | 18:35 | 24 08:20 (19) | 20:28 | 6 | 07:41 (15) 21:18 | 21:56 |
| 13 | 08:40 | 07:58 | 06:58 | 07:56 (19) | 06:48 | | 05:49 | 05:18 |
| | 16:52 | 17:47 | 18:37 | 25 08:21 (19) | 20:30 | | 21:20 | 21:57 |
| 14 | 08:39 | 07:56 | 06:56 | 07:33 (14) | 06:45 | | 05:47 | 05:18 |
| | 16:54 | 17:49 | 18:39 | 30 08:21 (19) | 20:32 | | 21:21 | 21:57 |
| 15 | 08:39 | 07:54 | 06:54 | 07:30 (14) | 06:43 | | 05:46 | 05:18 |
| | 16:55 | 17:50 | 18:41 | 36 08:21 (19) | 20:33 | | 21:23 | 21:58 |
| 16 | 08:38 | 07:52 | 06:51 | 07:27 (14) | 06:41 | | 05:44 | 05:18 |
| | 16:57 | 17:52 | 18:42 | 39 08:20 (19) | 20:35 | | 21:24 | 21:58 |
| 17 | 08:37 | 07:50 | 06:49 | 07:27 (14) | 06:39 | | 05:43 | 05:18 |
| | 16:58 | 17:54 | 18:44 | 38 08:19 (19) | 20:37 | | 21:26 | 21:59 |
| 18 | 08:36 | 07:48 | 06:47 | 07:26 (14) | 06:37 | | 05:41 | 05:18 |
| | 17:00 | 17:56 | 18:46 | 40 08:19 (19) | 20:38 | | 21:27 | 21:59 |
| 19 | 08:35 | 07:46 | 06:45 | 07:25 (14) | 06:34 | | 05:40 | 05:18 |
| | 17:02 | 17:58 | 18:47 | 38 08:17 (19) | 20:40 | | 21:29 | 21:59 |
| 20 | 08:34 | 07:44 | 06:42 | 07:25 (14) | 06:32 | | 05:38 | 05:18 |
| | 17:03 | 18:00 | 18:49 | 34 08:15 (19) | 20:42 | | 21:30 | 22:00 |
| 21 | 08:33 | 07:42 | 06:40 | 07:26 (14) | 06:30 | | 05:37 | 05:18 |
| | 17:05 | 18:01 | 18:51 | 29 08:13 (19) | 20:44 | | 21:32 | 22:00 |
| 22 | 08:32 | 07:40 | 06:38 | 07:25 (14) | 06:28 | | 05:36 | 05:18 |
| | 17:07 | 18:03 | 18:53 | 22 08:09 (19) | 20:45 | | 21:33 | 22:00 |
| 23 | 08:30 | 07:38 | 06:35 | 07:27 (14) | 06:26 | | 05:35 | 05:19 |
| | 17:09 | 18:05 | 18:54 | 11 07:38 (14) | 20:47 | | 21:35 | 22:00 |
| 24 | 08:29 | 07:36 | 06:33 | 07:29 (14) | 06:24 | | 05:33 | 05:19 |
| | 17:10 | 18:07 | 18:56 | 7 07:36 (14) | 20:49 | | 21:36 | 22:00 |
| 25 | 08:28 | 07:33 | 06:31 | | 06:22 | | 05:32 | 05:19 |
| | 17:12 | 18:09 | 18:58 | | 20:50 | | 21:37 | 22:01 |
| 26 | 08:27 | 07:31 | 06:28 | | 06:20 | | 05:31 | 05:20 |
| | 17:14 | 18:11 | 18:59 | | 20:52 | | 21:39 | 22:01 |
| 27 | 08:25 | 07:29 | 06:26 | | 06:18 | | 05:30 | 05:20 |
| | 17:16 | 18:12 | 19:01 | | 20:54 | | 21:40 | 22:00 |
| 28 | 08:24 | 07:27 | 06:24 | | 06:16 | | 05:29 | 05:20 |
| | 17:17 | 18:14 | 19:03 | | 20:55 | | 21:41 | 22:00 |
| 29 | 08:23 | | 07:21 | | 06:14 | | 05:28 | 05:21 |
| | 17:19 | | 20:05 | | 20:57 | | 21:42 | 22:00 |
| 30 | 08:21 | | 07:19 | | 06:12 | | 05:27 | 05:22 |
| | 17:21 | | 20:06 | | 20:59 | | 21:44 | 22:00 |
| 31 | 08:20 | | 07:17 | | | | 05:26 | |
| | 17:23 | | 20:08 | | | | 21:45 | |
| Potential sun hours | 259 | 278 | 367 | | 416 | | 485 | 498 |
| Total, worst case | | | | 460 | | 118 | | |
| Sun reduction | | | | 0.24 | | 0.35 | | |
| Oper. time red. | | | | 1.00 | | 1.00 | | |
| Wind dir. red. | | | | 0.59 | | 0.66 | | |
| Total reduction | | | | 0.14 | | 0.23 | | |
| Total, real | | | | 66 | | 28 | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** AY - H63

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | July | August | | | September | | October | | | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 05:22 | 05:59 | | | 06:48 | | 07:32 (15) | | 07:37 | 08:36 (19) | 07:30 | 08:21 |
| | 22:00 | 21:28 | | | 20:26 | 11 | 07:43 (15) | | 19:17 | 09:00 (19) | 17:11 | 16:31 |
| 2 | 05:23 | 06:00 | | | 06:50 | | 07:30 (15) | | 07:38 | 08:36 (19) | 07:32 | 08:22 |
| | 21:59 | 21:26 | | | 20:24 | 13 | 07:43 (15) | | 19:15 | 08:59 (19) | 17:09 | 16:30 |
| 3 | 05:24 | 06:02 | | | 06:51 | | 07:29 (15) | | 07:40 | 08:36 (19) | 07:34 | 08:24 |
| | 21:59 | 21:25 | | | 20:22 | 15 | 07:44 (15) | | 19:12 | 08:58 (19) | 17:08 | 16:30 |
| 4 | 05:24 | 06:03 | | | 06:53 | | 07:29 (15) | | 07:42 | 08:37 (19) | 07:36 | 08:25 |
| | 21:59 | 21:23 | | | 20:19 | 15 | 07:44 (15) | | 19:10 | 08:57 (19) | 17:06 | 16:29 |
| 5 | 05:25 | 06:05 | | | 06:54 | | 07:28 (15) | | 07:43 | 08:38 (19) | 07:37 | 08:26 |
| | 21:58 | 21:21 | | | 20:17 | 15 | 07:43 (15) | | 19:08 | 08:55 (19) | 17:04 | 16:29 |
| 6 | 05:26 | 06:06 | | | 06:56 | | 07:29 (15) | | 07:45 | 08:40 (19) | 07:39 | 08:28 |
| | 21:58 | 21:19 | | | 20:15 | 14 | 07:43 (15) | | 19:06 | 08:52 (19) | 17:02 | 16:28 |
| 7 | 05:27 | 06:08 | | | 06:58 | | 07:28 (15) | | 07:47 | 08:45 (19) | 07:41 | 08:29 |
| | 21:57 | 21:18 | | | 20:13 | 13 | 07:41 (15) | | 19:03 | 3 08:48 (19) | 17:01 | 16:28 |
| 8 | 05:28 | 06:09 | | | 06:59 | | 07:30 (15) | | 07:48 | | 07:43 | 08:30 |
| | 21:56 | 21:16 | | | 20:10 | 10 | 07:40 (15) | | 19:01 | | 16:59 | 16:28 |
| 9 | 05:29 | 06:11 | | | 07:01 | | 07:31 (15) | | 07:50 | | 07:45 | 08:31 |
| | 21:56 | 21:14 | | | 20:08 | 6 | 07:37 (15) | | 18:59 | | 16:57 | 16:27 |
| 10 | 05:30 | 06:13 | | | 07:03 | | | | 07:52 | | 07:46 | 08:33 |
| | 21:55 | 21:12 | | | 20:06 | | | | 18:57 | | 16:56 | 16:27 |
| 11 | 05:31 | 06:14 | | | 07:04 | | | | 07:54 | | 07:48 | 08:34 |
| | 21:54 | 21:10 | | | 20:03 | | | | 18:54 | | 16:54 | 16:27 |
| 12 | 05:32 | 06:16 | | | 07:06 | | | | 07:55 | | 07:50 | 08:35 |
| | 21:53 | 21:08 | | | 20:01 | | | | 18:52 | | 16:53 | 16:27 |
| 13 | 05:33 | 06:17 | | | 07:07 | | | | 07:57 | | 07:52 | 08:36 |
| | 21:53 | 21:06 | | | 19:59 | | | | 18:50 | | 16:51 | 16:27 |
| 14 | 05:34 | 06:19 | | | 07:09 | | | | 07:59 | | 07:53 | 08:37 |
| | 21:52 | 21:04 | | | 19:56 | | | | 18:48 | | 16:50 | 16:27 |
| 15 | 05:35 | 06:21 | | | 07:11 | | | | 08:00 | | 07:55 | 08:37 |
| | 21:51 | 21:02 | | | 19:54 | | | | 18:46 | | 16:48 | 16:27 |
| 16 | 05:36 | 06:22 | | | 07:12 | | | | 08:02 | | 07:57 | 08:38 |
| | 21:50 | 21:00 | | | 19:52 | | | | 18:43 | | 16:47 | 16:27 |
| 17 | 05:38 | 06:24 | | | 07:14 | | | | 08:04 | | 07:59 | 08:39 |
| | 21:49 | 20:58 | | | 19:50 | | | | 18:41 | | 16:45 | 16:27 |
| 18 | 05:39 | 06:25 | | | 07:15 | | | | 08:06 | | 08:00 | 08:40 |
| | 21:47 | 20:56 | | | 19:47 | | | | 18:39 | | 16:44 | 16:27 |
| 19 | 05:40 | 06:27 | | | 07:17 | | 08:16 (14) | | 08:07 | | 08:02 | 08:41 |
| | 21:46 | 20:54 | | | 19:45 | 5 | 08:21 (14) | | 18:37 | | 16:43 | 16:28 |
| 20 | 05:41 | 06:29 | | | 07:19 | | 08:14 (14) | | 08:09 | | 08:04 | 08:41 |
| | 21:45 | 20:52 | | | 19:43 | 10 | 08:24 (14) | | 18:35 | | 16:42 | 16:28 |
| 21 | 05:43 | 06:30 | | | 07:20 | | 08:11 (14) | | 08:11 | | 08:05 | 08:42 |
| | 21:44 | 20:50 | | | 19:40 | 17 | 08:52 (19) | | 18:33 | | 16:40 | 16:28 |
| 22 | 05:44 | 06:32 | | | 07:22 | | 08:10 (14) | | 08:13 | | 08:07 | 08:42 |
| | 21:43 | 20:48 | | | 19:38 | 28 | 08:57 (19) | | 18:31 | | 16:39 | 16:29 |
| 23 | 05:45 | 06:33 | | | 07:24 | | 08:10 (14) | | 08:14 | | 08:09 | 08:43 |
| | 21:41 | 20:46 | | | 19:36 | 32 | 08:59 (19) | | 18:29 | | 16:38 | 16:29 |
| 24 | 05:47 | 06:35 | | | 07:25 | | 08:09 (14) | | 08:16 | | 08:10 | 08:43 |
| | 21:40 | 20:44 | | | 19:33 | 37 | 09:00 (19) | | 18:27 | | 16:37 | 16:30 |
| 25 | 05:48 | 06:37 | | | 07:27 | | 08:09 (14) | | 07:18 | | 08:12 | 08:44 |
| | 21:39 | 20:42 | | | 19:31 | 38 | 09:01 (19) | | 17:25 | | 16:36 | 16:31 |
| 26 | 05:50 | 06:38 | | | 07:29 | | 08:08 (14) | | 07:20 | | 08:13 | 08:44 |
| | 21:37 | 20:39 | | | 19:29 | 40 | 09:01 (19) | | 17:23 | | 16:35 | 16:31 |
| 27 | 05:51 | 06:40 | | | 07:30 | | 08:09 (14) | | 07:21 | | 08:15 | 08:44 |
| | 21:36 | 20:37 | | | 19:26 | 38 | 09:01 (19) | | 17:21 | | 16:34 | 16:32 |
| 28 | 05:53 | 06:42 | | | 07:32 | | 08:10 (14) | | 07:23 | | 08:17 | 08:44 |
| | 21:34 | 20:35 | | | 19:24 | 37 | 09:02 (19) | | 17:19 | | 16:33 | 16:33 |
| 29 | 05:54 | 06:43 | | | 07:33 | | 08:11 (14) | | 07:25 | | 08:18 | 08:45 |
| | 21:33 | 20:33 | | | 19:22 | 33 | 09:01 (19) | | 17:17 | | 16:33 | 16:34 |
| 30 | 05:56 | 06:45 | | | 07:35 | | 08:36 (19) | | 07:27 | | 08:20 | 08:45 |
| | 21:31 | 20:31 | | | 19:19 | 25 | 09:01 (19) | | 17:15 | | 16:32 | 16:35 |
| 31 | 05:57 | 06:46 | | 07:34 (15) | | | | | 07:28 | | | 08:45 |
| | 21:30 | 20:28 | 6 | 07:40 (15) | | | | | 17:13 | | | 16:36 |
| Potential sun hours | 501 | 453 | | | 381 | | | | 332 | | 267 | 244 |
| Total, worst case | | | 6 | | | 452 | | | | 121 | | |
| Sun reduction | | | 0.30 | | | 0.28 | | | | 0.24 | | |
| Oper. time red. | | | 1.00 | | | 1.00 | | | | 1.00 | | |
| Wind dir. red. | | | 0.66 | | | 0.61 | | | | 0.58 | | |
| Total reduction | | | 0.20 | | | 0.17 | | | | 0.14 | | |
| Total, real | | | 1 | | | 78 | | | | 17 | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
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+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** AZ - H64

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:15 | 06:10 | 05:25 | 05:23 | 05:59 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | 21:00 | 21:46 | 22:00 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:45 | 08:17 | 07:23 | 07:13 | 06:08 | 05:25 | 05:23 | 06:00 | 06:50 | 07:39 | 07:32 | 08:23 |
| | 16:38 | 17:27 | 18:18 | 20:12 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:10 | 16:31 |
| 3 | 08:45 | 08:15 | 07:21 | 07:10 | 06:07 | 05:24 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:20 | 20:13 | 21:04 | 21:48 | 21:59 | 21:25 | 20:22 | 19:13 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:19 | 07:08 | 06:05 | 05:23 | 05:25 | 06:03 | 06:53 | 07:42 | 07:36 | 08:25 |
| | 16:41 | 17:30 | 18:22 | 20:15 | 21:05 | 21:49 | 21:59 | 21:23 | 20:20 | 19:10 | 17:06 | 16:30 |
| 5 | 08:44 | 08:12 | 07:16 | 07:06 | 06:03 | 05:22 | 05:25 | 06:05 | 06:55 | 07:44 | 07:38 | 08:27 |
| | 16:42 | 17:32 | 18:23 | 20:17 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:22 | 05:26 | 06:07 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:09 | 21:51 | 21:58 | 21:20 | 20:15 | 19:06 | 17:03 | 16:29 |
| 7 | 08:44 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 21:10 | 21:52 | 21:57 | 21:18 | 20:13 | 19:04 | 17:01 | 16:28 |
| 8 | 08:43 | 08:07 | 07:10 | 06:59 | 05:58 | 05:21 | 05:28 | 06:10 | 07:00 | 07:49 | 07:43 | 08:30 |
| | 16:46 | 17:38 | 18:29 | 20:22 | 21:12 | 21:53 | 21:56 | 21:16 | 20:11 | 19:01 | 16:59 | 16:28 |
| 9 | 08:43 | 08:05 | 07:07 | 06:57 | 05:56 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:45 | 08:31 |
| | 16:47 | 17:40 | 18:30 | 20:23 | 21:14 | 21:54 | 21:56 | 21:14 | 20:08 | 18:59 | 16:58 | 16:28 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:20 | 05:30 | 06:13 | 07:03 | 07:52 | 07:46 | 08:33 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:54 | 07:48 | 08:34 |
| | 16:50 | 17:43 | 18:34 | 20:27 | 21:17 | 21:55 | 21:54 | 21:10 | 20:04 | 18:55 | 16:54 | 16:27 |
| 12 | 08:41 | 08:00 | 07:01 | 06:50 | 05:51 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:35 |
| | 16:51 | 17:45 | 18:36 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:58 | 06:58 | 06:48 | 05:49 | 05:19 | 05:33 | 06:18 | 07:08 | 07:57 | 07:52 | 08:36 |
| | 16:53 | 17:47 | 18:37 | 20:30 | 21:20 | 21:57 | 21:53 | 21:07 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:56 | 06:56 | 06:46 | 05:48 | 05:19 | 05:34 | 06:19 | 07:09 | 07:59 | 07:53 | 08:37 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 21:21 | 21:57 | 21:52 | 21:05 | 19:57 | 18:48 | 16:50 | 16:27 |
| 15 | 08:39 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:36 | 06:21 | 07:11 | 08:01 | 07:55 | 08:38 |
| | 16:56 | 17:51 | 18:41 | 20:34 | 21:23 | 21:58 | 21:51 | 21:03 | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 08:38 | 07:52 | 06:52 | 06:41 | 05:44 | 05:18 | 05:37 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:53 | 18:43 | 20:35 | 21:24 | 21:58 | 21:50 | 21:01 | 19:52 | 18:44 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:59 | 08:39 |
| | 16:59 | 17:54 | 18:44 | 20:37 | 21:26 | 21:59 | 21:49 | 20:59 | 19:50 | 18:42 | 16:46 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:42 | 05:18 | 05:39 | 06:26 | 07:16 | 08:06 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:39 | 21:27 | 21:59 | 21:48 | 20:57 | 19:47 | 18:39 | 16:44 | 16:28 |
| 19 | 08:35 | 07:46 | 06:45 | 06:35 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:41 |
| | 17:02 | 17:58 | 18:48 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:33 | 05:39 | 05:18 | 05:42 | 06:29 | 07:19 | 08:09 | 08:04 | 08:41 |
| | 17:04 | 18:00 | 18:49 | 20:42 | 21:30 | 22:00 | 21:45 | 20:52 | 19:43 | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:31 | 05:37 | 05:18 | 05:43 | 06:30 | 07:21 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:02 | 18:51 | 20:44 | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:41 | 16:29 |
| 22 | 08:32 | 07:40 | 06:38 | 06:28 | 05:36 | 05:19 | 05:44 | 06:32 | 07:22 | 08:13 | 08:07 | 08:42 |
| | 17:07 | 18:04 | 18:53 | 20:45 | 21:33 | 22:00 | 21:43 | 20:48 | 19:38 | 18:31 | 16:40 | 16:29 |
| 23 | 08:31 | 07:38 | 06:36 | 06:26 | 05:35 | 05:19 | 05:46 | 06:34 | 07:24 | 08:14 | 08:09 | 08:43 |
| | 17:09 | 18:05 | 18:55 | 20:47 | 21:35 | 22:00 | 21:41 | 20:46 | 19:36 | 18:29 | 16:38 | 16:30 |
| 24 | 08:29 | 07:36 | 06:33 | 06:24 | 05:34 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:11 | 18:07 | 18:56 | 20:49 | 21:36 | 22:01 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:34 | 06:31 | 06:22 | 05:32 | 05:19 | 05:49 | 06:37 | 07:27 | 07:18 | 08:12 | 08:44 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:01 | 21:39 | 20:42 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:27 | 07:32 | 06:29 | 06:20 | 05:31 | 05:20 | 05:50 | 06:39 | 07:29 | 07:20 | 08:14 | 08:44 |
| | 17:14 | 18:11 | 19:00 | 20:52 | 21:39 | 22:01 | 21:37 | 20:40 | 19:29 | 17:23 | 16:35 | 16:32 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:13 | 19:01 | 20:54 | 21:40 | 22:01 | 21:36 | 20:37 | 19:26 | 17:21 | 16:35 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:21 | 05:53 | 06:42 | 07:32 | 07:23 | 08:17 | 08:45 |
| | 17:18 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:34 | 16:33 |
| 29 | 08:23 | | 07:22 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:34 | 07:25 | 08:18 | 08:45 |
| | 17:19 | | 20:05 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:56 | 06:45 | 07:35 | 07:27 | 08:20 | 08:45 |
| | 17:21 | | 20:06 | 20:59 | 21:44 | 22:00 | 21:31 | 20:31 | 19:20 | 17:15 | 16:32 | 16:35 |
| 31 | 08:20 | | 07:17 | | 05:26 | | 05:57 | 06:47 | | 07:29 | | 08:45 |
| | 17:23 | | 20:08 | | 21:45 | | 21:30 | 20:29 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 244 |
| Total, worst case | | | | | | | | | | | | |
| Sun reduction | | | | | | | | | | | | |
| Oper. time red. | | | | | | | | | | | | |
| Wind dir. red. | | | | | | | | | | | | |
| Total reduction | | | | | | | | | | | | |
| Total, real | | | | | | | | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

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Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** BA - H67

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:15 | 06:10 | 05:25 | 05:22 | 05:59 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | 21:00 | 21:46 | 22:00 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:45 | 08:17 | 07:23 | 07:12 | 06:08 | 05:25 | 05:23 | 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:27 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:31 |
| 3 | 08:44 | 08:15 | 07:21 | 07:10 | 06:06 | 05:24 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:20 | 20:13 | 21:04 | 21:48 | 21:59 | 21:25 | 20:22 | 19:13 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:05 | 05:23 | 05:25 | 06:03 | 06:53 | 07:42 | 07:36 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 19:10 | 17:06 | 16:30 |
| 5 | 08:44 | 08:12 | 07:16 | 07:06 | 06:03 | 05:22 | 05:25 | 06:05 | 06:55 | 07:43 | 07:37 | 08:26 |
| | 16:42 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:22 | 05:26 | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:09 | 21:51 | 21:57 | 21:19 | 20:15 | 19:06 | 17:02 | 16:29 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 21:10 | 21:52 | 21:57 | 21:18 | 20:13 | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:07 | 07:10 | 06:59 | 05:57 | 05:21 | 05:28 | 06:10 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:38 | 18:28 | 20:22 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:57 | 05:56 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:45 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 21:13 | 21:53 | 21:56 | 21:14 | 20:08 | 18:59 | 16:57 | 16:28 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:20 | 05:30 | 06:13 | 07:03 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:54 | 07:48 | 08:33 |
| | 16:50 | 17:43 | 18:34 | 20:27 | 21:17 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:01 | 06:50 | 05:51 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:35 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:48 | 05:49 | 05:19 | 05:33 | 06:18 | 07:07 | 07:57 | 07:52 | 08:36 |
| | 16:53 | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:56 | 06:56 | 06:45 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:59 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 21:21 | 21:57 | 21:51 | 21:04 | 19:57 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:35 | 06:21 | 07:11 | 08:00 | 07:55 | 08:37 |
| | 16:56 | 17:51 | 18:41 | 20:33 | 21:23 | 21:58 | 21:51 | 21:02 | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 08:38 | 07:52 | 06:51 | 06:41 | 05:44 | 05:18 | 05:37 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:50 | 21:00 | 19:52 | 18:44 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:59 | 08:39 |
| | 16:59 | 17:54 | 18:44 | 20:37 | 21:26 | 21:59 | 21:48 | 20:58 | 19:50 | 18:41 | 16:46 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 | 05:18 | 05:39 | 06:26 | 07:16 | 08:06 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:28 |
| 19 | 08:35 | 07:46 | 06:45 | 06:35 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:48 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:33 | 05:39 | 05:18 | 05:42 | 06:29 | 07:19 | 08:09 | 08:04 | 08:41 |
| | 17:04 | 18:00 | 18:49 | 20:42 | 21:30 | 22:00 | 21:45 | 20:52 | 19:43 | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:02 | 18:51 | 20:44 | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:41 | 16:29 |
| 22 | 08:32 | 07:40 | 06:38 | 06:28 | 05:36 | 05:19 | 05:44 | 06:32 | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | 21:33 | 22:00 | 21:43 | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 05:35 | 05:19 | 05:46 | 06:34 | 07:24 | 08:14 | 08:09 | 08:43 |
| | 17:09 | 18:05 | 18:54 | 20:47 | 21:34 | 22:00 | 21:41 | 20:46 | 19:36 | 18:29 | 16:38 | 16:30 |
| 24 | 08:29 | 07:36 | 06:33 | 06:24 | 05:34 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:49 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | 07:18 | 08:12 | 08:44 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:39 | 20:42 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:27 | 07:31 | 06:28 | 06:20 | 05:31 | 05:20 | 05:50 | 06:38 | 07:29 | 07:20 | 08:13 | 08:44 |
| | 17:14 | 18:11 | 18:59 | 20:52 | 21:38 | 22:00 | 21:37 | 20:39 | 19:29 | 17:23 | 16:35 | 16:32 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:12 | 19:01 | 20:54 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:21 | 05:53 | 06:42 | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:34 | 16:33 |
| 29 | 08:22 | | 07:22 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | 07:25 | 08:18 | 08:45 |
| | 17:19 | | 20:05 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:56 | 06:45 | 07:35 | 07:27 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:59 | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:20 | | 07:17 | | 05:26 | | 05:57 | 06:47 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:45 | | 21:30 | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 245 |
| Total, worst case | | | | | | | | | | | | |
| Sun reduction | | | | | | | | | | | | |
| Oper. time red. | | | | | | | | | | | | |
| Wind dir. red. | | | | | | | | | | | | |
| Total reduction | | | | | | | | | | | | |
| Total, real | | | | | | | | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

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Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** BB - H68

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:14 | 06:10 | 05:25 | 05:22 | 05:59 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | 07:12 | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | 06:06 | 05:23 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 | 21:03 | 21:48 | 21:59 | 21:24 | 20:22 | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:04 | 05:23 | 05:24 | 06:03 | 06:53 | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | 06:03 | 05:22 | 05:25 | 06:05 | 06:54 | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:21 | 05:26 | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 19:05 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 21:10 | 21:52 | 21:57 | 21:17 | 20:12 | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 05:57 | 05:20 | 05:28 | 06:09 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | 20:21 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | 05:55 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 21:13 | 21:53 | 21:55 | 21:14 | 20:08 | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:19 | 05:30 | 06:13 | 07:02 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | 20:26 | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | 06:50 | 05:50 | 05:19 | 05:32 | 06:16 | 19:29 (5) 07:06 | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 3 | 19:32 (5) 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:47 19:21 (5) | 05:49 | 05:18 | 05:33 | 06:17 | 19:25 (5) 07:07 | 18:40 (4) 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 9 19:30 (5) | 21:20 | 21:56 | 21:52 | 21:06 12 | 19:37 (5) 19:59 7 | 18:47 (4) 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 06:45 19:18 (5) | 05:47 | 05:18 | 05:34 | 06:19 | 19:23 (5) 07:09 | 18:37 (4) 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | 20:32 14 19:32 (5) | 21:21 | 21:57 | 21:51 | 21:04 15 | 19:38 (5) 19:56 12 | 18:49 (4) 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 19:16 (5) | 05:46 | 05:18 | 05:35 | 06:20 | 19:21 (5) 07:11 | 18:35 (4) 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | 20:33 18 19:34 (5) | 21:23 | 21:57 | 21:50 | 21:02 18 | 19:39 (5) 19:54 15 | 18:50 (4) 18:46 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 19:15 (5) | 05:44 | 05:18 | 05:36 | 06:22 | 19:20 (5) 07:12 | 18:34 (4) 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 20 19:35 (5) | 21:24 | 21:58 | 21:49 | 21:00 20 | 19:40 (5) 19:52 16 | 18:50 (4) 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 19:14 (5) | 05:43 | 05:18 | 05:38 | 06:24 | 19:19 (5) 07:14 | 18:33 (4) 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | 20:37 22 19:36 (5) | 21:26 | 21:58 | 21:48 | 20:58 22 | 19:41 (5) 19:49 18 | 18:51 (4) 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 19:13 (5) | 05:41 | 05:18 | 05:39 | 06:25 | 19:18 (5) 07:15 | 18:32 (4) 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 23 19:36 (5) | 21:27 | 21:59 | 21:47 | 20:56 23 | 19:41 (5) 19:47 18 | 18:50 (4) 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 17:54 (4) | 06:34 19:12 (5) | 05:40 | 05:18 | 05:40 | 06:27 | 19:17 (5) 07:17 | 18:32 (4) 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 3 17:57 (4) | 20:40 25 19:37 (5) | 21:29 | 21:59 | 21:46 | 20:54 25 | 19:42 (5) 19:45 18 | 18:50 (4) 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 17:50 (4) | 06:32 19:12 (5) | 05:38 | 05:18 | 05:41 | 06:29 | 19:16 (5) 07:19 | 18:32 (4) 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 11 18:01 (4) | 20:42 25 19:37 (5) | 21:30 | 21:59 | 21:45 | 20:52 25 | 19:41 (5) 19:42 18 | 18:50 (4) 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 17:47 (4) | 06:30 19:12 (5) | 05:37 | 05:18 | 05:43 | 06:30 | 19:16 (5) 07:20 | 18:32 (4) 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 14 18:01 (4) | 20:43 25 19:37 (5) | 21:32 | 22:00 | 21:44 | 20:50 25 | 19:41 (5) 19:40 16 | 18:48 (4) 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 17:46 (4) | 06:28 19:12 (5) | 05:36 | 05:18 | 05:44 | 06:32 | 19:15 (5) 07:22 | 18:33 (4) 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 16 18:02 (4) | 20:45 25 19:37 (5) | 21:33 | 22:00 | 21:42 | 20:48 26 | 19:41 (5) 19:38 14 | 18:47 (4) 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 17:46 (4) | 06:26 19:12 (5) | 05:35 | 05:19 | 05:45 | 06:33 | 19:16 (5) 07:23 | 18:33 (4) 08:14 | 08:08 | 08:43 |
| | 17:08 | 18:05 | 18:54 17 18:03 (4) | 20:47 24 19:36 (5) | 21:34 | 22:00 | 21:41 | 20:46 25 | 19:41 (5) 19:35 12 | 18:45 (4) 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 17:45 (4) | 06:24 19:12 (5) | 05:33 | 05:19 | 05:47 | 06:35 | 19:16 (5) 07:25 | 18:36 (4) 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 19 18:04 (4) | 20:48 24 19:36 (5) | 21:36 | 22:00 | 21:40 | 20:44 25 | 19:41 (5) 19:33 6 | 18:42 (4) 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 17:44 (4) | 06:22 19:12 (5) | 05:32 | 05:19 | 05:48 | 06:37 | 19:16 (5) 07:27 | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 19 18:03 (4) | 20:50 23 19:35 (5) | 21:37 | 22:00 | 21:38 | 20:41 23 | 19:39 (5) 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 17:44 (4) | 06:20 19:12 (5) | 05:31 | 05:20 | 05:50 | 06:38 | 19:17 (5) 07:28 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 18 18:02 (4) | 20:52 22 19:34 (5) | 21:38 | 22:00 | 21:37 | 20:39 22 | 19:39 (5) 19:28 | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 17:45 (4) | 06:18 19:13 (5) | 05:30 | 05:20 | 05:51 | 06:40 | 19:17 (5) 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 17 18:02 (4) | 20:53 20 19:33 (5) | 21:40 | 22:00 | 21:36 | 20:37 20 | 19:37 (5) 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 17:45 (4) | 06:16 19:14 (5) | 05:29 | 05:20 | 05:53 | 06:41 | 19:18 (5) 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 15 18:00 (4) | 20:55 18 19:32 (5) | 21:41 | 22:00 | 21:34 | 20:35 18 | 19:36 (5) 19:24 | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 18:46 (4) | 06:14 19:15 (5) | 05:28 | 05:21 | 05:54 | 06:43 | 19:19 (5) 07:33 | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 13 18:59 (4) | 20:57 15 19:30 (5) | 21:42 | 22:00 | 21:33 | 20:33 14 | 19:33 (5) 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 18:48 (4) | 06:12 19:17 (5) | 05:27 | 05:22 | 05:56 | 06:45 | 19:22 (5) 07:35 | 07:27 | 08:19 | 08:45 |
| | 17:21 | | 20:06 9 18:57 (4) | 20:58 10 19:27 (5) | 21:43 | 22:00 | 21:31 | 20:31 8 | 19:30 (5) 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | 05:26 | | 05:57 | 06:46 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:44 | | 21:29 | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 244 |
| Total, worst case | | | 171 | 362 | | | | 369 | 170 | | | |
| Sun reduction | | | 0.24 | 0.35 | | | | 0.30 | 0.28 | | | |
| Oper. time red. | | | 1.00 | 1.00 | | | | 1.00 | 1.00 | | | |
| Wind dir. red. | | | 0.67 | 0.63 | | | | 0.63 | 0.67 | | | |
| Total reduction | | | 0.16 | 0.22 | | | | 0.19 | 0.19 | | | |
| Total, real | | | 28 | 81 | | | | 69 | 32 | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
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Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** BC - H69

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | | April | | May | June | July | August | | September | | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | | 07:14 | | 19:03 (5) | 06:10 | 05:25 | 05:22 | 05:58 | | 06:48 | 19:03 (5) | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:24 | 18:16 | | 20:10 | 18 | 19:21 (5) | 21:00 | 21:46 | 21:59 | 21:28 | | 20:26 | 12 19:15 (5) | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | | 07:12 | | 19:02 (5) | 06:08 | 05:24 | 05:23 | 06:00 | | 06:50 | 19:00 (5) | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | | 20:11 | 20 | 19:22 (5) | 21:02 | 21:47 | 21:59 | 21:26 | | 20:24 | 16 19:16 (5) | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | | 07:10 | | 19:02 (5) | 06:06 | 05:23 | 05:24 | 06:02 | | 06:51 | 18:59 (5) | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | | 20:13 | 21 | 19:23 (5) | 21:03 | 21:48 | 21:59 | 21:24 | | 20:22 | 18 19:17 (5) | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | | 07:08 | | 19:00 (5) | 06:04 | 05:23 | 05:24 | 06:03 | | 06:53 | 18:57 (5) | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | | 20:15 | 22 | 19:22 (5) | 21:05 | 21:49 | 21:58 | 21:23 | | 20:19 | 20 19:17 (5) | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | | 07:05 | | 19:00 (5) | 06:03 | 05:22 | 05:25 | 06:05 | | 06:54 | 18:57 (5) | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | | 20:16 | 22 | 19:22 (5) | 21:07 | 21:50 | 21:58 | 21:21 | | 20:17 | 21 19:18 (5) | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | | 07:03 | | 19:00 (5) | 06:01 | 05:21 | 05:26 | 06:06 | | 06:56 | 18:56 (5) | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | | 20:18 | 22 | 19:22 (5) | 21:08 | 21:51 | 21:57 | 21:19 | | 20:15 | 22 19:18 (5) | 19:05 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | | 07:01 | | 19:01 (5) | 05:59 | 05:21 | 05:27 | 06:08 | | 06:58 | 18:55 (5) | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | | 20:20 | 21 | 19:22 (5) | 21:10 | 21:52 | 21:57 | 21:17 | | 20:12 | 22 19:17 (5) | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | | 06:59 | | 19:00 (5) | 05:57 | 05:20 | 05:28 | 06:09 | | 06:59 | 18:55 (5) | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | | 20:21 | 20 | 19:20 (5) | 21:12 | 21:53 | 21:56 | 21:16 | | 20:10 | 22 19:17 (5) | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | | 06:56 | | 19:01 (5) | 05:55 | 05:20 | 05:29 | 06:11 | | 07:01 | 18:55 (5) | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | | 20:23 | 18 | 19:19 (5) | 21:13 | 21:53 | 21:55 | 21:14 | | 20:08 | 21 19:16 (5) | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | | 06:54 | | 19:02 (5) | 05:54 | 05:19 | 05:30 | 06:12 | | 07:02 | 18:55 (5) | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | | 20:25 | 16 | 19:18 (5) | 21:15 | 21:54 | 21:55 | 21:12 | | 20:06 | 21 19:16 (5) | 18:56 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | | 06:52 | | 19:04 (5) | 05:52 | 05:19 | 05:31 | 06:14 | | 07:04 | 18:55 (5) | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | | 20:26 | 12 | 19:16 (5) | 21:16 | 21:55 | 21:54 | 21:10 | | 20:03 | 19 19:14 (5) | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | | 06:50 | | 19:07 (5) | 05:50 | 05:19 | 05:32 | 06:16 | | 07:06 | 18:56 (5) | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | | 20:28 | 5 | 19:12 (5) | 21:18 | 21:56 | 21:53 | 21:08 | | 20:01 | 17 19:13 (5) | 18:52 | 16:52 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | | 06:47 | | | 05:49 | 05:18 | 05:33 | 06:17 | | 07:07 | 18:58 (5) | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | | 20:30 | | | 21:20 | 21:56 | 21:52 | 21:06 | | 19:59 | 13 19:11 (5) | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | | 06:45 | | | 05:47 | 05:18 | 05:34 | 06:19 | | 07:09 | 19:00 (5) | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | | 20:32 | | | 21:21 | 21:57 | 21:51 | 21:04 | | 19:56 | 7 19:07 (5) | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | | 06:43 | | | 05:46 | 05:18 | 05:35 | 06:20 | | 07:11 | | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | | 20:33 | | | 21:23 | 21:57 | 21:50 | 21:02 | | 19:54 | | 18:45 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | | 06:41 | | | 05:44 | 05:18 | 05:36 | 06:22 | | 07:12 | | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | | 20:35 | | | 21:24 | 21:58 | 21:49 | 21:00 | | 19:52 | | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | | 06:39 | | | 05:43 | 05:18 | 05:38 | 06:24 | | 07:14 | | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | | 20:37 | | | 21:26 | 21:58 | 21:48 | 20:58 | | 19:49 | | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | | 06:37 | | | 05:41 | 05:18 | 05:39 | 06:25 | | 07:15 | | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | | 20:38 | | | 21:27 | 21:59 | 21:47 | 20:56 | | 19:47 | | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | | 06:34 | | | 05:40 | 05:18 | 05:40 | 06:27 | | 07:17 | | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | | 20:40 | | | 21:29 | 21:59 | 21:46 | 20:54 | | 19:45 | | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | | 06:32 | | | 05:38 | 05:18 | 05:41 | 06:29 | | 07:19 | | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | | 20:42 | | | 21:30 | 21:59 | 21:45 | 20:52 | | 19:42 | | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | | 06:30 | | | 05:37 | 05:18 | 05:43 | 06:30 | | 07:20 | | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | | 20:43 | | | 21:32 | 22:00 | 21:44 | 20:50 | | 19:40 | | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | | 06:28 | | | 05:36 | 05:18 | 05:44 | 06:32 | | 07:22 | | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:52 | | 20:45 | | | 21:33 | 22:00 | 21:42 | 20:48 | | 19:38 | | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | | 06:26 | | | 05:35 | 05:18 | 05:45 | 06:33 | | 07:23 | | 08:14 | 08:08 | 08:43 |
| | 17:08 | 18:05 | 18:54 | | 20:47 | | | 21:34 | 22:00 | 21:41 | 20:46 | | 19:35 | | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | | 06:24 | | | 05:33 | 05:19 | 05:47 | 06:35 | | 07:25 | | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | | 20:48 | | | 21:36 | 22:00 | 21:40 | 20:44 | | 19:33 | | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | | 06:22 | | | 05:32 | 05:19 | 05:48 | 06:37 | | 07:27 | | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | | 20:50 | | | 21:37 | 22:00 | 21:38 | 20:41 | | 19:31 | | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | | 06:20 | | | 05:31 | 05:20 | 05:50 | 06:38 | | 07:28 | | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | | 20:52 | | | 21:38 | 22:00 | 21:37 | 20:39 | | 19:28 | | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | | 06:18 | | | 05:30 | 05:20 | 05:51 | 06:40 | | 07:30 | | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 | | 20:53 | | | 21:40 | 22:00 | 21:36 | 20:37 | | 19:26 | | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | | 06:16 | | | 05:29 | 05:20 | 05:53 | 06:41 | | 07:32 | | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | | 20:55 | | | 21:41 | 22:00 | 21:34 | 20:35 | | 19:24 | | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 19:11 (5) | 06:14 | | | 05:28 | 05:21 | 05:54 | 06:43 | | 07:33 | | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 5 19:16 (5) | 20:57 | | | 21:42 | 22:00 | 21:33 | 20:33 | | 19:21 | | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 19:07 (5) | 06:12 | | | 05:27 | 05:22 | 05:55 | 06:45 | | 07:35 | | 07:27 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 12 19:19 (5) | 20:58 | | | 21:43 | 22:00 | 21:31 | 20:31 | | 19:19 | | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | 19:04 (5) | | | | 05:26 | | 05:57 | 06:46 | 19:06 (5) | | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | 16 19:20 (5) | | | | 21:44 | | 21:29 | 20:28 | 5 19:11 (5) | | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | | 416 | | | 485 | 498 | 501 | 453 | | 381 | | 332 | 267 | 244 |
| Total, worst case | | | | 33 | | 217 | | | | | | 5 | | 251 | | | |
| Sun reduction | | | | 0.24 | | 0.35 | | | | | | 0.30 | | 0.28 | | | |
| Oper. time red. | | | | 1.00 | | 1.00 | | | | | | 1.00 | | 1.00 | | | |
| Wind dir. red. | | | | 0.65 | | 0.65 | | | | | | 0.65 | | 0.65 | | | |
| Total reduction | | | | 0.16 | | 0.23 | | | | | | 0.19 | | 0.19 | | | |
| Total, real | | | | 5 | | 50 | | | | | | 1 | | 46 | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** BD - H70

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:14 | 18:59 (5) 06:10 | 05:25 | 05:22 | 05:58 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:24 | 18:16 | 20:09 21 | 19:20 (5) 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | 07:12 | 18:59 (5) 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 21 | 19:20 (5) 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | 18:59 (5) 06:06 | 05:23 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 21 | 19:20 (5) 21:03 | 21:48 | 21:59 | 21:24 | 20:22 | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 18:59 (5) 06:04 | 05:23 | 05:24 | 06:03 | 06:53 19:00 (5) | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 19 | 19:18 (5) 21:05 | 21:49 | 21:58 | 21:23 | 20:19 8 19:08 (5) | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | 18:59 (5) 06:03 | 05:22 | 05:25 | 06:05 | 06:54 18:58 (5) | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | 20:16 18 | 19:17 (5) 21:07 | 21:50 | 21:58 | 21:21 | 20:17 13 19:11 (5) | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 19:00 (5) 06:01 | 05:21 | 05:26 | 06:06 | 06:56 18:56 (5) | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 16 | 19:16 (5) 21:08 | 21:51 | 21:57 | 21:19 | 20:15 16 19:12 (5) | 19:05 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 19:02 (5) 05:59 | 05:21 | 05:27 | 06:08 | 06:58 18:55 (5) | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:26 | 20:20 13 | 19:15 (5) 21:10 | 21:52 | 21:57 | 21:17 | 20:12 17 19:12 (5) | 19:03 | 17:00 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 19:03 (5) 05:57 | 05:20 | 05:28 | 06:09 | 06:59 18:54 (5) | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | 20:21 8 | 19:11 (5) 21:12 | 21:53 | 21:56 | 21:16 | 20:10 19 19:13 (5) | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | 05:55 | 05:20 | 05:29 | 06:11 | 07:01 18:53 (5) | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 21:13 | 21:53 | 21:55 | 21:14 | 20:08 20 19:13 (5) | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:19 | 05:30 | 06:12 | 07:02 18:52 (5) | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 21 19:13 (5) | 18:56 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 18:52 (5) | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | 20:26 | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 20 19:12 (5) | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | 06:50 | 05:50 | 05:19 | 05:32 | 06:16 | 07:06 18:52 (5) | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 20 19:12 (5) | 18:52 | 16:52 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:47 | 05:49 | 05:18 | 05:33 | 06:17 | 07:07 18:51 (5) | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 19 19:10 (5) | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 06:45 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 18:52 (5) | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 17 19:09 (5) | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:35 | 06:20 | 07:11 18:54 (5) | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | 20:33 | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 14 19:08 (5) | 18:45 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | 05:44 | 05:18 | 05:36 | 06:22 | 07:12 18:55 (5) | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 10 19:05 (5) | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | 20:37 | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 | 05:18 | 05:39 | 06:25 | 07:15 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | 06:34 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 05:38 | 05:18 | 05:41 | 06:29 | 07:19 | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | 21:30 | 21:59 | 21:45 | 20:52 | 19:42 | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | 06:28 | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:52 | 20:45 | 21:33 | 22:00 | 21:42 | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 05:35 | 05:18 | 05:45 | 06:33 | 07:23 | 08:14 | 08:08 | 08:43 |
| | 17:08 | 18:05 | 18:54 | 20:47 | 21:34 | 22:00 | 21:41 | 20:46 | 19:35 | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | 05:33 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:38 | 20:41 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 06:20 | 05:31 | 05:20 | 05:50 | 06:38 | 07:28 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | 20:52 | 21:38 | 22:00 | 21:37 | 20:39 | 19:28 | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 18:07 (5) | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 9 18:16 (5) | 20:53 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 18:04 (5) | 06:16 | 05:29 | 05:20 | 05:53 | 06:41 | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 13 18:17 (5) | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 19:02 (5) | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 17 19:19 (5) | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:21 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 19:01 (5) | 06:12 | 05:27 | 05:22 | 05:55 | 06:45 | 07:35 | 07:26 | 08:19 | 08:45 |
| | 17:21 | | 20:06 19 19:20 (5) | 20:58 | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 19:00 (5) | | 05:26 | | 05:57 | 06:46 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 19 19:19 (5) | | 21:44 | | 21:29 | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 244 |
| Total, worst case | | | 77 | 137 | | | | | 214 | | | |
| Sun reduction | | | 0.24 | 0.35 | | | | | 0.28 | | | |
| Oper. time red. | | | 1.00 | 1.00 | | | | | 1.00 | | | |
| Wind dir. red. | | | 0.66 | 0.66 | | | | | 0.66 | | | |
| Total reduction | | | 0.16 | 0.23 | | | | | 0.19 | | | |
| Total, real | | | 12 | 32 | | | | | 40 | | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** BE - H71

## Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | | | April | | | May | June | July | August | September | | | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | | | 07:14 | | 19:00 (5) | 06:10 | 05:25 | 05:22 | 05:58 | 06:48 | | | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:24 | 18:16 | | | 20:09 | 19 | 19:19 (5) | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | | | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | | | 07:12 | | 19:00 (5) | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | | | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | | | 20:11 | 19 | 19:19 (5) | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | | | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | | | 07:10 | | 19:00 (5) | 06:06 | 05:23 | 05:24 | 06:02 | 06:51 | | | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | | | 20:13 | 19 | 19:19 (5) | 21:03 | 21:48 | 21:59 | 21:24 | 20:22 | | | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | | | 07:08 | | 19:00 (5) | 06:04 | 05:23 | 05:24 | 06:03 | 06:53 | | | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | | | 20:15 | 17 | 19:17 (5) | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | | | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | | | 07:05 | | 19:01 (5) | 06:03 | 05:22 | 05:25 | 06:05 | 06:54 | | 19:02 (5) | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | | | 20:16 | 15 | 19:16 (5) | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 5 | 19:07 (5) | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | | | 07:03 | | 19:02 (5) | 06:01 | 05:21 | 05:26 | 06:06 | 06:56 | | 18:59 (5) | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | | | 20:18 | 12 | 19:14 (5) | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 11 | 19:10 (5) | 19:05 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | | | 07:01 | | 19:05 (5) | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | | 18:56 (5) | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:26 | | | 20:20 | 6 | 19:11 (5) | 21:10 | 21:52 | 21:57 | 21:17 | 20:12 | 15 | 19:11 (5) | 19:03 | 17:00 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | | | 06:59 | | | 05:57 | 05:20 | 05:28 | 06:09 | 06:59 | | 18:55 (5) | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | | | 20:21 | | | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 17 | 19:12 (5) | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | | | 06:56 | | | 05:55 | 05:20 | 05:29 | 06:11 | 07:01 | | 18:53 (5) | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | | | 20:23 | | | 21:13 | 21:53 | 21:55 | 21:14 | 20:08 | 19 | 19:12 (5) | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | | | 06:54 | | | 05:54 | 05:19 | 05:30 | 06:12 | 07:02 | | 18:53 (5) | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | | | 20:25 | | | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 19 | 19:12 (5) | 18:56 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | | | 06:52 | | | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | | 18:52 (5) | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | | | 20:26 | | | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 19 | 19:11 (5) | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | | | 06:50 | | | 05:50 | 05:19 | 05:32 | 06:16 | 07:06 | | 18:52 (5) | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | | | 20:28 | | | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 19 | 19:11 (5) | 18:52 | 16:52 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | | | 06:47 | | | 05:49 | 05:18 | 05:33 | 06:17 | 07:07 | | 18:51 (5) | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | | | 20:30 | | | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 19 | 19:10 (5) | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | | | 06:45 | | | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | | 18:52 (5) | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:48 | 18:39 | | | 20:32 | | | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 17 | 19:09 (5) | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | | | 06:43 | | | 05:46 | 05:18 | 05:35 | 06:20 | 07:10 | | 18:53 (5) | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | | | 20:33 | | | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | 16 | 19:09 (5) | 18:45 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | | | 06:41 | | | 05:44 | 05:18 | 05:36 | 06:22 | 07:12 | | 18:54 (5) | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | | | 20:35 | | | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | 12 | 19:06 (5) | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | | | 06:39 | | | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | | 18:56 (5) | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | | | 20:37 | | | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | 8 | 19:04 (5) | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | | | 06:37 | | | 05:41 | 05:18 | 05:39 | 06:25 | 07:15 | | | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | | | 20:38 | | | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | | | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | | | 06:34 | | | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | | | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | | | 20:40 | | | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | | | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | | | 06:32 | | | 05:38 | 05:18 | 05:41 | 06:29 | 07:19 | | | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | | | 20:42 | | | 21:30 | 21:59 | 21:45 | 20:52 | 19:42 | | | 18:35 | 16:42 | 16:28 |
| 21 | 08:32 | 07:42 | 06:40 | | | 06:30 | | | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | | | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | | | 20:43 | | | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | | | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | | | 06:28 | | | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 | | | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:52 | | | 20:45 | | | 21:33 | 22:00 | 21:42 | 20:48 | 19:38 | | | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:37 | 06:35 | | | 06:26 | | | 05:34 | 05:18 | 05:45 | 06:33 | 07:23 | | | 08:14 | 08:08 | 08:43 |
| | 17:08 | 18:05 | 18:54 | | | 20:47 | | | 21:34 | 22:00 | 21:41 | 20:46 | 19:35 | | | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | | | 06:24 | | | 05:33 | 05:19 | 05:47 | 06:35 | 07:25 | | | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | | | 20:48 | | | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | | | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | | | 06:22 | | | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | | | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | | | 20:50 | | | 21:37 | 22:00 | 21:38 | 20:41 | 19:31 | | | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | | 18:09 (5) | 06:20 | | | 05:31 | 05:19 | 05:50 | 06:38 | 07:28 | | | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | 5 | 18:14 (5) | 20:52 | | | 21:38 | 22:00 | 21:37 | 20:39 | 19:28 | | | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | | 18:06 (5) | 06:18 | | | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | | | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 | 11 | 18:17 (5) | 20:53 | | | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | | | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | | 18:03 (5) | 06:16 | | | 05:29 | 05:20 | 05:53 | 06:41 | 07:32 | | | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 15 | 18:18 (5) | 20:55 | | | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | | | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | | 19:02 (5) | 06:14 | | | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | | | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 17 | 19:19 (5) | 20:57 | | | 21:42 | 22:00 | 21:33 | 20:33 | 19:21 | | | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | | 19:01 (5) | 06:12 | | | 05:27 | 05:22 | 05:55 | 06:45 | 07:35 | | | 07:26 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 19 | 19:20 (5) | 20:58 | | | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | | | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | 19:00 (5) | | | | 05:26 | | 05:57 | 06:46 | | | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | 19 | 19:19 (5) | | | | 21:44 | | 21:29 | 20:28 | | | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | | | 416 | | | 485 | 498 | 501 | 453 | 381 | | | 332 | 267 | 244 |
| Total, worst case | | | | 86 | | | 107 | | | | | | | 196 | | | | |
| Sun reduction | | | | 0.24 | | | 0.35 | | | | | | | 0.28 | | | | |
| Oper. time red. | | | | 1.00 | | | 1.00 | | | | | | | 1.00 | | | | |
| Wind dir. red. | | | | 0.66 | | | 0.66 | | | | | | | 0.66 | | | | |
| Total reduction | | | | 0.16 | | | 0.23 | | | | | | | 0.19 | | | | |
| Total, real | | | | 14 | | | 25 | | | | | | | 37 | | | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** BF - H72

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | | April | | May | June | July | August | September | | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | | 07:14 | | 18:58 (5) | 06:10 | 05:25 | 05:22 | 05:58 | 06:48 | | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:24 | 18:16 | | 20:09 | 19 | 19:17 (5) | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | | 07:12 | | 18:58 (5) | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | | 20:11 | 19 | 19:17 (5) | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | | 07:10 | | 18:59 (5) | 06:06 | 05:23 | 05:24 | 06:02 | 06:51 | | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | | 20:13 | 17 | 19:16 (5) | 21:03 | 21:48 | 21:59 | 21:24 | 20:22 | | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | | 07:08 | | 18:59 (5) | 06:04 | 05:23 | 05:24 | 06:03 | 06:53 | | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | | 20:15 | 15 | 19:14 (5) | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | | 07:05 | | 19:01 (5) | 06:03 | 05:22 | 05:25 | 06:05 | 06:54 | | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | | 20:16 | 11 | 19:12 (5) | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | | 07:03 | | 19:04 (5) | 06:01 | 05:21 | 05:26 | 06:06 | 06:56 | 19:00 (5) | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | | 20:18 | 5 | 19:09 (5) | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 5 19:05 (5) | 19:05 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | | 07:01 | | | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 18:56 (5) | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:26 | | 20:20 | | | 21:10 | 21:52 | 21:57 | 21:17 | 20:12 | 11 19:07 (5) | 19:03 | 17:00 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | | 06:59 | | | 05:57 | 05:20 | 05:28 | 06:09 | 06:59 | 18:54 (5) | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | | 20:21 | | | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 15 19:09 (5) | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | | 06:56 | | | 05:55 | 05:20 | 05:29 | 06:11 | 07:01 | 18:52 (5) | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | | 20:23 | | | 21:13 | 21:53 | 21:55 | 21:14 | 20:08 | 17 19:09 (5) | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | | 06:54 | | | 05:54 | 05:19 | 05:30 | 06:12 | 07:02 | 18:52 (5) | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | | 20:25 | | | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18 19:10 (5) | 18:56 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | | 06:52 | | | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 18:50 (5) | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | | 20:26 | | | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 19 19:09 (5) | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | | 06:50 | | | 05:50 | 05:19 | 05:32 | 06:16 | 07:06 | 18:50 (5) | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | | 20:28 | | | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 20 19:10 (5) | 18:52 | 16:52 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | | 06:47 | | | 05:49 | 05:18 | 05:33 | 06:17 | 07:07 | 18:49 (5) | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | | 20:30 | | | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 20 19:09 (5) | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | | 06:45 | | | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 18:49 (5) | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:48 | 18:39 | | 20:32 | | | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 19 19:08 (5) | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | | 06:43 | | | 05:46 | 05:18 | 05:35 | 06:20 | 07:10 | 18:50 (5) | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | | 20:33 | | | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | 18 19:08 (5) | 18:45 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | | 06:41 | | | 05:44 | 05:18 | 05:36 | 06:22 | 07:12 | 18:50 (5) | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | | 20:35 | | | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | 16 19:06 (5) | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | | 06:39 | | | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 18:51 (5) | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | | 20:37 | | | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | 14 19:05 (5) | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | | 06:37 | | | 05:41 | 05:18 | 05:39 | 06:25 | 07:15 | 18:53 (5) | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | | 20:38 | | | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 8 19:01 (5) | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | | 06:34 | | | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | | 20:40 | | | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | | 06:32 | | | 05:38 | 05:18 | 05:41 | 06:29 | 07:19 | | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | | 20:42 | | | 21:30 | 21:59 | 21:45 | 20:52 | 19:42 | | 18:35 | 16:42 | 16:28 |
| 21 | 08:32 | 07:42 | 06:40 | | 06:30 | | | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | | 20:43 | | | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | | 06:28 | | | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 | | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:52 | | 20:45 | | | 21:33 | 22:00 | 21:42 | 20:48 | 19:38 | | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:37 | 06:35 | | 06:26 | | | 05:34 | 05:18 | 05:45 | 06:33 | 07:23 | | 08:14 | 08:08 | 08:43 |
| | 17:08 | 18:05 | 18:54 | | 20:47 | | | 21:34 | 22:00 | 21:41 | 20:46 | 19:35 | | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | | 06:24 | | | 05:33 | 05:19 | 05:47 | 06:35 | 07:25 | | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | | 20:48 | | | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 18:06 (5) | 06:22 | | | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 7 18:13 (5) | 20:50 | | | 21:37 | 22:00 | 21:38 | 20:41 | 19:31 | | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 18:03 (5) | 06:20 | | | 05:31 | 05:19 | 05:50 | 06:38 | 07:28 | | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | 13 18:16 (5) | 20:52 | | | 21:38 | 22:00 | 21:37 | 20:39 | 19:28 | | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 18:02 (5) | 06:18 | | | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 | 15 18:17 (5) | 20:53 | | | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 18:00 (5) | 06:16 | | | 05:29 | 05:20 | 05:53 | 06:41 | 07:32 | | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 17 18:17 (5) | 20:55 | | | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 18:59 (5) | 06:14 | | | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 19 19:18 (5) | 20:57 | | | 21:42 | 22:00 | 21:33 | 20:33 | 19:21 | | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 18:59 (5) | 06:12 | | | 05:27 | 05:22 | 05:55 | 06:45 | 07:35 | | 07:26 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 19 19:18 (5) | 20:58 | | | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | 18:58 (5) | | | | 05:26 | | 05:57 | 06:46 | | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | 19 19:17 (5) | | | | 21:44 | | 21:29 | 20:28 | | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | | 416 | | | 485 | 498 | 501 | 453 | 381 | | 332 | 267 | 244 |
| Total, worst case | | | | 109 | | 86 | | | | | | | 200 | | | |
| Sun reduction | | | | 0.24 | | 0.35 | | | | | | | 0.28 | | | |
| Oper. time red. | | | | 1.00 | | 1.00 | | | | | | | 1.00 | | | |
| Wind dir. red. | | | | 0.66 | | 0.66 | | | | | | | 0.66 | | | |
| Total reduction | | | | 0.16 | | 0.23 | | | | | | | 0.19 | | | |
| Total, real | | | | 18 | | 20 | | | | | | | 37 | | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** BG - H73

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | | April | | May | June | July | August | September | | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | | 07:14 | 18:58 (5) | 06:10 | 05:25 | 05:22 | 05:58 | 06:48 | | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:24 | 18:16 | | 20:09 | 15 19:13 (5) | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | | 07:12 | 19:00 (5) | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | | 20:11 | 12 19:12 (5) | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | | 07:10 | 19:02 (5) | 06:06 | 05:23 | 05:24 | 06:02 | 06:51 | | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | | 20:13 | 7 19:09 (5) | 21:03 | 21:48 | 21:59 | 21:24 | 20:22 | | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | | 07:08 | | 06:04 | 05:23 | 05:24 | 06:03 | 06:53 | | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | | 20:15 | | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | | 07:05 | | 06:02 | 05:22 | 05:25 | 06:05 | 06:54 | | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | | 20:16 | | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | | 07:03 | | 06:01 | 05:21 | 05:26 | 06:06 | 06:56 | | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | | 20:18 | | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | | 19:05 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | | 07:01 | | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:26 | | 20:20 | | 21:10 | 21:52 | 21:57 | 21:17 | 20:12 | | 19:03 | 17:00 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | | 06:59 | | 05:57 | 05:20 | 05:28 | 06:09 | 06:59 | | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | | 20:21 | | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | | 06:56 | | 05:55 | 05:20 | 05:29 | 06:11 | 07:01 | 18:55 (5) | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | | 20:23 | | 21:13 | 21:53 | 21:55 | 21:14 | 20:08 | 7 19:02 (5) | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | | 06:54 | | 05:54 | 05:19 | 05:30 | 06:12 | 07:02 | 18:53 (5) | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | | 20:25 | | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 12 19:05 (5) | 18:56 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | | 06:52 | | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 18:51 (5) | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | | 20:26 | | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 14 19:05 (5) | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | | 06:50 | | 05:50 | 05:19 | 05:32 | 06:16 | 07:06 | 18:50 (5) | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | | 20:28 | | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 16 19:06 (5) | 18:52 | 16:52 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | | 06:47 | | 05:49 | 05:18 | 05:33 | 06:17 | 07:07 | 18:48 (5) | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | | 20:30 | | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18 19:06 (5) | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | | 06:45 | | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 18:48 (5) | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:48 | 18:39 | | 20:32 | | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 18 19:06 (5) | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | | 06:43 | | 05:46 | 05:18 | 05:35 | 06:20 | 07:10 | 18:48 (5) | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | | 20:33 | | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | 18 19:06 (5) | 18:45 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | | 06:41 | | 05:44 | 05:18 | 05:36 | 06:22 | 07:12 | 18:47 (5) | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | | 20:35 | | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | 18 19:05 (5) | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | | 06:39 | | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 18:48 (5) | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | | 20:37 | | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | 17 19:05 (5) | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | | 06:37 | | 05:41 | 05:18 | 05:39 | 06:25 | 07:15 | 18:47 (5) | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | | 20:38 | | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 16 19:03 (5) | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | | 06:34 | | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 18:49 (5) | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | | 20:40 | | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 12 19:01 (5) | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | | 06:32 | | 05:38 | 05:18 | 05:41 | 06:28 | 07:19 | 18:51 (5) | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | | 20:42 | | 21:30 | 21:59 | 21:45 | 20:52 | 19:42 | 8 18:59 (5) | 18:35 | 16:42 | 16:28 |
| 21 | 08:32 | 07:42 | 06:40 | | 06:30 | | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | | 20:43 | | 21:31 | 22:00 | 21:44 | 20:50 | 19:40 | | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | | 06:28 | | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 | | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:52 | | 20:45 | | 21:33 | 22:00 | 21:42 | 20:48 | 19:38 | | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:37 | 06:35 | 18:06 (5) | 06:26 | | 05:34 | 05:18 | 05:45 | 06:33 | 07:23 | | 08:14 | 08:08 | 08:43 |
| | 17:08 | 18:05 | 18:54 | 6 18:12 (5) | 20:47 | | 21:34 | 22:00 | 21:41 | 20:46 | 19:35 | | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | 18:02 (5) | 06:24 | | 05:33 | 05:19 | 05:47 | 06:35 | 07:25 | | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 12 18:14 (5) | 20:48 | | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 18:00 (5) | 06:22 | | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 15 18:15 (5) | 20:50 | | 21:37 | 22:00 | 21:38 | 20:41 | 19:31 | | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 17:59 (5) | 06:20 | | 05:31 | 05:19 | 05:50 | 06:38 | 07:28 | | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | 17 18:16 (5) | 20:52 | | 21:38 | 22:00 | 21:37 | 20:39 | 19:28 | | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 17:59 (5) | 06:18 | | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 | 18 18:17 (5) | 20:53 | | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 17:57 (5) | 06:16 | | 05:29 | 05:20 | 05:53 | 06:41 | 07:32 | | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 19 18:16 (5) | 20:55 | | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 18:57 (5) | 06:14 | | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 19 19:16 (5) | 20:57 | | 21:42 | 22:00 | 21:33 | 20:33 | 19:21 | | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 18:58 (5) | 06:12 | | 05:27 | 05:22 | 05:55 | 06:45 | 07:35 | | 07:26 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 18 19:16 (5) | 20:58 | | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | 18:57 (5) | | | 05:26 | | 05:57 | 06:46 | | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | 17 19:14 (5) | | | 21:44 | | 21:29 | 20:28 | | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | | 416 | | 485 | 498 | 501 | 453 | 381 | | 332 | 267 | 244 |
| Total, worst case | | | 141 | | 34 | | | | | | 174 | | | | |
| Sun reduction | | | 0.24 | | 0.35 | | | | | | 0.28 | | | | |
| Oper. time red. | | | 1.00 | | 1.00 | | | | | | 1.00 | | | | |
| Wind dir. red. | | | 0.66 | | 0.66 | | | | | | 0.66 | | | | |
| Total reduction | | | 0.16 | | 0.23 | | | | | | 0.19 | | | | |
| Total, real | | | 23 | | 8 | | | | | | 33 | | | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** BH - H74

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:14 | 06:10 | 05:25 | 05:22 | 05:58 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:24 | 18:16 | 20:09 | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | 07:12 | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | 06:06 | 05:23 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 | 21:03 | 21:48 | 21:59 | 21:24 | 20:22 | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:04 | 05:23 | 05:24 | 06:03 | 06:53 | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | 06:02 | 05:22 | 05:25 | 06:05 | 06:54 | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:21 | 05:26 | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 19:05 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:26 | 20:20 | 21:10 | 21:52 | 21:57 | 21:17 | 20:12 | 19:03 | 17:00 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 05:57 | 05:20 | 05:28 | 06:09 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | 20:21 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | 05:55 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:46 | 17:39 | 18:30 | 20:23 | 21:13 | 21:53 | 21:55 | 21:14 | 20:08 | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:19 | 05:30 | 06:12 | 07:02 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:56 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | 20:26 | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | 06:50 | 05:50 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:52 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:47 | 05:49 | 05:18 | 05:33 | 06:17 | 07:07 | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 06:45 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:48 | 18:39 | 20:32 | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:35 | 06:20 | 07:10 | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | 20:33 | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | 18:45 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | 05:44 | 05:18 | 05:36 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | 20:37 | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 | 05:18 | 05:39 | 06:25 | 07:15 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | 06:34 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 05:38 | 05:18 | 05:41 | 06:28 | 07:19 | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | 21:30 | 21:59 | 21:45 | 20:52 | 19:42 | 18:35 | 16:42 | 16:28 |
| 21 | 08:32 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | 21:31 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | 06:28 | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:52 | 20:45 | 21:33 | 22:00 | 21:42 | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:37 | 06:35 | 06:26 | 05:34 | 05:18 | 05:45 | 06:33 | 07:23 | 08:14 | 08:08 | 08:43 |
| | 17:08 | 18:05 | 18:54 | 20:47 | 21:34 | 22:00 | 21:41 | 20:46 | 19:35 | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | 05:33 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:38 | 20:41 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 06:20 | 05:31 | 05:19 | 05:50 | 06:38 | 07:28 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | 20:52 | 21:38 | 22:00 | 21:37 | 20:39 | 19:28 | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 | 20:53 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:20 | 05:53 | 06:41 | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:21 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:55 | 06:45 | 07:35 | 07:26 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:58 | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | 05:26 | | 05:57 | 06:46 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:44 | | 21:29 | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 244 |
| Total, worst case | | | | | | | | | | | | |
| Sun reduction | | | | | | | | | | | | |
| Oper. time red. | | | | | | | | | | | | |
| Wind dir. red. | | | | | | | | | | | | |
| Total reduction | | | | | | | | | | | | |
| Total, real | | | | | | | | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** BI - H75

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:14 | 06:10 | 05:25 | 05:22 | 05:58 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:24 | 18:16 | 20:09 | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | 07:12 | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | 06:06 | 05:23 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 | 21:03 | 21:48 | 21:59 | 21:24 | 20:22 | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:04 | 05:23 | 05:24 | 06:03 | 06:53 | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | 06:02 | 05:22 | 05:25 | 06:05 | 06:54 | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:21 | 05:26 | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 19:05 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:26 | 20:20 | 21:10 | 21:52 | 21:57 | 21:17 | 20:12 | 19:03 | 17:00 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 05:57 | 05:20 | 05:28 | 06:09 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | 20:21 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | 05:55 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:46 | 17:39 | 18:30 | 20:23 | 21:13 | 21:53 | 21:55 | 21:14 | 20:08 | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:19 | 05:30 | 06:12 | 07:02 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:56 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:33 | 20:26 | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | 06:50 | 05:50 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:52 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:47 | 05:49 | 05:18 | 05:33 | 06:17 | 07:07 | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 06:45 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:48 | 18:39 | 20:32 | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:35 | 06:20 | 07:10 | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | 20:33 | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | 18:45 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | 05:44 | 05:18 | 05:36 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | 20:37 | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 | 05:18 | 05:39 | 06:25 | 07:15 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | 06:34 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 05:38 | 05:18 | 05:41 | 06:28 | 07:19 | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | 21:30 | 21:59 | 21:45 | 20:52 | 19:42 | 18:35 | 16:42 | 16:28 |
| 21 | 08:32 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | 21:31 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | 06:28 | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:52 | 20:45 | 21:33 | 22:00 | 21:42 | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:37 | 06:35 | 06:26 | 05:34 | 05:18 | 05:45 | 06:33 | 07:23 | 08:14 | 08:08 | 08:43 |
| | 17:08 | 18:05 | 18:54 | 20:47 | 21:34 | 22:00 | 21:41 | 20:46 | 19:35 | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | 05:33 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:38 | 20:41 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 06:20 | 05:31 | 05:19 | 05:50 | 06:38 | 07:28 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | 20:52 | 21:38 | 22:00 | 21:37 | 20:39 | 19:28 | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 | 20:53 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:20 | 05:53 | 06:41 | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:21 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:55 | 06:45 | 07:35 | 07:26 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:58 | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | 05:26 | | 05:57 | 06:46 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:44 | | 21:29 | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 244 |
| Total, worst case | | | | | | | | | | | | |
| Sun reduction | | | | | | | | | | | | |
| Oper. time red. | | | | | | | | | | | | |
| Wind dir. red. | | | | | | | | | | | | |
| Total reduction | | | | | | | | | | | | |
| Total, real | | | | | | | | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** BJ - H76

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:14 | 06:10 | 05:25 | 05:22 | 05:58 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:24 | 18:16 | 20:09 | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | 07:12 | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | 06:06 | 05:23 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 | 21:03 | 21:48 | 21:59 | 21:24 | 20:22 | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:04 | 05:23 | 05:24 | 06:03 | 06:53 | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | 06:02 | 05:22 | 05:25 | 06:05 | 06:54 | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:21 | 05:26 | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 19:05 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:26 | 20:20 | 21:10 | 21:52 | 21:57 | 21:17 | 20:12 | 19:03 | 17:00 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 05:57 | 05:20 | 05:28 | 06:09 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | 20:21 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | 05:55 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:46 | 17:39 | 18:30 | 20:23 | 21:13 | 21:53 | 21:55 | 21:14 | 20:08 | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:19 | 05:30 | 06:12 | 07:02 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:56 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:33 | 20:26 | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | 06:50 | 05:50 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:52 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:47 | 05:49 | 05:18 | 05:33 | 06:17 | 07:07 | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 06:45 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:48 | 18:39 | 20:32 | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:35 | 06:20 | 07:10 | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | 20:33 | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | 18:45 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | 05:44 | 05:18 | 05:36 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | 20:37 | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 | 05:18 | 05:39 | 06:25 | 07:15 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | 06:34 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 05:38 | 05:18 | 05:41 | 06:28 | 07:19 | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | 21:30 | 21:59 | 21:45 | 20:52 | 19:42 | 18:35 | 16:42 | 16:28 |
| 21 | 08:32 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | 21:31 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | 06:28 | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:52 | 20:45 | 21:33 | 22:00 | 21:42 | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:37 | 06:35 | 06:26 | 05:34 | 05:18 | 05:45 | 06:33 | 07:23 | 08:14 | 08:08 | 08:43 |
| | 17:08 | 18:05 | 18:54 | 20:47 | 21:34 | 22:00 | 21:41 | 20:46 | 19:35 | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | 05:33 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:38 | 20:41 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 06:20 | 05:31 | 05:19 | 05:50 | 06:38 | 07:28 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | 20:52 | 21:38 | 22:00 | 21:37 | 20:39 | 19:28 | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 | 20:53 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:20 | 05:53 | 06:41 | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:21 | 17:17 | 16:32 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:55 | 06:45 | 07:35 | 07:26 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:58 | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | 05:26 | | 05:57 | 06:46 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:44 | | 21:29 | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 244 |
| Total, worst case | | | | | | | | | | | | |
| Sun reduction | | | | | | | | | | | | |
| Oper. time red. | | | | | | | | | | | | |
| Wind dir. red. | | | | | | | | | | | | |
| Total reduction | | | | | | | | | | | | |
| Total, real | | | | | | | | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** BK - H77

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:14 | 06:10 | 05:25 | 05:22 | 05:58 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:24 | 18:16 | 20:09 | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | 07:12 | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | 06:06 | 05:23 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 | 21:03 | 21:48 | 21:59 | 21:24 | 20:22 | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:04 | 05:23 | 05:24 | 06:03 | 06:53 | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | 06:02 | 05:22 | 05:25 | 06:05 | 06:54 | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:21 | 05:26 | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 19:05 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:26 | 20:20 | 21:10 | 21:52 | 21:57 | 21:17 | 20:12 | 19:03 | 17:00 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 05:57 | 05:20 | 05:28 | 06:09 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | 20:21 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | 05:55 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:46 | 17:39 | 18:30 | 20:23 | 21:13 | 21:53 | 21:55 | 21:14 | 20:08 | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:19 | 05:30 | 06:12 | 07:02 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:56 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | 20:26 | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | 06:50 | 05:50 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:52 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:47 | 05:49 | 05:18 | 05:33 | 06:17 | 07:07 | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 06:45 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:48 | 18:39 | 20:32 | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:35 | 06:20 | 07:10 | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | 20:33 | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | 18:45 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | 05:44 | 05:18 | 05:36 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | 20:37 | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 | 05:18 | 05:39 | 06:25 | 07:15 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | 06:34 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 05:38 | 05:18 | 05:41 | 06:28 | 07:19 | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | 21:30 | 21:59 | 21:45 | 20:52 | 19:42 | 18:35 | 16:42 | 16:28 |
| 21 | 08:32 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | 21:31 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | 06:28 | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:52 | 20:45 | 21:33 | 22:00 | 21:42 | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:37 | 06:35 | 06:26 | 05:34 | 05:18 | 05:45 | 06:33 | 07:23 | 08:14 | 08:08 | 08:43 |
| | 17:08 | 18:05 | 18:54 | 20:47 | 21:34 | 22:00 | 21:41 | 20:46 | 19:35 | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | 05:33 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:38 | 20:41 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 06:20 | 05:31 | 05:19 | 05:50 | 06:38 | 07:28 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | 20:52 | 21:38 | 22:00 | 21:37 | 20:39 | 19:28 | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 | 20:53 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:20 | 05:53 | 06:41 | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:21 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:55 | 06:45 | 07:35 | 07:26 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:58 | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | 05:26 | | 05:57 | 06:46 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:44 | | 21:29 | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 244 |
| Total, worst case | | | | | | | | | | | | |
| Sun reduction | | | | | | | | | | | | |
| Oper. time red. | | | | | | | | | | | | |
| Wind dir. red. | | | | | | | | | | | | |
| Total reduction | | | | | | | | | | | | |
| Total, real | | | | | | | | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** BL - H78

## Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:15 | 06:10 | 05:25 | 19:41 (8) | 05:22 | 19:42 (8) | 05:59 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | 21:00 | 21:46 | 21 20:02 (8) | 21:59 | 31 20:13 (8) | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | 07:12 | 06:08 | 05:24 | 19:40 (8) | 05:23 | 19:42 (8) | 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 21:02 | 21:47 | 23 20:03 (8) | 21:59 | 31 20:13 (8) | 21:26 | 20:24 | 19:15 | 17:09 | 16:31 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | 06:06 | 05:24 | 19:39 (8) | 05:24 | 19:42 (8) | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 | 21:03 | 21:48 | 24 20:03 (8) | 21:59 | 30 20:12 (8) | 21:25 | 20:22 | 19:12 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:04 | 05:23 | 19:39 (8) | 05:24 | 19:43 (8) | 06:03 | 06:53 | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 26 20:05 (8) | 21:58 | 29 20:12 (8) | 21:23 | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | 06:03 | 05:22 | 19:38 (8) | 05:25 | 19:44 (8) | 06:05 | 06:54 | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 27 20:05 (8) | 21:58 | 28 20:12 (8) | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:22 | 19:38 (8) | 05:26 | 19:44 (8) | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:08 | 21:51 | 28 20:06 (8) | 21:57 | 28 20:12 (8) | 21:19 | 20:15 | 19:06 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 19:38 (8) | 05:27 | 19:44 (8) | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 21:10 | 21:52 | 28 20:06 (8) | 21:57 | 27 20:11 (8) | 21:18 | 20:13 | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 05:57 | 05:20 | 19:38 (8) | 05:28 | 19:45 (8) | 06:09 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | 20:21 | 21:12 | 21:53 | 29 20:07 (8) | 21:56 | 26 20:11 (8) | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | 05:56 | 05:20 | 19:37 (8) | 05:29 | 19:46 (8) | 06:11 | 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 21:13 | 21:53 | 30 20:07 (8) | 21:56 | 25 20:11 (8) | 21:14 | 20:08 | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:20 | 19:37 (8) | 05:30 | 19:47 (8) | 06:13 | 07:03 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 31 20:08 (8) | 21:55 | 23 20:10 (8) | 21:12 | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 19:38 (8) | 05:31 | 19:48 (8) | 06:14 | 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | 20:26 | 21:16 | 21:55 | 30 20:08 (8) | 21:54 | 22 20:10 (8) | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | 06:50 | 19:00 (7) 05:51 | 05:19 | 19:38 (8) | 05:32 | 19:49 (8) | 06:16 | 07:06 | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 8 19:08 (7) 21:18 | 21:56 | 31 20:09 (8) | 21:53 | 20 20:09 (8) | 21:08 | 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:48 | 18:56 (7) 05:49 | 05:19 | 19:37 (8) | 05:33 | 19:50 (8) | 06:17 | 19:06 (7) | 07:07 | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 14 19:10 (7) 21:20 | 21:56 | 32 20:09 (8) | 21:52 | 18 20:08 (8) | 21:06 | 6 19:12 (7) | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 06:45 | 18:54 (7) 05:47 | 05:18 | 19:37 (8) | 05:34 | 19:51 (8) | 06:19 | 19:02 (7) | 07:09 | 07:59 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 18 19:12 (7) 21:21 | 21:57 | 32 20:09 (8) | 21:51 | 16 20:07 (8) | 21:04 | 12 19:14 (7) | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 18:53 (7) 05:46 | 05:18 | 19:37 (8) | 05:35 | 19:53 (8) | 06:21 | 19:01 (7) | 07:11 | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:41 | 20:33 | 20 19:13 (7) 21:23 | 21:57 | 33 20:10 (8) | 21:50 | 12 20:05 (8) | 21:02 | 15 19:16 (7) | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | 18:52 (7) 05:44 | 05:18 | 19:38 (8) | 05:37 | 19:55 (8) | 06:22 | 18:58 (7) | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 22 19:14 (7) 21:24 | 21:58 | 32 20:10 (8) | 21:49 | 7 20:02 (8) | 21:00 | 19 19:17 (7) | 19:52 | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 18:51 (7) 05:43 | 05:18 | 19:38 (8) | 05:38 | | 06:24 | 18:58 (7) | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:59 | 17:54 | 18:44 | 20:37 | 23 19:14 (7) 21:26 | 21:58 | 32 20:10 (8) | 21:48 | | 20:58 | 20 19:18 (7) | 19:49 | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 18:50 (7) 05:41 | 05:18 | 19:38 (8) | 05:39 | | 06:25 | 18:56 (7) | 07:15 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 25 19:15 (7) 21:27 | 21:59 | 33 20:11 (8) | 21:47 | | 20:56 | 22 19:18 (7) | 19:47 | 18:39 | 16:44 | 16:28 |
| 19 | 08:35 | 07:46 | 06:44 | 06:34 | 18:50 (7) 05:40 | 05:18 | 19:38 (8) | 05:40 | | 06:27 | 18:55 (7) | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | 25 19:15 (7) 21:29 | 21:59 | 33 20:11 (8) | 21:46 | | 20:54 | 24 19:19 (7) | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 18:49 (7) 05:39 | 05:18 | 19:38 (8) | 05:42 | | 06:29 | 18:54 (7) | 07:19 | 08:09 | 08:04 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | 26 19:15 (7) 21:30 | 21:59 | 33 20:11 (8) | 21:45 | | 20:52 | 25 19:19 (7) | 19:42 | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | 18:49 (7) 05:37 | 05:18 | 19:39 (8) | 05:43 | | 06:30 | 18:54 (7) | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | 26 19:15 (7) 21:32 | 22:00 | 33 20:12 (8) | 21:44 | | 20:50 | 25 19:19 (7) | 19:40 | 18:33 | 16:40 | 16:29 |
| 22 | 08:31 | 07:40 | 06:38 | 06:28 | 18:49 (7) 05:36 | 05:18 | 19:39 (8) | 05:44 | | 06:32 | 18:54 (7) | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | 26 19:15 (7) 21:33 | 22:00 | 33 20:12 (8) | 21:42 | | 20:48 | 26 19:20 (7) | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 18:50 (7) 05:35 | 05:19 | 19:39 (8) | 05:46 | | 06:33 | 18:53 (7) | 07:24 | 08:14 | 08:08 | 08:43 |
| | 17:09 | 18:05 | 18:54 | 20:47 | 24 19:14 (7) 21:34 | 22:00 | 33 20:12 (8) | 21:41 | | 20:46 | 26 19:19 (7) | 19:35 | 18:29 | 16:38 | 16:30 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | 18:50 (7) 05:33 | 05:19 | 19:39 (8) | 05:47 | | 06:35 | 18:54 (7) | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 23 19:13 (7) 21:36 | 22:00 | 33 20:12 (8) | 21:40 | | 20:44 | 25 19:19 (7) | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 18:50 (7) 05:32 | 05:19 | 19:40 (8) | 05:48 | | 06:37 | 18:53 (7) | 07:27 | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 23 19:13 (7) 21:37 | 22:00 | 32 20:12 (8) | 21:38 | | 20:42 | 25 19:18 (7) | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 06:20 | 18:51 (7) 05:31 | 05:20 | 19:40 (8) | 05:50 | | 06:38 | 18:54 (7) | 07:28 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:11 | 18:59 | 20:52 | 20 19:11 (7) 21:38 | 22:00 | 32 20:12 (8) | 21:37 | | 20:39 | 23 19:17 (7) | 19:29 | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 18:52 (7) 05:30 | 05:20 | 19:40 (8) | 05:51 | | 06:40 | 18:54 (7) | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:12 | 19:01 | 20:53 | 18 19:10 (7) 21:40 | 22:00 | 33 20:13 (8) | 21:36 | | 20:37 | 22 19:16 (7) | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 18:53 (7) 05:29 | 19:45 (8) 05:21 | 19:40 (8) | 05:53 | | 06:42 | 18:55 (7) | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 15 19:08 (7) 21:41 | 11 19:56 (8) 22:00 | 32 20:12 (8) | 21:34 | | 20:35 | 20 19:15 (7) | 19:24 | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 06:14 | 18:55 (7) 05:28 | 19:43 (8) 05:21 | 19:41 (8) | 05:54 | | 06:43 | 18:55 (7) | 07:33 | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 20:57 | 11 19:06 (7) 21:42 | 15 19:58 (8) 22:00 | 32 20:13 (8) | 21:33 | | 20:33 | 18 19:13 (7) | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 19:42 (8) 05:22 | 19:41 (8) | 05:56 | | 06:45 | 18:57 (7) | 07:35 | 07:27 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:58 | 21:43 | 17 19:59 (8) 22:00 | 31 20:12 (8) | 21:31 | | 20:31 | 14 19:11 (7) | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | 05:26 | 19:41 (8) | | 05:57 | | 06:46 | 18:59 (7) | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:44 | 19 20:00 (8) | | 21:29 | | 20:28 | 8 19:07 (7) | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | | 501 | | 453 | | 381 | 332 | 267 | 244 |
| Total, worst case | | | | 367 | 62 | 912 | | 373 | | 375 | | | | | |
| Sun reduction | | | | 0.35 | 0.37 | 0.30 | | 0.27 | | 0.30 | | | | | |
| Oper. time red. | | | | 1.00 | 1.00 | 1.00 | | 1.00 | | 1.00 | | | | | |
| Wind dir. red. | | | | 0.64 | 0.58 | 0.58 | | 0.58 | | 0.64 | | | | | |
| Total reduction | | | | 0.23 | 0.21 | 0.17 | | 0.15 | | 0.19 | | | | | |
| Total, real | | | | 84 | 13 | 158 | | 57 | | 72 | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
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kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** BM - H79

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | | | April | | | May | | | June | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | | | 07:15 | | 18:19 (8) | 06:10 | | | 05:25 | | 19:36 (4) |
| | 16:37 | 17:25 | 18:16 | | | 20:10 | 29 | 18:48 (8) | 21:00 | | | 21:46 | 31 | 20:07 (4) |
| 2 | 08:45 | 08:16 | 07:23 | | | 07:12 | | 18:19 (8) | 06:08 | | | 05:24 | | 19:36 (4) |
| | 16:38 | 17:26 | 18:18 | | | 20:11 | 30 | 18:49 (8) | 21:02 | | | 21:47 | 31 | 20:07 (4) |
| 3 | 08:44 | 08:15 | 07:20 | | | 07:10 | | 18:18 (8) | 06:06 | | | 05:24 | | 19:36 (4) |
| | 16:39 | 17:28 | 18:19 | | | 20:13 | 31 | 18:49 (8) | 21:03 | | | 21:48 | 31 | 20:07 (4) |
| 4 | 08:44 | 08:13 | 07:18 | | | 07:08 | | 18:17 (8) | 06:04 | | | 05:23 | | 19:36 (4) |
| | 16:40 | 17:30 | 18:21 | | | 20:15 | 32 | 18:49 (8) | 21:05 | | | 21:49 | 32 | 20:08 (4) |
| 5 | 08:44 | 08:12 | 07:16 | | | 07:05 | | 18:17 (8) | 06:03 | | | 05:22 | | 19:36 (4) |
| | 16:41 | 17:32 | 18:23 | | | 20:16 | 32 | 18:49 (8) | 21:07 | | | 21:50 | 32 | 20:08 (4) |
| 6 | 08:44 | 08:10 | 07:14 | | | 07:03 | | 18:16 (8) | 06:01 | | | 05:22 | | 19:36 (4) |
| | 16:43 | 17:34 | 18:25 | | | 20:18 | 33 | 18:49 (8) | 21:08 | | | 21:51 | 33 | 20:09 (4) |
| 7 | 08:43 | 08:08 | 07:12 | | | 07:01 | | 18:17 (8) | 05:59 | | | 05:21 | | 19:36 (4) |
| | 16:44 | 17:36 | 18:27 | | | 20:20 | 32 | 18:49 (8) | 21:10 | | | 21:52 | 33 | 20:09 (4) |
| 8 | 08:43 | 08:06 | 07:09 | | | 06:59 | | 18:16 (8) | 05:57 | | | 05:20 | | 19:36 (4) |
| | 16:45 | 17:37 | 18:28 | | | 20:21 | 31 | 18:47 (8) | 21:12 | | | 21:53 | 33 | 20:09 (4) |
| 9 | 08:42 | 08:05 | 07:07 | | | 06:56 | | 18:16 (8) | 05:56 | | | 05:20 | | 19:36 (4) |
| | 16:47 | 17:39 | 18:30 | | | 20:23 | 31 | 18:47 (8) | 21:13 | | | 21:53 | 33 | 20:09 (4) |
| 10 | 08:42 | 08:03 | 07:05 | | | 06:54 | | 18:17 (8) | 05:54 | | | 05:19 | | 19:36 (4) |
| | 16:48 | 17:41 | 18:32 | | | 20:25 | 29 | 18:46 (8) | 21:15 | | | 21:54 | 34 | 20:10 (4) |
| 11 | 08:41 | 08:01 | 07:03 | | 17:19 (7) | 06:52 | | 18:18 (8) | 05:52 | | | 05:19 | | 19:37 (4) |
| | 16:49 | 17:43 | 18:34 | 7 | 17:26 (7) | 20:26 | 28 | 18:46 (8) | 21:16 | | | 21:55 | 33 | 20:10 (4) |
| 12 | 08:41 | 07:59 | 07:00 | | 17:15 (7) | 06:50 | | 18:19 (8) | 05:50 | | | 05:19 | | 19:37 (4) |
| | 16:51 | 17:45 | 18:35 | 13 | 17:28 (7) | 20:28 | 26 | 18:45 (8) | 21:18 | | | 21:56 | 34 | 20:11 (4) |
| 13 | 08:40 | 07:57 | 06:58 | | 17:13 (7) | 06:48 | | 18:19 (8) | 05:49 | | | 05:19 | | 19:36 (4) |
| | 16:52 | 17:47 | 18:37 | 17 | 17:30 (7) | 20:30 | 23 | 18:42 (8) | 21:20 | | | 21:56 | 34 | 20:10 (4) |
| 14 | 08:39 | 07:55 | 06:56 | | 17:12 (7) | 06:45 | | 18:20 (8) | 05:47 | | | 05:18 | | 19:37 (4) |
| | 16:54 | 17:49 | 18:39 | 19 | 17:31 (7) | 20:32 | 21 | 18:41 (8) | 21:21 | | | 21:57 | 34 | 20:11 (4) |
| 15 | 08:38 | 07:54 | 06:54 | | 17:10 (7) | 06:43 | | 18:22 (8) | 05:46 | | | 05:18 | | 19:37 (4) |
| | 16:55 | 17:50 | 18:41 | 21 | 17:31 (7) | 20:33 | 17 | 18:39 (8) | 21:23 | | | 21:57 | 34 | 20:11 (4) |
| 16 | 08:37 | 07:52 | 06:51 | | 17:10 (7) | 06:41 | | 18:25 (8) | 05:44 | | | 05:18 | | 19:37 (4) |
| | 16:57 | 17:52 | 18:42 | 21 | 17:31 (7) | 20:35 | 10 | 18:35 (8) | 21:24 | | | 21:58 | 34 | 20:11 (4) |
| 17 | 08:37 | 07:50 | 06:49 | | 17:10 (7) | 06:39 | | | 05:43 | | | 05:18 | | 19:37 (4) |
| | 16:59 | 17:54 | 18:44 | 22 | 17:32 (7) | 20:37 | | | 21:26 | | | 21:58 | 34 | 20:11 (4) |
| 18 | 08:36 | 07:48 | 06:47 | | 17:09 (7) | 06:37 | | | 05:41 | | | 05:18 | | 19:38 (4) |
| | 17:00 | 17:56 | 18:46 | 22 | 17:31 (7) | 20:38 | | | 21:27 | | | 21:59 | 34 | 20:12 (4) |
| 19 | 08:35 | 07:46 | 06:44 | | 17:09 (7) | 06:34 | | | 05:40 | | | 05:18 | | 19:38 (4) |
| | 17:02 | 17:58 | 18:47 | 22 | 17:31 (7) | 20:40 | | | 21:29 | | | 21:59 | 34 | 20:12 (4) |
| 20 | 08:34 | 07:44 | 06:42 | | 17:10 (7) | 06:32 | | | 05:39 | | 19:45 (4) | 05:18 | | 19:38 (4) |
| | 17:03 | 18:00 | 18:49 | 20 | 17:30 (7) | 20:42 | | | 21:30 | 9 | 19:54 (4) | 22:00 | 34 | 20:12 (4) |
| 21 | 08:33 | 07:42 | 06:40 | | 17:10 (7) | 06:30 | | | 05:37 | | 19:43 (4) | 05:18 | | 19:39 (4) |
| | 17:05 | 18:01 | 18:51 | 20 | 17:30 (7) | 20:43 | | | 21:32 | 14 | 19:57 (4) | 22:00 | 34 | 20:13 (4) |
| 22 | 08:31 | 07:40 | 06:38 | | 17:11 (7) | 06:28 | | | 05:36 | | 19:41 (4) | 05:18 | | 19:39 (4) |
| | 17:07 | 18:03 | 18:53 | 17 | 17:28 (7) | 20:45 | | | 21:33 | 18 | 19:59 (4) | 22:00 | 34 | 20:13 (4) |
| 23 | 08:30 | 07:38 | 06:35 | | 17:12 (7) | 06:26 | | | 05:35 | | 19:40 (4) | 05:19 | | 19:39 (4) |
| | 17:09 | 18:05 | 18:54 | 14 | 17:26 (7) | 20:47 | | | 21:34 | 20 | 20:00 (4) | 22:00 | 34 | 20:13 (4) |
| 24 | 08:29 | 07:35 | 06:33 | | 17:15 (7) | 06:24 | | | 05:33 | | 19:40 (4) | 05:19 | | 19:39 (4) |
| | 17:10 | 18:07 | 18:56 | 8 | 17:23 (7) | 20:48 | | | 21:36 | 21 | 20:01 (4) | 22:00 | 34 | 20:13 (4) |
| 25 | 08:28 | 07:33 | 06:31 | | | 06:22 | | | 05:32 | | 19:39 (4) | 05:19 | | 19:40 (4) |
| | 17:12 | 18:09 | 18:58 | | | 20:50 | | | 21:37 | 23 | 20:02 (4) | 22:00 | 33 | 20:13 (4) |
| 26 | 08:26 | 07:31 | 06:28 | | | 06:20 | | | 05:31 | | 19:38 (4) | 05:20 | | 19:39 (4) |
| | 17:14 | 18:11 | 18:59 | | | 20:52 | | | 21:38 | 25 | 20:03 (4) | 22:00 | 34 | 20:13 (4) |
| 27 | 08:25 | 07:29 | 06:26 | | 17:30 (8) | 06:18 | | | 05:30 | | 19:38 (4) | 05:20 | | 19:40 (4) |
| | 17:16 | 18:12 | 19:01 | 11 | 17:41 (8) | 20:53 | | | 21:40 | 26 | 20:04 (4) | 22:00 | 34 | 20:14 (4) |
| 28 | 08:24 | 07:27 | 06:24 | | 17:26 (8) | 06:16 | | | 05:29 | | 19:37 (4) | 05:21 | | 19:40 (4) |
| | 17:17 | 18:14 | 19:03 | 17 | 17:43 (8) | 20:55 | | | 21:41 | 28 | 20:05 (4) | 22:00 | 34 | 20:14 (4) |
| 29 | 08:22 | | 07:21 | | 18:24 (8) | 06:14 | | | 05:28 | | 19:37 (4) | 05:21 | | 19:41 (4) |
| | 17:19 | | 20:04 | 21 | 18:45 (8) | 20:57 | | | 21:42 | 28 | 20:05 (4) | 22:00 | 33 | 20:14 (4) |
| 30 | 08:21 | | 07:19 | | 18:22 (8) | 06:12 | | | 05:27 | | 19:36 (4) | 05:22 | | 19:40 (4) |
| | 17:21 | | 20:06 | 25 | 18:47 (8) | 20:58 | | | 21:43 | 29 | 20:05 (4) | 22:00 | 34 | 20:14 (4) |
| 31 | 08:19 | | 07:17 | | 18:20 (8) | | | | 05:26 | | 19:36 (4) | | | |
| | 17:23 | | 20:08 | 27 | 18:47 (8) | | | | 21:45 | 30 | 20:06 (4) | | | |
| Potential sun hours | 260 | 278 | 367 | | | 416 | | | 485 | | | 498 | | |
| Total, worst case | | | | 344 | | | 435 | | | 271 | | | 1000 | |
| Sun reduction | | | | 0.24 | | | 0.35 | | | 0.37 | | | 0.30 | |
| Oper. time red. | | | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Wind dir. red. | | | | 0.68 | | | 0.67 | | | 0.58 | | | 0.58 | |
| Total reduction | | | | 0.17 | | | 0.24 | | | 0.21 | | | 0.17 | |
| Total, real | | | | 57 | | | 103 | | | 58 | | | 174 | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
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+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** BM - H79

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | July | | August | | | September | | October | | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 05:22 | | 19:41 (4) | 05:59 | | 06:48 | | 18:17 (8) | 07:37 | 17:54 (7) | 07:30 | 08:21 |
| | 21:59 | 33 | 20:14 (4) | 21:28 | | 20:26 | 28 | 18:45 (8) | 19:17 | 15 | 18:09 (7) | 17:11 | 16:31 |
| 2 | 05:23 | | 19:40 (4) | 06:00 | | 06:50 | | 18:15 (8) | 07:38 | | 17:55 (7) | 07:32 | 08:22 |
| | 21:59 | 34 | 20:14 (4) | 21:26 | | 20:24 | 29 | 18:44 (8) | 19:15 | 10 | 18:05 (7) | 17:09 | 16:30 |
| 3 | 05:24 | | 19:41 (4) | 06:02 | | 06:51 | | 18:14 (8) | 07:40 | | | 07:34 | 08:24 |
| | 21:59 | 33 | 20:14 (4) | 21:25 | | 20:22 | 31 | 18:45 (8) | 19:12 | | | 17:08 | 16:30 |
| 4 | 05:24 | | 19:41 (4) | 06:03 | | 06:53 | | 18:14 (8) | 07:42 | | | 07:35 | 08:25 |
| | 21:58 | 34 | 20:15 (4) | 21:23 | | 20:19 | 31 | 18:45 (8) | 19:10 | | | 17:06 | 16:29 |
| 5 | 05:25 | | 19:42 (4) | 06:05 | | 06:54 | | 18:13 (8) | 07:43 | | | 07:37 | 08:26 |
| | 21:58 | 33 | 20:15 (4) | 21:21 | | 20:17 | 32 | 18:45 (8) | 19:08 | | | 17:04 | 16:29 |
| 6 | 05:26 | | 19:41 (4) | 06:06 | | 06:56 | | 18:13 (8) | 07:45 | | | 07:39 | 08:28 |
| | 21:57 | 33 | 20:14 (4) | 21:19 | | 20:15 | 32 | 18:45 (8) | 19:06 | | | 17:02 | 16:28 |
| 7 | 05:27 | | 19:42 (4) | 06:08 | | 06:58 | | 18:12 (8) | 07:47 | | | 07:41 | 08:29 |
| | 21:57 | 32 | 20:14 (4) | 21:18 | | 20:13 | 32 | 18:44 (8) | 19:03 | | | 17:01 | 16:28 |
| 8 | 05:28 | | 19:42 (4) | 06:09 | | 06:59 | | 18:12 (8) | 07:48 | | | 07:43 | 08:30 |
| | 21:56 | 33 | 20:15 (4) | 21:16 | | 20:10 | 32 | 18:44 (8) | 19:01 | | | 16:59 | 16:28 |
| 9 | 05:29 | | 19:43 (4) | 06:11 | | 07:01 | | 18:11 (8) | 07:50 | | | 07:44 | 08:31 |
| | 21:56 | 32 | 20:15 (4) | 21:14 | | 20:08 | 32 | 18:43 (8) | 18:59 | | | 16:57 | 16:27 |
| 10 | 05:30 | | 19:43 (4) | 06:13 | | 07:03 | | 18:12 (8) | 07:52 | | | 07:46 | 08:32 |
| | 21:55 | 32 | 20:15 (4) | 21:12 | | 20:06 | 30 | 18:42 (8) | 18:57 | | | 16:56 | 16:27 |
| 11 | 05:31 | | 19:44 (4) | 06:14 | | 07:04 | | 18:11 (8) | 07:53 | | | 07:48 | 08:33 |
| | 21:54 | 31 | 20:15 (4) | 21:10 | | 20:03 | 29 | 18:40 (8) | 18:54 | | | 16:54 | 16:27 |
| 12 | 05:32 | | 19:44 (4) | 06:16 | | 07:06 | | 18:12 (8) | 07:55 | | | 07:50 | 08:34 |
| | 21:53 | 30 | 20:14 (4) | 21:08 | | 20:01 | 28 | 18:40 (8) | 18:52 | | | 16:53 | 16:27 |
| 13 | 05:33 | | 19:44 (4) | 06:17 | | 07:07 | | 18:14 (8) | 07:57 | | | 07:51 | 08:35 |
| | 21:52 | 30 | 20:14 (4) | 21:06 | | 19:59 | 25 | 18:39 (8) | 18:50 | | | 16:51 | 16:27 |
| 14 | 05:34 | | 19:45 (4) | 06:19 | | 07:09 | | 18:14 (8) | 07:59 | | | 07:53 | 08:36 |
| | 21:51 | 29 | 20:14 (4) | 21:04 | | 19:56 | 22 | 18:36 (8) | 18:48 | | | 16:50 | 16:27 |
| 15 | 05:35 | | 19:45 (4) | 06:21 | | 07:11 | | 18:16 (8) | 08:00 | | | 07:55 | 08:37 |
| | 21:50 | 28 | 20:13 (4) | 21:02 | | 19:54 | 18 | 18:34 (8) | 18:46 | | | 16:48 | 16:27 |
| 16 | 05:36 | | 19:46 (4) | 06:22 | | 07:12 | | 18:18 (8) | 08:02 | | | 07:57 | 08:38 |
| | 21:49 | 27 | 20:13 (4) | 21:00 | | 19:52 | 12 | 18:30 (8) | 18:43 | | | 16:47 | 16:27 |
| 17 | 05:38 | | 19:47 (4) | 06:24 | | 07:14 | | | 08:04 | | | 07:58 | 08:39 |
| | 21:48 | 26 | 20:13 (4) | 20:58 | | 19:49 | | | 18:41 | | | 16:45 | 16:27 |
| 18 | 05:39 | | 19:48 (4) | 06:25 | | 07:15 | | | 08:05 | | | 08:00 | 08:40 |
| | 21:47 | 24 | 20:12 (4) | 20:56 | | 19:47 | | | 18:39 | | | 16:44 | 16:27 |
| 19 | 05:40 | | 19:49 (4) | 06:27 | | 07:17 | | 18:03 (7) | 08:07 | | | 08:02 | 08:40 |
| | 21:46 | 22 | 20:11 (4) | 20:54 | | 19:45 | 6 | 18:09 (7) | 18:37 | | | 16:43 | 16:28 |
| 20 | 05:42 | | 19:49 (4) | 06:29 | | 07:19 | | 17:59 (7) | 08:09 | | | 08:04 | 08:41 |
| | 21:45 | 21 | 20:10 (4) | 20:52 | | 19:42 | 13 | 18:12 (7) | 18:35 | | | 16:42 | 16:28 |
| 21 | 05:43 | | 19:50 (4) | 06:30 | | 07:20 | | 17:57 (7) | 08:11 | | | 08:05 | 08:42 |
| | 21:44 | 19 | 20:09 (4) | 20:50 | | 19:40 | 16 | 18:13 (7) | 18:33 | | | 16:40 | 16:29 |
| 22 | 05:44 | | 19:53 (4) | 06:32 | | 07:22 | | 17:55 (7) | 08:12 | | | 08:07 | 08:42 |
| | 21:42 | 15 | 20:08 (4) | 20:48 | | 19:38 | 19 | 18:14 (7) | 18:31 | | | 16:39 | 16:29 |
| 23 | 05:46 | | 19:54 (4) | 06:33 | | 07:24 | | 17:53 (7) | 08:14 | | | 08:08 | 08:43 |
| | 21:41 | 12 | 20:06 (4) | 20:46 | | 19:35 | 21 | 18:14 (7) | 18:29 | | | 16:38 | 16:30 |
| 24 | 05:47 | | 19:58 (4) | 06:35 | | 07:25 | | 17:53 (7) | 08:16 | | | 08:10 | 08:43 |
| | 21:40 | 4 | 20:02 (4) | 20:44 | | 19:33 | 21 | 18:14 (7) | 18:27 | | | 16:37 | 16:30 |
| 25 | 05:48 | | | 06:37 | | 07:27 | | 17:53 (7) | 07:18 | | | 08:12 | 08:43 |
| | 21:38 | | | 20:42 | | 19:31 | 21 | 18:14 (7) | 17:25 | | | 16:36 | 16:31 |
| 26 | 05:50 | | | 06:38 | | 07:28 | | 17:51 (7) | 07:19 | | | 08:13 | 08:44 |
| | 21:37 | | | 20:39 | | 19:28 | 22 | 18:13 (7) | 17:23 | | | 16:35 | 16:31 |
| 27 | 05:51 | | | 06:40 | 18:27 (8) | 07:30 | | 17:52 (7) | 07:21 | | | 08:15 | 08:44 |
| | 21:36 | | | 20:37 | 11 18:38 (8) | 19:26 | 21 | 18:13 (7) | 17:21 | | | 16:34 | 16:32 |
| 28 | 05:53 | | | 06:42 | 18:24 (8) | 07:32 | | 17:52 (7) | 07:23 | | | 08:16 | 08:44 |
| | 21:34 | | | 20:35 | 17 18:41 (8) | 19:24 | 21 | 18:13 (7) | 17:19 | | | 16:33 | 16:33 |
| 29 | 05:54 | | | 06:43 | 18:21 (8) | 07:33 | | 17:52 (7) | 07:25 | | | 08:18 | 08:44 |
| | 21:33 | | | 20:33 | 21 18:42 (8) | 19:22 | 19 | 18:11 (7) | 17:17 | | | 16:33 | 16:34 |
| 30 | 05:56 | | | 06:45 | 18:20 (8) | 07:35 | | 17:53 (7) | 07:27 | | | 08:19 | 08:45 |
| | 21:31 | | | 20:31 | 23 18:43 (8) | 19:19 | 17 | 18:10 (7) | 17:15 | | | 16:32 | 16:35 |
| 31 | 05:57 | | | 06:46 | 18:17 (8) | | | | 07:28 | | | | 08:45 |
| | 21:29 | | | 20:28 | 26 18:43 (8) | | | | 17:13 | | | | 16:36 |
| Potential sun hours | 501 | | | 453 | | 381 | | | 332 | | | 267 | 244 |
| Total, worst case | | 647 | | | 98 | | 660 | | | 25 | | | |
| Sun reduction | | 0.27 | | | 0.30 | | 0.28 | | | 0.24 | | | |
| Oper. time red. | | 1.00 | | | 1.00 | | 1.00 | | | 1.00 | | | |
| Wind dir. red. | | 0.58 | | | 0.67 | | 0.68 | | | 0.69 | | | |
| Total reduction | | 0.15 | | | 0.20 | | 0.19 | | | 0.16 | | | |
| Total, real | | 100 | | | 20 | | 126 | | | 4 | | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

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**Jennings O'Donovan**
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IE-F91 RHH9 Sligo
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Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** BN - H80

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | | February | | March | | April | | May | | June | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | | 08:18 | | 07:25 | | 17:20 (8) | | 07:14 | | 18:52 (4) | |
| | 16:37 | | 17:25 | | 18:16 | 8 | 17:28 (8) | | 20:10 | 20 | 19:12 (4) | |
| 2 | 08:44 | | 08:16 | | 07:23 | | 17:18 (8) | | 07:12 | | 18:52 (4) | |
| | 16:38 | | 17:26 | | 18:18 | 12 | 17:30 (8) | | 20:11 | 20 | 19:12 (4) | |
| 3 | 08:44 | | 08:15 | | 07:20 | | 17:16 (8) | | 07:10 | | 18:52 (4) | |
| | 16:39 | | 17:28 | | 18:19 | 16 | 17:32 (8) | | 20:13 | 19 | 19:11 (4) | |
| 4 | 08:44 | | 08:13 | | 07:18 | | 17:16 (8) | | 07:08 | | 18:52 (4) | |
| | 16:40 | | 17:30 | | 18:21 | 17 | 17:33 (8) | | 20:15 | 18 | 19:10 (4) | |
| 5 | 08:44 | | 08:12 | | 07:16 | | 17:14 (8) | | 07:05 | | 18:53 (4) | |
| | 16:41 | | 17:32 | | 18:23 | 18 | 17:32 (8) | | 20:16 | 16 | 19:09 (4) | |
| 6 | 08:44 | | 08:10 | | 07:14 | | 17:14 (8) | | 07:03 | | 18:54 (4) | |
| | 16:43 | | 17:34 | | 18:25 | 19 | 17:33 (8) | | 20:18 | 14 | 19:08 (4) | |
| 7 | 08:43 | | 08:08 | | 07:12 | | 17:14 (8) | | 07:01 | | 18:56 (4) | |
| | 16:44 | | 17:36 | | 18:27 | 19 | 17:33 (8) | | 20:20 | 10 | 19:06 (4) | |
| 8 | 08:43 | | 08:06 | | 07:09 | | 17:13 (8) | | 06:59 | | | |
| | 16:45 | | 17:37 | | 18:28 | 18 | 17:31 (8) | | 20:21 | | | |
| 9 | 08:42 | | 08:05 | | 07:07 | | 17:14 (8) | | 06:56 | | | |
| | 16:47 | | 17:39 | | 18:30 | 17 | 17:31 (8) | | 20:23 | | | |
| 10 | 08:42 | | 08:03 | | 07:05 | | 17:15 (8) | | 06:54 | | | |
| | 16:48 | | 17:41 | | 18:32 | 15 | 17:30 (8) | | 20:25 | | | |
| 11 | 08:41 | | 08:01 | | 07:03 | | 17:17 (8) | | 06:52 | | | |
| | 16:49 | | 17:43 | | 18:34 | 11 | 17:28 (8) | | 20:26 | | | |
| 12 | 08:41 | | 07:59 | | 07:00 | | 17:19 (8) | | 06:50 | | | |
| | 16:51 | | 17:45 | | 18:35 | 5 | 17:24 (8) | | 20:28 | | | |
| 13 | 08:40 | | 07:57 | | 06:58 | | | | 06:47 | | | |
| | 16:52 | | 17:47 | | 18:37 | | | | 20:30 | | | |
| 14 | 08:39 | | 07:55 | | 06:56 | | | | 06:45 | | | |
| | 16:54 | | 17:49 | | 18:39 | | | | 20:32 | | | |
| 15 | 08:38 | | 07:54 | | 06:54 | | | | 06:43 | | | |
| | 16:55 | | 17:50 | | 18:40 | | | | 20:33 | | | |
| 16 | 08:37 | | 07:52 | | 06:51 | | | | 06:41 | | | |
| | 16:57 | | 17:52 | | 18:42 | | | | 20:35 | | | |
| 17 | 08:37 | | 07:50 | | 06:49 | | | | 06:39 | | | |
| | 16:58 | | 17:54 | | 18:44 | | | | 20:37 | | | |
| 18 | 08:36 | | 07:48 | | 06:47 | | | | 06:37 | | | |
| | 17:00 | | 17:56 | | 18:46 | | | | 20:38 | | | |
| 19 | 08:35 | | 07:46 | | 06:44 | | | | 06:34 | | | |
| | 17:02 | | 17:58 | | 18:47 | | | | 20:40 | | | |
| 20 | 08:34 | | 07:44 | | 06:42 | | | | 06:32 | | | |
| | 17:03 | | 18:00 | | 18:49 | | | | 20:42 | | | |
| 21 | 08:33 | | 07:42 | | 06:40 | | | | 06:30 | | | |
| | 17:05 | | 18:01 | | 18:51 | | | | 20:43 | | | |
| 22 | 08:31 | | 07:40 | | 06:37 | | | | 06:28 | | | |
| | 17:07 | | 18:03 | | 18:53 | | | | 20:45 | | | |
| 23 | 08:30 | | 07:38 | | 06:35 | | | | 06:26 | | | |
| | 17:08 | | 18:05 | | 18:54 | | | | 20:47 | | | |
| 24 | 08:29 | | 07:35 | | 06:33 | | | | 06:24 | | | |
| | 17:10 | | 18:07 | | 18:56 | | | | 20:48 | | | |
| 25 | 08:28 | | 07:33 | | 06:31 | | | | 06:22 | | | |
| | 17:12 | | 18:09 | | 18:58 | | | | 20:50 | | | |
| 26 | 08:26 | | 07:31 | | 06:28 | | | | 06:20 | | 19:39 (5) | |
| | 17:14 | | 18:10 | | 18:59 | | | | 20:52 | 6 | 19:45 (5) | |
| 27 | 08:25 | | 07:29 | | 06:26 | | 17:59 (4) | | 06:18 | | 19:35 (5) | |
| | 17:15 | | 18:12 | | 19:01 | 10 | 18:09 (4) | | 20:53 | 13 | 19:48 (5) | |
| 28 | 08:24 | | 07:27 | | 06:24 | | 17:56 (4) | | 06:16 | | 19:33 (5) | |
| | 17:17 | | 18:14 | | 19:03 | 14 | 18:10 (4) | | 20:55 | 17 | 19:50 (5) | |
| 29 | 08:22 | | | | 07:21 | | 18:55 (4) | | 06:14 | | 19:31 (5) | |
| | 17:19 | | | | 20:04 | 16 | 19:11 (4) | | 20:57 | 20 | 19:51 (5) | |
| 30 | 08:21 | | | | 07:19 | | 18:54 (4) | | 06:12 | | 19:30 (5) | |
| | 17:21 | | | | 20:06 | 18 | 19:12 (4) | | 20:58 | 22 | 19:52 (5) | |
| 31 | 08:19 | | | | 07:17 | | 18:52 (4) | | | | | |
| | 17:23 | | | | 20:08 | 20 | 19:12 (4) | | | | | |
| Potential sun hours | 260 | | 278 | | 367 | | | 416 | | | 485 | | | | | 498 |
| Total, worst case | | | | | | 253 | | | | 195 | | | | 441 | | |
| Sun reduction | | | | | | 0.24 | | | | 0.35 | | | | 0.37 | | |
| Oper. time red. | | | | | | 1.00 | | | | 1.00 | | | | 1.00 | | |
| Wind dir. red. | | | | | | 0.68 | | | | 0.64 | | | | 0.60 | | |
| Total reduction | | | | | | 0.17 | | | | 0.23 | | | | 0.22 | | |
| Total, real | | | | | | 42 | | | | 44 | | | | 97 | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
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Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** BN - H80

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | July | | August | | September | | October | | November | December |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 05:22 | | 05:59 | | 19:38 (5) | 06:48 | | | 07:30 | 08:21 |
| | 21:59 | | 21:28 | 25 | 20:03 (5) | 20:26 | | | 17:11 | 16:31 |
| 2 | 05:23 | | 06:00 | | 19:38 (5) | 06:50 | | | 07:32 | 08:22 |
| | 21:59 | | 21:26 | 26 | 20:04 (5) | 20:24 | | | 17:09 | 16:30 |
| 3 | 05:24 | | 06:02 | | 19:37 (5) | 06:51 | | | 07:34 | 08:24 |
| | 21:59 | | 21:24 | 27 | 20:04 (5) | 20:22 | | | 17:07 | 16:30 |
| 4 | 05:24 | | 06:03 | | 19:36 (5) | 06:53 | | | 07:35 | 08:25 |
| | 21:58 | | 21:23 | 27 | 20:03 (5) | 20:19 | | | 17:06 | 16:29 |
| 5 | 05:25 | | 06:05 | | 19:37 (5) | 06:54 | 18:52 (4) | | 07:37 | 08:26 |
| | 21:58 | | 21:21 | 27 | 20:04 (5) | 20:17 | 19:02 (4) | 10 | 17:04 | 16:29 |
| 6 | 05:26 | | 06:06 | | 19:36 (5) | 06:56 | 18:50 (4) | | 07:39 | 08:28 |
| | 21:57 | | 21:19 | 27 | 20:03 (5) | 20:15 | 19:04 (4) | 14 | 17:02 | 16:28 |
| 7 | 05:27 | | 06:08 | | 19:36 (5) | 06:58 | 18:48 (4) | | 07:41 | 08:29 |
| | 21:57 | | 21:17 | 28 | 20:04 (5) | 20:12 | 19:04 (4) | 16 | 17:01 | 16:28 |
| 8 | 05:28 | | 06:09 | | 19:36 (5) | 06:59 | 18:47 (4) | | 07:43 | 08:30 |
| | 21:56 | | 21:16 | 27 | 20:03 (5) | 20:10 | 19:05 (4) | 18 | 16:59 | 16:28 |
| 9 | 05:29 | | 06:11 | | 19:37 (5) | 07:01 | 18:46 (4) | | 07:44 | 08:31 |
| | 21:55 | | 21:14 | 26 | 20:03 (5) | 20:08 | 19:05 (4) | 19 | 16:57 | 16:27 |
| 10 | 05:30 | | 06:13 | | 19:36 (5) | 07:02 | 18:45 (4) | | 07:46 | 08:32 |
| | 21:55 | | 21:12 | 26 | 20:02 (5) | 20:06 | 19:05 (4) | 20 | 16:56 | 16:27 |
| 11 | 05:31 | | 06:14 | | 19:37 (5) | 07:04 | 18:44 (4) | | 07:48 | 08:33 |
| | 21:54 | | 21:10 | 25 | 20:02 (5) | 20:03 | 19:04 (4) | 20 | 16:54 | 16:27 |
| 12 | 05:32 | | 06:16 | | 19:37 (5) | 07:06 | 18:45 (4) | | 07:50 | 08:34 |
| | 21:53 | | 21:08 | 24 | 20:01 (5) | 20:01 | 19:04 (4) | 19 | 16:53 | 16:27 |
| 13 | 05:33 | | 06:17 | | 19:38 (5) | 07:07 | 18:45 (4) | | 07:51 | 08:35 |
| | 21:52 | | 21:06 | 22 | 20:00 (5) | 19:59 | 19:04 (4) | 19 | 16:51 | 16:27 |
| 14 | 05:34 | | 06:19 | | 19:39 (5) | 07:09 | 18:45 (4) | | 07:53 | 08:36 |
| | 21:51 | | 21:04 | 19 | 19:58 (5) | 19:56 | 19:02 (4) | 17 | 16:50 | 16:27 |
| 15 | 05:35 | | 06:20 | | 19:41 (5) | 07:11 | 18:46 (4) | | 07:55 | 08:37 |
| | 21:50 | | 21:02 | 16 | 19:57 (5) | 19:54 | 19:01 (4) | 15 | 16:48 | 16:27 |
| 16 | 05:36 | | 06:22 | | 19:42 (5) | 07:12 | 18:47 (4) | | 07:57 | 08:38 |
| | 21:49 | | 21:00 | 12 | 19:54 (5) | 19:52 | 18:58 (4) | 11 | 16:47 | 16:27 |
| 17 | 05:38 | | 06:24 | | 19:47 (5) | 07:14 | 18:50 (4) | | 07:58 | 08:39 |
| | 21:48 | | 20:58 | 2 | 19:49 (5) | 19:49 | 18:54 (4) | 4 | 16:45 | 16:27 |
| 18 | 05:39 | | 06:25 | | | 07:15 | | | 08:00 | 08:40 |
| | 21:47 | | 20:56 | | | 19:47 | | | 16:44 | 16:27 |
| 19 | 05:40 | | 06:27 | | | 07:17 | | | 08:02 | 08:40 |
| | 21:46 | | 20:54 | | | 19:45 | | | 16:43 | 16:28 |
| 20 | 05:41 | | 06:29 | | | 07:19 | | | 08:03 | 08:41 |
| | 21:45 | | 20:52 | | | 19:42 | | | 16:42 | 16:28 |
| 21 | 05:43 | | 06:30 | | | 07:20 | | | 08:05 | 08:42 |
| | 21:44 | | 20:50 | | | 19:40 | | | 16:40 | 16:28 |
| 22 | 05:44 | | 06:32 | | | 07:22 | | | 08:07 | 08:42 |
| | 21:42 | | 20:48 | | | 19:38 | | | 16:39 | 16:29 |
| 23 | 05:45 | | 06:33 | | | 07:23 | | | 08:08 | 08:43 |
| | 21:41 | | 20:46 | | | 19:35 | | | 16:38 | 16:29 |
| 24 | 05:47 | | 19:47 (5) | | 06:35 | 07:25 | | | 08:10 | 08:43 |
| | 21:40 | 7 | 19:54 (5) | | 20:44 | 19:33 | | | 16:37 | 16:30 |
| 25 | 05:48 | | 19:44 (5) | | 06:37 | 07:27 | | | 08:12 | 08:43 |
| | 21:38 | 12 | 19:56 (5) | | 20:41 | 19:31 | | | 16:36 | 16:31 |
| 26 | 05:50 | | 19:44 (5) | | 06:38 | 07:28 | | | 08:13 | 08:44 |
| | 21:37 | 14 | 19:58 (5) | | 20:39 | 19:28 | | | 16:35 | 16:31 |
| 27 | 05:51 | | 19:42 (5) | | 06:40 | 07:30 | | | 08:15 | 08:44 |
| | 21:36 | 17 | 19:59 (5) | | 20:37 | 19:26 | | | 16:34 | 16:32 |
| 28 | 05:53 | | 19:41 (5) | | 06:41 | 07:32 | | | 08:16 | 08:44 |
| | 21:34 | 20 | 20:01 (5) | | 20:35 | 19:24 | | | 16:33 | 16:33 |
| 29 | 05:54 | | 19:40 (5) | | 06:43 | 07:33 | | | 08:18 | 08:44 |
| | 21:33 | 21 | 20:01 (5) | | 20:33 | 19:22 | | | 16:33 | 16:34 |
| 30 | 05:56 | | 19:39 (5) | | 06:45 | 07:35 | | | 08:19 | 08:45 |
| | 21:31 | 23 | 20:02 (5) | | 20:31 | 19:19 | | | 16:32 | 16:35 |
| 31 | 05:57 | | 19:39 (5) | | 06:46 | | | | | 08:45 |
| | 21:29 | 24 | 20:03 (5) | | 20:28 | | | | | 16:36 |
| Potential sun hours | 501 | | 453 | | 381 | | 332 | | 267 | 244 |
| Total, worst case | | 138 | | 386 | | 202 | | 174 | | |
| Sun reduction | | 0.27 | | 0.30 | | 0.28 | | 0.24 | | |
| Oper. time red. | | 1.00 | | 1.00 | | 1.00 | | 1.00 | | |
| Wind dir. red. | | 0.60 | | 0.60 | | 0.66 | | 0.69 | | |
| Total reduction | | 0.16 | | 0.18 | | 0.19 | | 0.16 | | |
| Total, real | | 22 | | 69 | | 38 | | 29 | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

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Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** BO - H81

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | | April | | | May | | June |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | | 07:15 | | | 06:10 | | 19:13 (4) 05:25 |
| | 16:37 | 17:25 | 18:16 | | 20:10 | | | 21:00 | 26 | 19:39 (4) 21:46 |
| 2 | 08:45 | 08:16 | 07:23 | | 07:12 | | | 06:08 | | 19:13 (4) 05:24 |
| | 16:38 | 17:26 | 18:18 | | 20:11 | | | 21:02 | 27 | 19:40 (4) 21:47 |
| 3 | 08:44 | 08:15 | 07:20 | | 07:10 | | | 06:06 | | 19:12 (4) 05:24 |
| | 16:39 | 17:28 | 18:19 | | 20:13 | | | 21:03 | 28 | 19:40 (4) 21:48 |
| 4 | 08:44 | 08:13 | 07:18 | 17:15 (7) | 07:08 | | | 06:04 | | 19:11 (4) 05:23 |
| | 16:40 | 17:30 | 18:21 | 5 17:20 (7) | 20:15 | | | 21:05 | 29 | 19:40 (4) 21:49 |
| 5 | 08:44 | 08:12 | 07:16 | 17:11 (7) | 07:05 | | | 06:03 | | 19:11 (4) 05:22 |
| | 16:41 | 17:32 | 18:23 | 12 17:23 (7) | 20:16 | | | 21:07 | 29 | 19:40 (4) 21:50 |
| 6 | 08:44 | 08:10 | 07:14 | 17:09 (7) | 07:03 | | | 06:01 | | 19:11 (4) 05:22 |
| | 16:43 | 17:34 | 18:25 | 15 17:24 (7) | 20:18 | | | 21:08 | 30 | 19:41 (4) 21:51 |
| 7 | 08:43 | 08:08 | 07:12 | 17:08 (7) | 07:01 | | | 05:59 | | 19:11 (4) 05:21 |
| | 16:44 | 17:36 | 18:27 | 17 17:25 (7) | 20:20 | | | 21:10 | 30 | 19:41 (4) 21:52 |
| 8 | 08:43 | 08:06 | 07:09 | 17:08 (7) | 06:59 | | | 05:57 | | 19:11 (4) 05:20 |
| | 16:45 | 17:37 | 18:28 | 18 17:26 (7) | 20:21 | | | 21:12 | 29 | 19:40 (4) 21:53 |
| 9 | 08:42 | 08:05 | 07:07 | 17:06 (7) | 06:56 | | | 05:56 | | 19:11 (4) 05:20 |
| | 16:47 | 17:39 | 18:30 | 20 17:26 (7) | 20:23 | | | 21:13 | 30 | 19:41 (4) 21:53 |
| 10 | 08:42 | 08:03 | 07:05 | 17:06 (7) | 06:54 | | | 05:54 | | 19:11 (4) 05:19 |
| | 16:48 | 17:41 | 18:32 | 20 17:26 (7) | 20:25 | | | 21:15 | 29 | 19:40 (4) 21:54 |
| 11 | 08:41 | 08:01 | 07:03 | 17:06 (7) | 06:52 | | | 05:52 | | 19:12 (4) 05:19 |
| | 16:49 | 17:43 | 18:34 | 20 17:26 (7) | 20:26 | | | 21:16 | 28 | 19:40 (4) 21:55 |
| 12 | 08:41 | 07:59 | 07:00 | 17:06 (7) | 06:50 | | | 05:50 | | 19:12 (4) 05:19 |
| | 16:51 | 17:45 | 18:35 | 18 17:24 (7) | 20:28 | | | 21:18 | 27 | 19:39 (4) 21:56 |
| 13 | 08:40 | 07:57 | 06:58 | 17:07 (7) | 06:47 | | | 05:49 | | 19:13 (4) 05:18 |
| | 16:52 | 17:47 | 18:37 | 17 17:24 (7) | 20:30 | | | 21:20 | 26 | 19:39 (4) 21:56 |
| 14 | 08:39 | 07:55 | 06:56 | 17:08 (7) | 06:45 | | | 05:47 | | 19:13 (4) 05:18 |
| | 16:54 | 17:49 | 18:39 | 15 17:23 (7) | 20:32 | | | 21:21 | 25 | 19:38 (4) 21:57 |
| 15 | 08:38 | 07:54 | 06:54 | 17:09 (7) | 06:43 | | | 05:46 | | 19:14 (4) 05:18 |
| | 16:55 | 17:50 | 18:41 | 22 17:32 (8) | 20:33 | | | 21:23 | 24 | 19:38 (4) 21:57 |
| 16 | 08:37 | 07:52 | 06:51 | 17:12 (7) | 06:41 | | | 05:44 | | 19:15 (4) 05:18 |
| | 16:57 | 17:52 | 18:42 | 21 17:35 (8) | 20:35 | | | 21:24 | 21 | 19:36 (4) 21:58 |
| 17 | 08:37 | 07:50 | 06:49 | 17:17 (8) | 06:39 | | | 05:43 | | 19:16 (4) 05:18 |
| | 16:59 | 17:54 | 18:44 | 20 17:37 (8) | 20:37 | | | 21:26 | 20 | 19:36 (4) 21:58 |
| 18 | 08:36 | 07:48 | 06:47 | 17:15 (8) | 06:37 | | | 05:41 | | 19:18 (4) 05:18 |
| | 17:00 | 17:56 | 18:46 | 22 17:37 (8) | 20:38 | | | 21:27 | 17 | 19:35 (4) 21:59 |
| 19 | 08:35 | 07:46 | 06:44 | 17:14 (8) | 06:34 | | | 05:40 | | 19:19 (4) 05:18 |
| | 17:02 | 17:58 | 18:47 | 24 17:38 (8) | 20:40 | | | 21:29 | 15 | 19:34 (4) 21:59 |
| 20 | 08:34 | 07:44 | 06:42 | 17:13 (8) | 06:32 | | | 05:38 | | 19:20 (4) 05:18 |
| | 17:03 | 18:00 | 18:49 | 26 17:39 (8) | 20:42 | | | 21:30 | 11 | 19:31 (4) 22:00 |
| 21 | 08:33 | 07:42 | 06:40 | 17:12 (8) | 06:30 | | | 05:37 | | 19:24 (4) 05:18 |
| | 17:05 | 18:01 | 18:51 | 27 17:39 (8) | 20:43 | | | 21:32 | 5 | 19:29 (4) 22:00 |
| 22 | 08:31 | 07:40 | 06:38 | 17:11 (8) | 06:28 | | | 05:36 | | 05:18 |
| | 17:07 | 18:03 | 18:53 | 28 17:39 (8) | 20:45 | | | 21:33 | | 22:00 |
| 23 | 08:30 | 07:38 | 06:35 | 17:11 (8) | 06:26 | | | 05:35 | | 05:19 |
| | 17:09 | 18:05 | 18:54 | 28 17:39 (8) | 20:47 | | | 21:34 | | 22:00 |
| 24 | 08:29 | 07:35 | 06:33 | 17:11 (8) | 06:24 | | | 05:33 | | 05:19 |
| | 17:10 | 18:07 | 18:56 | 28 17:39 (8) | 20:48 | | | 21:36 | | 22:00 |
| 25 | 08:28 | 07:33 | 06:31 | 17:11 (8) | 06:22 | | 19:25 (4) | 05:32 | | 05:19 |
| | 17:12 | 18:09 | 18:58 | 27 17:38 (8) | 20:50 | 4 | 19:29 (4) | 21:37 | | 22:00 |
| 26 | 08:26 | 07:31 | 06:28 | 17:11 (8) | 06:20 | | 19:21 (4) | 05:31 | | 05:20 |
| | 17:14 | 18:10 | 18:59 | 26 17:37 (8) | 20:52 | 13 | 19:34 (4) | 21:38 | | 22:00 |
| 27 | 08:25 | 07:29 | 06:26 | 17:12 (8) | 06:18 | | 19:18 (4) | 05:30 | | 05:20 |
| | 17:16 | 18:12 | 19:01 | 25 17:37 (8) | 20:53 | 18 | 19:36 (4) | 21:40 | | 22:00 |
| 28 | 08:24 | 07:27 | 06:24 | 17:12 (8) | 06:16 | | 19:16 (4) | 05:29 | | 05:21 |
| | 17:17 | 18:14 | 19:03 | 23 17:35 (8) | 20:55 | 21 | 19:37 (4) | 21:41 | | 22:00 |
| 29 | 08:22 | | 07:21 | 18:13 (8) | 06:14 | | 19:15 (4) | 05:28 | | 05:21 |
| | 17:19 | | 20:04 | 21 18:34 (8) | 20:57 | 23 | 19:38 (4) | 21:42 | | 22:00 |
| 30 | 08:21 | | 07:19 | 18:15 (8) | 06:12 | | 19:14 (4) | 05:27 | | 05:22 |
| | 17:21 | | 20:06 | 17 18:32 (8) | 20:58 | 25 | 19:39 (4) | 21:43 | | 22:00 |
| 31 | 08:19 | | 07:17 | 18:17 (8) | | | | 05:26 | | |
| | 17:23 | | 20:08 | 11 18:28 (8) | | | | 21:45 | | |
| Potential sun hours | 260 | 278 | 367 | | 416 | | | 485 | | 498 |
| Total, worst case | | | 573 | | 104 | | | 506 | | |
| Sun reduction | | | 0.24 | | 0.35 | | | 0.37 | | |
| Oper. time red. | | | 1.00 | | 1.00 | | | 1.00 | | |
| Wind dir. red. | | | 0.69 | | 0.61 | | | 0.61 | | |
| Total reduction | | | 0.17 | | 0.22 | | | 0.23 | | |
| Total, real | | | 96 | | 22 | | | 114 | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

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Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** BO - H81

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | July | | | August | | | September | | | October | | | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 05:22 | | | 05:59 | | 19:22 (4) | 06:48 | | | 07:37 | | 17:46 (7) | 07:30 | 08:21 |
| | 21:59 | | | 21:28 | 28 | 19:50 (4) | 20:26 | | | 19:17 | 18 | 18:04 (7) | 17:11 | 16:31 |
| 2 | 05:23 | | | 06:00 | | 19:22 (4) | 06:50 | | | 07:38 | | 17:44 (7) | 07:32 | 08:22 |
| | 21:59 | | | 21:26 | 29 | 19:51 (4) | 20:24 | | | 19:15 | 20 | 18:04 (7) | 17:09 | 16:30 |
| 3 | 05:24 | | | 06:02 | | 19:21 (4) | 06:51 | | | 07:40 | | 17:44 (7) | 07:34 | 08:24 |
| | 21:59 | | | 21:25 | 29 | 19:50 (4) | 20:22 | | | 19:12 | 20 | 18:04 (7) | 17:08 | 16:30 |
| 4 | 05:24 | | | 06:03 | | 19:21 (4) | 06:53 | | | 07:42 | | 17:44 (7) | 07:35 | 08:25 |
| | 21:58 | | | 21:23 | 29 | 19:50 (4) | 20:19 | | | 19:10 | 20 | 18:04 (7) | 17:06 | 16:29 |
| 5 | 05:25 | | | 06:05 | | 19:21 (4) | 06:54 | | | 07:43 | | 17:43 (7) | 07:37 | 08:26 |
| | 21:58 | | | 21:21 | 30 | 19:51 (4) | 20:17 | | | 19:08 | 19 | 18:02 (7) | 17:04 | 16:29 |
| 6 | 05:26 | | | 06:06 | | 19:20 (4) | 06:56 | | | 07:45 | | 17:44 (7) | 07:39 | 08:28 |
| | 21:57 | | | 21:19 | 30 | 19:50 (4) | 20:15 | | | 19:06 | 18 | 18:02 (7) | 17:02 | 16:28 |
| 7 | 05:27 | | | 06:08 | | 19:21 (4) | 06:58 | | | 07:47 | | 17:45 (7) | 07:41 | 08:29 |
| | 21:57 | | | 21:18 | 29 | 19:50 (4) | 20:13 | | | 19:03 | 16 | 18:01 (7) | 17:01 | 16:28 |
| 8 | 05:28 | | | 06:09 | | 19:20 (4) | 06:59 | | | 07:48 | | 17:46 (7) | 07:43 | 08:30 |
| | 21:56 | | | 21:16 | 30 | 19:50 (4) | 20:10 | | | 19:01 | 14 | 18:00 (7) | 16:59 | 16:28 |
| 9 | 05:29 | | | 06:11 | | 19:21 (4) | 07:01 | | | 07:50 | | 17:47 (7) | 07:44 | 08:31 |
| | 21:56 | | | 21:14 | 29 | 19:50 (4) | 20:08 | | | 18:59 | 9 | 17:56 (7) | 16:57 | 16:27 |
| 10 | 05:30 | | | 06:13 | | 19:21 (4) | 07:03 | | | 07:52 | | | 07:46 | 08:32 |
| | 21:55 | | | 21:12 | 28 | 19:49 (4) | 20:06 | | | 18:57 | | | 16:56 | 16:27 |
| 11 | 05:31 | | | 06:14 | | 19:21 (4) | 07:04 | | | 07:53 | | | 07:48 | 08:33 |
| | 21:54 | | | 21:10 | 28 | 19:49 (4) | 20:03 | | | 18:54 | | | 16:54 | 16:27 |
| 12 | 05:32 | | | 06:16 | | 19:21 (4) | 07:06 | | 18:09 (8) | 07:55 | | | 07:50 | 08:34 |
| | 21:53 | | | 21:08 | 26 | 19:47 (4) | 20:01 | 11 | 18:20 (8) | 18:52 | | | 16:53 | 16:27 |
| 13 | 05:33 | | | 06:17 | | 19:22 (4) | 07:07 | | 18:07 (8) | 07:57 | | | 07:51 | 08:35 |
| | 21:52 | | | 21:06 | 25 | 19:47 (4) | 19:59 | 16 | 18:23 (8) | 18:50 | | | 16:51 | 16:27 |
| 14 | 05:34 | | | 06:19 | | 19:23 (4) | 07:09 | | 18:04 (8) | 07:59 | | | 07:53 | 08:36 |
| | 21:51 | | | 21:04 | 22 | 19:45 (4) | 19:56 | 20 | 18:24 (8) | 18:48 | | | 16:50 | 16:27 |
| 15 | 05:35 | | | 06:21 | | 19:24 (4) | 07:11 | | 18:03 (8) | 08:00 | | | 07:55 | 08:37 |
| | 21:50 | | | 21:02 | 20 | 19:44 (4) | 19:54 | 22 | 18:25 (8) | 18:46 | | | 16:48 | 16:27 |
| 16 | 05:36 | | | 06:22 | | 19:25 (4) | 07:12 | | 18:01 (8) | 08:02 | | | 07:57 | 08:38 |
| | 21:49 | | | 21:00 | 17 | 19:42 (4) | 19:52 | 24 | 18:25 (8) | 18:43 | | | 16:47 | 16:27 |
| 17 | 05:38 | | | 06:24 | | 19:28 (4) | 07:14 | | 18:00 (8) | 08:04 | | | 07:58 | 08:39 |
| | 21:48 | | | 20:58 | 12 | 19:40 (4) | 19:49 | 26 | 18:26 (8) | 18:41 | | | 16:45 | 16:27 |
| 18 | 05:39 | | | 06:25 | | | 07:15 | | 17:58 (8) | 08:05 | | | 08:00 | 08:40 |
| | 21:47 | | | 20:56 | | | 19:47 | 27 | 18:25 (8) | 18:39 | | | 16:44 | 16:27 |
| 19 | 05:40 | | | 06:27 | | | 07:17 | | 17:58 (8) | 08:07 | | | 08:02 | 08:40 |
| | 21:46 | | | 20:54 | | | 19:45 | 27 | 18:25 (8) | 18:37 | | | 16:43 | 16:28 |
| 20 | 05:41 | | | 06:29 | | | 07:19 | | 17:58 (8) | 08:09 | | | 08:04 | 08:41 |
| | 21:45 | | | 20:52 | | | 19:42 | 28 | 18:26 (8) | 18:35 | | | 16:42 | 16:28 |
| 21 | 05:43 | | | 06:30 | | | 07:20 | | 17:57 (8) | 08:11 | | | 08:05 | 08:42 |
| | 21:44 | | | 20:50 | | | 19:40 | 27 | 18:24 (8) | 18:33 | | | 16:40 | 16:29 |
| 22 | 05:44 | | | 06:32 | | | 07:22 | | 17:57 (8) | 08:12 | | | 08:07 | 08:42 |
| | 21:42 | | | 20:48 | | | 19:38 | 27 | 18:24 (8) | 18:31 | | | 16:39 | 16:29 |
| 23 | 05:46 | | 19:32 (4) | 06:33 | | | 07:24 | | 17:56 (8) | 08:14 | | | 08:08 | 08:43 |
| | 21:41 | 9 | 19:41 (4) | 20:46 | | | 19:35 | 27 | 18:23 (8) | 18:29 | | | 16:38 | 16:30 |
| 24 | 05:47 | | 19:30 (4) | 06:35 | | | 07:25 | | 17:57 (8) | 08:16 | | | 08:10 | 08:43 |
| | 21:40 | 13 | 19:43 (4) | 20:44 | | | 19:33 | 25 | 18:22 (8) | 18:27 | | | 16:37 | 16:30 |
| 25 | 05:48 | | 19:29 (4) | 06:37 | | | 07:27 | | 17:58 (8) | 07:18 | | | 08:12 | 08:43 |
| | 21:38 | 16 | 19:45 (4) | 20:42 | | | 19:31 | 23 | 18:21 (8) | 17:25 | | | 16:36 | 16:31 |
| 26 | 05:50 | | 19:27 (4) | 06:38 | | | 07:28 | | 17:58 (8) | 07:19 | | | 08:13 | 08:44 |
| | 21:37 | 19 | 19:46 (4) | 20:39 | | | 19:28 | 21 | 18:19 (8) | 17:23 | | | 16:35 | 16:31 |
| 27 | 05:51 | | 19:26 (4) | 06:40 | | | 07:30 | | 18:00 (8) | 07:21 | | | 08:15 | 08:44 |
| | 21:36 | 21 | 19:47 (4) | 20:37 | | | 19:26 | 17 | 18:17 (8) | 17:21 | | | 16:34 | 16:32 |
| 28 | 05:53 | | 19:26 (4) | 06:42 | | | 07:32 | | 17:51 (7) | 07:23 | | | 08:16 | 08:44 |
| | 21:34 | 22 | 19:48 (4) | 20:35 | | | 19:24 | 23 | 18:15 (8) | 17:19 | | | 16:33 | 16:33 |
| 29 | 05:54 | | 19:24 (4) | 06:43 | | | 07:33 | | 17:48 (7) | 07:25 | | | 08:18 | 08:44 |
| | 21:33 | 24 | 19:48 (4) | 20:33 | | | 19:22 | 17 | 18:09 (8) | 17:17 | | | 16:33 | 16:34 |
| 30 | 05:56 | | 19:23 (4) | 06:45 | | | 07:35 | | 17:47 (7) | 07:27 | | | 08:19 | 08:45 |
| | 21:31 | 26 | 19:49 (4) | 20:31 | | | 19:19 | 16 | 18:03 (7) | 17:15 | | | 16:32 | 16:35 |
| 31 | 05:57 | | 19:23 (4) | 06:46 | | | | | | 07:28 | | | | 08:45 |
| | 21:29 | 27 | 19:50 (4) | 20:28 | | | | | | 17:13 | | | | 16:36 |
| Potential sun hours | 501 | | | 453 | | | 381 | | | 332 | | | 267 | 244 |
| Total, worst case | | 177 | | | 441 | | | 424 | | | 154 | | | |
| Sun reduction | | 0.27 | | | 0.30 | | | 0.28 | | | 0.24 | | | |
| Oper. time red. | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | | | |
| Wind dir. red. | | 0.61 | | | 0.61 | | | 0.68 | | | 0.69 | | | |
| Total reduction | | 0.16 | | | 0.18 | | | 0.19 | | | 0.16 | | | |
| Total, real | | 29 | | | 80 | | | 82 | | | 25 | | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

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Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** BP - H82

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | | May | June | July | August | | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:14 | | 06:10 | 05:25 | 05:22 | 05:59 | | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | | 21:00 | 21:46 | 21:59 | 21:28 | | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | 07:12 | | 06:08 | 05:24 | 05:23 | 06:00 | | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | | 21:02 | 21:47 | 21:59 | 21:26 | | 20:24 | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | | 06:06 | 05:23 | 05:24 | 06:02 | | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 | | 21:03 | 21:48 | 21:59 | 21:24 | | 20:22 | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | | 06:04 | 05:23 | 05:24 | 06:03 | | 06:53 | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | | 21:05 | 21:49 | 21:58 | 21:23 | | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | | 06:03 | 05:22 | 05:25 | 06:05 | | 06:54 | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | 20:16 | | 21:07 | 21:50 | 21:58 | 21:21 | | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | | 06:01 | 05:21 | 05:26 | 06:06 | | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | | 21:08 | 21:51 | 21:57 | 21:19 | | 20:15 | 19:05 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | | 05:59 | 05:21 | 05:27 | 06:08 | | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | | 21:10 | 21:52 | 21:57 | 21:17 | | 20:12 | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | | 05:57 | 05:20 | 05:28 | 06:09 | | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | 20:21 | | 21:12 | 21:53 | 21:56 | 21:16 | | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | | 05:55 | 05:20 | 05:29 | 06:11 | | 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | | 21:13 | 21:53 | 21:55 | 21:14 | | 20:08 | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | | 05:54 | 05:19 | 05:30 | 06:13 | | 07:02 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | | 21:15 | 21:54 | 21:55 | 21:12 | | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | | 05:52 | 05:19 | 05:31 | 06:14 | | 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | 20:26 | | 21:16 | 21:55 | 21:54 | 21:10 | | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | 06:50 | 19:22 (5) | 05:50 | 05:19 | 05:32 | 06:16 | | 07:06 | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 7 19:29 (5) | 21:18 | 21:56 | 21:53 | 21:08 | | 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:47 | 19:17 (5) | 05:49 | 05:18 | 05:33 | 06:17 | | 07:07 | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 14 19:31 (5) | 21:20 | 21:56 | 21:52 | 21:06 | | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 06:45 | 19:16 (5) | 05:47 | 05:18 | 05:34 | 06:19 | 19:24 (5) | 07:09 | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 17 19:33 (5) | 21:21 | 21:57 | 21:51 | 21:04 | 10 19:34 (5) | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 19:14 (5) | 05:46 | 05:18 | 05:35 | 06:20 | 19:22 (5) | 07:11 | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | 20:33 | 20 19:34 (5) | 21:23 | 21:57 | 21:50 | 21:02 | 15 19:37 (5) | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | 19:13 (5) | 05:44 | 05:18 | 05:36 | 06:22 | 19:20 (5) | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 22 19:35 (5) | 21:24 | 21:58 | 21:49 | 21:00 | 17 19:37 (5) | 19:52 | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 19:12 (5) | 05:43 | 05:18 | 05:38 | 06:24 | 19:19 (5) | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | 20:37 | 23 19:35 (5) | 21:26 | 21:58 | 21:48 | 20:58 | 20 19:39 (5) | 19:49 | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 19:12 (5) | 05:41 | 05:18 | 05:39 | 06:25 | 19:17 (5) | 07:15 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 24 19:36 (5) | 21:27 | 21:59 | 21:47 | 20:56 | 22 19:39 (5) | 19:47 | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | 06:34 | 19:11 (5) | 05:40 | 05:18 | 05:40 | 06:27 | 19:17 (5) | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | 25 19:36 (5) | 21:29 | 21:59 | 21:46 | 20:54 | 23 19:40 (5) | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 19:11 (5) | 05:38 | 05:18 | 05:41 | 06:29 | 19:16 (5) | 07:19 | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | 25 19:36 (5) | 21:30 | 21:59 | 21:45 | 20:52 | 24 19:40 (5) | 19:42 | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | 19:11 (5) | 05:37 | 05:18 | 05:43 | 06:30 | 19:15 (5) | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | 25 19:36 (5) | 21:32 | 22:00 | 21:44 | 20:50 | 25 19:40 (5) | 19:40 | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | 06:28 | 19:11 (5) | 05:36 | 05:18 | 05:44 | 06:32 | 19:14 (5) | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | 24 19:35 (5) | 21:33 | 22:00 | 21:42 | 20:48 | 25 19:39 (5) | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 19:11 (5) | 05:35 | 05:19 | 05:45 | 06:33 | 19:15 (5) | 07:23 | 08:14 | 08:08 | 08:43 |
| | 17:08 | 18:05 | 18:54 | 20:47 | 24 19:35 (5) | 21:34 | 22:00 | 21:41 | 20:46 | 25 19:40 (5) | 19:35 | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | 19:11 (5) | 05:33 | 05:19 | 05:47 | 06:35 | 19:15 (5) | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 23 19:34 (5) | 21:36 | 22:00 | 21:40 | 20:44 | 25 19:40 (5) | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 19:12 (5) | 05:32 | 05:19 | 05:48 | 06:37 | 19:14 (5) | 07:27 | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21 19:33 (5) | 21:37 | 22:00 | 21:38 | 20:41 | 25 19:39 (5) | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 06:20 | 19:13 (5) | 05:31 | 05:20 | 05:50 | 06:38 | 19:15 (5) | 07:28 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | 20:52 | 19 19:32 (5) | 21:38 | 22:00 | 21:37 | 20:39 | 23 19:38 (5) | 19:28 | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 19:14 (5) | 05:30 | 05:20 | 05:51 | 06:40 | 19:15 (5) | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 | 20:53 | 16 19:30 (5) | 21:40 | 22:00 | 21:36 | 20:37 | 22 19:37 (5) | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 19:15 (5) | 05:29 | 05:20 | 05:53 | 06:41 | 19:16 (5) | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 14 19:29 (5) | 21:41 | 22:00 | 21:34 | 20:35 | 20 19:36 (5) | 19:24 | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 06:14 | 19:18 (5) | 05:28 | 05:21 | 05:54 | 06:43 | 19:17 (5) | 07:33 | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 20:57 | 8 19:26 (5) | 21:42 | 22:00 | 21:33 | 20:33 | 17 19:34 (5) | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | | 05:27 | 05:22 | 05:56 | 06:45 | 19:18 (5) | 07:35 | 07:27 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:58 | | 21:43 | 22:00 | 21:31 | 20:31 | 14 19:32 (5) | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | | 05:26 | | 05:57 | 06:46 | 19:21 (5) | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | | 21:44 | | 21:29 | 20:28 | 7 19:28 (5) | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | | 485 | 498 | 501 | 453 | | 381 | 332 | 267 | 244 |
| Total, worst case | | | | | 351 | | | | | 359 | | | | |
| Sun reduction | | | | | 0.35 | | | | | 0.30 | | | | |
| Oper. time red. | | | | | 1.00 | | | | | 1.00 | | | | |
| Wind dir. red. | | | | | 0.63 | | | | | 0.63 | | | | |
| Total reduction | | | | | 0.22 | | | | | 0.19 | | | | |
| Total, real | | | | | 78 | | | | | 67 | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** BQ - H83

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:14 | 18:58 (5) | 06:10 | 05:25 | 05:22 | 05:59 | 06:48 | 18:57 (5) | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:24 | 18:16 | 20:10 | 21 19:19 (5) | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | 16 19:13 (5) | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | 07:12 | 18:57 (5) | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | 18:55 (5) | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 23 19:20 (5) | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 18 19:13 (5) | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | 18:56 (5) | 06:06 | 05:23 | 05:24 | 06:02 | 06:51 | 18:54 (5) | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 | 24 19:20 (5) | 21:03 | 21:48 | 21:59 | 21:25 | 20:22 | 21 19:15 (5) | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 18:55 (5) | 06:04 | 05:23 | 05:24 | 06:03 | 06:53 | 18:52 (5) | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 25 19:20 (5) | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 23 19:15 (5) | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | 18:55 (5) | 06:03 | 05:22 | 05:25 | 06:05 | 06:54 | 18:51 (5) | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | 20:16 | 25 19:20 (5) | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 24 19:15 (5) | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 18:55 (5) | 06:01 | 05:21 | 05:26 | 06:06 | 06:56 | 18:51 (5) | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 24 19:19 (5) | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 25 19:16 (5) | 19:05 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 18:55 (5) | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 18:50 (5) | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 24 19:19 (5) | 21:10 | 21:52 | 21:57 | 21:17 | 20:12 | 25 19:15 (5) | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 18:55 (5) | 05:57 | 05:20 | 05:28 | 06:09 | 06:59 | 18:50 (5) | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | 20:21 | 22 19:17 (5) | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 25 19:15 (5) | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | 18:56 (5) | 05:55 | 05:20 | 05:29 | 06:11 | 07:01 | 18:49 (5) | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 21 19:17 (5) | 21:13 | 21:53 | 21:56 | 21:14 | 20:08 | 25 19:14 (5) | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 18:57 (5) | 05:54 | 05:19 | 05:30 | 06:13 | 07:02 | 18:50 (5) | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 18 19:15 (5) | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 23 19:13 (5) | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 18:58 (5) | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 18:50 (5) | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | 20:26 | 16 19:14 (5) | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 22 19:12 (5) | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | 06:50 | 19:00 (5) | 05:50 | 05:19 | 05:32 | 06:16 | 07:06 | 18:51 (5) | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 12 19:12 (5) | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 20 19:11 (5) | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:47 | | 05:49 | 05:18 | 05:33 | 06:17 | 07:07 | 18:52 (5) | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 17 19:09 (5) | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 06:45 | | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 18:53 (5) | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | 20:32 | | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 14 19:07 (5) | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | | 05:46 | 05:18 | 05:35 | 06:20 | 07:11 | 18:56 (5) | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | 20:33 | | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | 7 19:03 (5) | 18:46 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | | 05:44 | 05:18 | 05:36 | 06:22 | 07:12 | | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | 20:37 | | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | | 05:41 | 05:18 | 05:39 | 06:25 | 07:15 | | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | 06:34 | | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | | 05:38 | 05:18 | 05:41 | 06:29 | 07:19 | | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | | 21:30 | 22:00 | 21:45 | 20:52 | 19:42 | | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | 06:28 | | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 | | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | | 21:33 | 22:00 | 21:42 | 20:48 | 19:38 | | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | | 05:35 | 05:19 | 05:45 | 06:33 | 07:23 | | 08:14 | 08:08 | 08:43 |
| | 17:08 | 18:05 | 18:54 | 20:47 | | 21:34 | 22:00 | 21:41 | 20:46 | 19:35 | | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | | 05:33 | 05:19 | 05:47 | 06:35 | 07:25 | | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | | 21:37 | 22:00 | 21:38 | 20:41 | 19:31 | | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 06:20 | | 05:31 | 05:20 | 05:50 | 06:38 | 07:28 | | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | 20:52 | | 21:38 | 22:00 | 21:37 | 20:39 | 19:28 | | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 | 20:53 | | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 18:07 (5) | 06:16 | 05:29 | 05:20 | 05:53 | 06:41 | 07:32 | | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 5 18:12 (5) | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 19:03 (5) | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 13 19:16 (5) | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:22 | | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 19:01 (5) | 06:12 | 05:27 | 05:22 | 05:55 | 06:45 | 19:05 (5) | 07:35 | | 07:27 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 17 19:18 (5) | 20:58 | 21:43 | 22:00 | 21:31 | 20:31 | 2 19:07 (5) | 19:19 | | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | 18:59 (5) | | 05:26 | | 05:57 | 06:46 | 18:59 (5) | | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | 19 19:18 (5) | | 21:44 | | 21:29 | 20:28 | 12 19:11 (5) | | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | | 485 | 498 | 501 | 453 | | 381 | | 332 | 267 | 244 |
| Total, worst case | | | 54 | | 255 | | | | 14 | | 305 | | | | |
| Sun reduction | | | 0.24 | | 0.35 | | | | 0.30 | | 0.28 | | | | |
| Oper. time red. | | | 1.00 | | 1.00 | | | | 1.00 | | 1.00 | | | | |
| Wind dir. red. | | | 0.66 | | 0.66 | | | | 0.66 | | 0.66 | | | | |
| Total reduction | | | 0.16 | | 0.23 | | | | 0.19 | | 0.19 | | | | |
| Total, real | | | 9 | | 59 | | | | 3 | | 57 | | | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
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kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** BR - H84

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | | May | June | July | August | | September | | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:14 | | 06:10 | 05:25 | 05:22 | 05:59 | | 06:48 | | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | | 21:00 | 21:46 | 21:59 | 21:28 | | 20:26 | 23 | 19:29 (5) | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | 07:12 | | 06:08 | 05:24 | 05:23 | 06:00 | | 06:50 | | 19:07 (5) | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | | 21:02 | 21:47 | 21:59 | 21:26 | | 20:24 | 20 | 19:27 (5) | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | | 06:06 | 05:23 | 05:24 | 06:02 | | 06:51 | | 19:08 (5) | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 | | 21:03 | 21:48 | 21:59 | 21:25 | | 20:22 | 18 | 19:26 (5) | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | | 06:04 | 05:23 | 05:24 | 06:03 | | 06:53 | | 19:09 (5) | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | | 21:05 | 21:49 | 21:58 | 21:23 | | 20:19 | 14 | 19:23 (5) | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | | 06:03 | 05:22 | 05:25 | 06:05 | | 06:54 | | 19:13 (5) | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | 20:16 | | 21:07 | 21:50 | 21:58 | 21:21 | | 20:17 | 6 | 19:19 (5) | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | | 06:01 | 05:21 | 05:26 | 06:06 | | 06:56 | | | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | | 21:08 | 21:51 | 21:57 | 21:19 | | 20:15 | | | 19:05 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 19:17 (5) | 05:59 | 05:21 | 05:27 | 06:08 | | 06:58 | | | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 6 19:23 (5) | 21:10 | 21:52 | 21:57 | 21:17 | | 20:12 | | | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 19:12 (5) | 05:57 | 05:20 | 05:28 | 06:09 | | 06:59 | | | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | 20:21 | 14 19:26 (5) | 21:12 | 21:53 | 21:56 | 21:16 | | 20:10 | | | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | 19:10 (5) | 05:55 | 05:20 | 05:29 | 06:11 | | 07:01 | | | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 18 19:28 (5) | 21:13 | 21:53 | 21:56 | 21:14 | | 20:08 | | | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 19:09 (5) | 05:54 | 05:19 | 05:30 | 06:13 | | 07:02 | | | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 20 19:29 (5) | 21:15 | 21:54 | 21:55 | 21:12 | | 20:06 | | | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 19:07 (5) | 05:52 | 05:19 | 05:31 | 06:14 | | 07:04 | | | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | 20:26 | 23 19:30 (5) | 21:16 | 21:55 | 21:54 | 21:10 | | 20:03 | | | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | 06:50 | 19:07 (5) | 05:50 | 05:19 | 05:32 | 06:16 | | 07:06 | | | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 24 19:31 (5) | 21:18 | 21:56 | 21:53 | 21:08 | | 20:01 | | | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:47 | 19:05 (5) | 05:49 | 05:18 | 05:33 | 06:17 | | 07:07 | | | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 25 19:30 (5) | 21:20 | 21:56 | 21:52 | 21:06 | | 19:59 | | | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 06:45 | 19:04 (5) | 05:47 | 05:18 | 05:34 | 06:19 | | 07:09 | | | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 26 19:30 (5) | 21:21 | 21:57 | 21:51 | 21:04 | | 19:56 | | | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 19:04 (5) | 05:46 | 05:18 | 05:35 | 06:20 | | 07:11 | | | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | 20:33 | 26 19:30 (5) | 21:23 | 21:57 | 21:50 | 21:02 | | 19:54 | | | 18:46 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | 19:04 (5) | 05:44 | 05:18 | 05:36 | 06:22 | | 07:12 | | | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 26 19:30 (5) | 21:24 | 21:58 | 21:49 | 21:00 | | 19:52 | | | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 19:04 (5) | 05:43 | 05:18 | 05:38 | 06:24 | | 07:14 | | | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | 20:37 | 26 19:30 (5) | 21:26 | 21:58 | 21:48 | 20:58 | | 19:49 | | | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 19:04 (5) | 05:41 | 05:18 | 05:39 | 06:25 | 19:19 (5) | 07:15 | | | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 26 19:30 (5) | 21:27 | 21:59 | 21:47 | 20:56 | 5 19:24 (5) | 19:47 | | | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | 06:34 | 19:05 (5) | 05:40 | 05:18 | 05:40 | 06:27 | 19:16 (5) | 07:17 | | | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | 24 19:29 (5) | 21:29 | 21:59 | 21:46 | 20:54 | 12 19:28 (5) | 19:45 | | | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 19:05 (5) | 05:38 | 05:18 | 05:41 | 06:29 | 19:13 (5) | 07:19 | | | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | 23 19:28 (5) | 21:30 | 22:00 | 21:45 | 20:52 | 16 19:29 (5) | 19:42 | | | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | 19:06 (5) | 05:37 | 05:18 | 05:43 | 06:30 | 19:11 (5) | 07:20 | | | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | 21 19:27 (5) | 21:32 | 22:00 | 21:44 | 20:50 | 20 19:31 (5) | 19:40 | | | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | 06:28 | 19:07 (5) | 05:36 | 05:18 | 05:44 | 06:32 | 19:10 (5) | 07:22 | | | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | 19 19:26 (5) | 21:33 | 22:00 | 21:42 | 20:48 | 21 19:31 (5) | 19:38 | | | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 19:08 (5) | 05:35 | 05:19 | 05:45 | 06:33 | 19:09 (5) | 07:23 | | | 08:14 | 08:08 | 08:43 |
| | 17:08 | 18:05 | 18:54 | 20:47 | 16 19:24 (5) | 21:34 | 22:00 | 21:41 | 20:46 | 23 19:32 (5) | 19:35 | | | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | 19:10 (5) | 05:33 | 05:19 | 05:47 | 06:35 | 19:08 (5) | 07:25 | | | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 12 19:22 (5) | 21:36 | 22:00 | 21:40 | 20:44 | 25 19:33 (5) | 19:33 | | | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | | 05:32 | 05:19 | 05:48 | 06:37 | 19:07 (5) | 07:27 | | | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | | 21:37 | 22:00 | 21:38 | 20:41 | 25 19:32 (5) | 19:31 | | | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 06:20 | | 05:31 | 05:20 | 05:50 | 06:38 | 19:07 (5) | 07:28 | | | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | 20:52 | | 21:38 | 22:00 | 21:37 | 20:39 | 26 19:33 (5) | 19:28 | | | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | | 05:30 | 05:20 | 05:51 | 06:40 | 19:06 (5) | 07:30 | | | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 | 20:53 | | 21:40 | 22:00 | 21:36 | 20:37 | 26 19:32 (5) | 19:26 | | | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | | 05:29 | 05:20 | 05:53 | 06:41 | 19:06 (5) | 07:32 | | | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | | 21:41 | 22:00 | 21:34 | 20:35 | 26 19:32 (5) | 19:24 | | | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 06:14 | | 05:28 | 05:21 | 05:54 | 06:43 | 19:05 (5) | 07:33 | | | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 20:57 | | 21:42 | 22:00 | 21:33 | 20:33 | 26 19:31 (5) | 19:22 | | | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | | 05:27 | 05:22 | 05:56 | 06:45 | 19:06 (5) | 07:35 | | | 07:27 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:58 | | 21:43 | 22:00 | 21:31 | 20:31 | 25 19:31 (5) | 19:19 | | | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | | 05:26 | | 05:57 | 06:46 | 19:06 (5) | | | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | | 21:44 | | 21:29 | 20:28 | 24 19:30 (5) | | | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | | 485 | 498 | 501 | 453 | | 381 | | 332 | 267 | 244 |
| Total, worst case | | | | | 375 | | | | | 300 | | 81 | | | |
| Sun reduction | | | | | 0.35 | | | | | 0.30 | | 0.28 | | | |
| Oper. time red. | | | | | 1.00 | | | | | 1.00 | | 1.00 | | | |
| Wind dir. red. | | | | | 0.64 | | | | | 0.64 | | 0.64 | | | |
| Total reduction | | | | | 0.23 | | | | | 0.19 | | 0.18 | | | |
| Total, real | | | | | 85 | | | | | 57 | | 15 | | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** BS - H85

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | | | April | | | May | June | July | August | September | | | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | | | 07:14 | | 19:11 (5) | 06:10 | 05:25 | 05:22 | 05:58 | 06:48 | | 19:09 (5) | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:24 | 18:16 | | | 20:09 | 13 | 19:24 (5) | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | 9 | 19:18 (5) | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | | | 07:12 | | 19:09 (5) | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | | 19:06 (5) | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | | | 20:11 | 16 | 19:25 (5) | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 13 | 19:19 (5) | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | | | 07:10 | | 19:09 (5) | 06:06 | 05:23 | 05:24 | 06:02 | 06:51 | | 19:05 (5) | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | | | 20:13 | 17 | 19:26 (5) | 21:03 | 21:48 | 21:59 | 21:24 | 20:22 | 16 | 19:21 (5) | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | | | 07:08 | | 19:07 (5) | 06:04 | 05:23 | 05:24 | 06:03 | 06:53 | | 19:03 (5) | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | | | 20:15 | 18 | 19:25 (5) | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 18 | 19:21 (5) | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | | | 07:05 | | 19:07 (5) | 06:03 | 05:22 | 05:25 | 06:05 | 06:54 | | 19:03 (5) | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | | | 20:16 | 19 | 19:26 (5) | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 18 | 19:21 (5) | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | | | 07:03 | | 19:07 (5) | 06:01 | 05:21 | 05:26 | 06:06 | 06:56 | | 19:03 (5) | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | | | 20:18 | 18 | 19:25 (5) | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 19 | 19:22 (5) | 19:05 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | | | 07:01 | | 19:07 (5) | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | | 19:02 (5) | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:26 | | | 20:20 | 18 | 19:25 (5) | 21:10 | 21:52 | 21:57 | 21:17 | 20:12 | 19 | 19:21 (5) | 19:03 | 17:00 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | | | 06:59 | | 19:06 (5) | 05:57 | 05:20 | 05:28 | 06:09 | 06:59 | | 19:02 (5) | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | | | 20:21 | 18 | 19:24 (5) | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 18 | 19:20 (5) | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | | | 06:56 | | 19:07 (5) | 05:55 | 05:20 | 05:29 | 06:11 | 07:01 | | 19:02 (5) | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | | | 20:23 | 16 | 19:23 (5) | 21:13 | 21:53 | 21:55 | 21:14 | 20:08 | 17 | 19:19 (5) | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | | | 06:54 | | 19:08 (5) | 05:54 | 05:19 | 05:30 | 06:12 | 07:02 | | 19:03 (5) | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | | | 20:25 | 13 | 19:21 (5) | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 15 | 19:18 (5) | 18:56 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | | | 06:52 | | 19:10 (5) | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | | 19:03 (5) | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | | | 20:26 | 9 | 19:19 (5) | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 13 | 19:16 (5) | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | | | 06:50 | | | 05:50 | 05:19 | 05:32 | 06:16 | 07:06 | | 19:05 (5) | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | | | 20:28 | | | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 9 | 19:14 (5) | 18:52 | 16:52 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | | | 06:47 | | | 05:49 | 05:18 | 05:33 | 06:17 | 07:07 | | | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | | | 20:30 | | | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | | | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | | | 06:45 | | | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | | | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:48 | 18:39 | | | 20:32 | | | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | | | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | | | 06:43 | | | 05:46 | 05:18 | 05:35 | 06:20 | 07:10 | | | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | | | 20:33 | | | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | | | 18:45 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | | | 06:41 | | | 05:44 | 05:18 | 05:36 | 06:22 | 07:12 | | | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | | | 20:35 | | | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | | | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | | | 06:39 | | | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | | | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | | | 20:37 | | | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | | | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | | | 06:37 | | | 05:41 | 05:18 | 05:39 | 06:25 | 07:15 | | | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | | | 20:38 | | | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | | | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | | | 06:34 | | | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | | | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | | | 20:40 | | | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | | | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | | | 06:32 | | | 05:38 | 05:18 | 05:41 | 06:29 | 07:19 | | | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | | | 20:42 | | | 21:30 | 21:59 | 21:45 | 20:52 | 19:42 | | | 18:35 | 16:42 | 16:28 |
| 21 | 08:32 | 07:42 | 06:40 | | | 06:30 | | | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | | | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | | | 20:43 | | | 21:31 | 22:00 | 21:44 | 20:50 | 19:40 | | | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | | | 06:28 | | | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 | | | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:52 | | | 20:45 | | | 21:33 | 22:00 | 21:42 | 20:48 | 19:38 | | | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:37 | 06:35 | | | 06:26 | | | 05:34 | 05:18 | 05:45 | 06:33 | 07:23 | | | 08:14 | 08:08 | 08:43 |
| | 17:08 | 18:05 | 18:54 | | | 20:47 | | | 21:34 | 22:00 | 21:41 | 20:46 | 19:35 | | | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | | | 06:24 | | | 05:33 | 05:19 | 05:47 | 06:35 | 07:25 | | | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | | | 20:48 | | | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | | | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | | | 06:22 | | | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | | | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | | | 20:50 | | | 21:37 | 22:00 | 21:38 | 20:41 | 19:31 | | | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | | | 06:20 | | | 05:31 | 05:20 | 05:50 | 06:38 | 07:28 | | | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | | | 20:52 | | | 21:38 | 22:00 | 21:37 | 20:39 | 19:28 | | | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | | | 06:18 | | | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | | | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 | | | 20:53 | | | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | | | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | | | 06:16 | | | 05:29 | 05:20 | 05:53 | 06:41 | 07:32 | | | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | | | 20:55 | | | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | | | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | | | 06:14 | | | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | | | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | | | 20:57 | | | 21:42 | 22:00 | 21:33 | 20:33 | 19:21 | | | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | | | 06:12 | | | 05:27 | 05:22 | 05:55 | 06:45 | 07:35 | | | 07:26 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | | | 20:58 | | | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | | | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | 19:13 (5) | | | | 05:26 | | 05:57 | 06:46 | | | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | 8 | 19:21 (5) | | | | 21:44 | | 21:29 | 20:28 | | | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | | | 416 | | | 485 | 498 | 501 | 453 | 381 | | | 332 | 267 | 244 |
| Total, worst case | | | | 8 | | | 175 | | | | | | | 184 | | | | |
| Sun reduction | | | | 0.24 | | | 0.35 | | | | | | | 0.28 | | | | |
| Oper. time red. | | | | 1.00 | | | 1.00 | | | | | | | 1.00 | | | | |
| Wind dir. red. | | | | 0.65 | | | 0.65 | | | | | | | 0.65 | | | | |
| Total reduction | | | | 0.16 | | | 0.23 | | | | | | | 0.18 | | | | |
| Total, real | | | | 1 | | | 40 | | | | | | | 34 | | | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** BT - H86

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:14 | 06:10 | 05:25 | 05:22 | 05:58 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:24 | 18:16 | 20:09 | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | 07:12 | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | 06:06 | 05:23 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 | 21:03 | 21:48 | 21:59 | 21:24 | 20:22 | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:04 | 05:23 | 05:24 | 06:03 | 06:53 | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | 06:02 | 05:22 | 05:25 | 06:05 | 06:54 | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:21 | 05:26 | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 19:05 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:26 | 20:20 | 21:10 | 21:52 | 21:57 | 21:17 | 20:12 | 19:03 | 17:00 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 05:57 | 05:20 | 05:28 | 06:09 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | 20:21 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | 05:55 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 21:13 | 21:53 | 21:55 | 21:14 | 20:08 | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:19 | 05:30 | 06:12 | 07:02 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:56 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | 20:26 | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | 06:50 | 05:50 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:52 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:47 | 05:49 | 05:18 | 05:33 | 06:17 | 07:07 | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 06:45 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:48 | 18:39 | 20:32 | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:35 | 06:20 | 07:10 | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | 20:33 | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | 18:45 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | 05:44 | 05:18 | 05:36 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | 20:37 | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 | 05:18 | 05:39 | 06:25 | 07:15 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | 06:34 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 05:38 | 05:18 | 05:41 | 06:28 | 07:19 | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | 21:30 | 21:59 | 21:45 | 20:52 | 19:42 | 18:35 | 16:42 | 16:28 |
| 21 | 08:32 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | 21:31 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | 06:28 | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:52 | 20:45 | 21:33 | 22:00 | 21:42 | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:37 | 06:35 | 06:26 | 05:34 | 05:18 | 05:45 | 06:33 | 07:23 | 08:14 | 08:08 | 08:43 |
| | 17:08 | 18:05 | 18:54 | 20:47 | 21:34 | 22:00 | 21:41 | 20:46 | 19:35 | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | 05:33 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:38 | 20:41 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 06:20 | 05:31 | 05:19 | 05:50 | 06:38 | 07:28 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | 20:52 | 21:38 | 22:00 | 21:37 | 20:39 | 19:28 | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 | 20:53 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:20 | 05:53 | 06:41 | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:21 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:55 | 06:45 | 07:35 | 07:26 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:58 | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | 05:26 | | 05:57 | 06:46 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:44 | | 21:29 | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 244 |
| Total, worst case | | | | | | | | | | | | |
| Sun reduction | | | | | | | | | | | | |
| Oper. time red. | | | | | | | | | | | | |
| Wind dir. red. | | | | | | | | | | | | |
| Total reduction | | | | | | | | | | | | |
| Total, real | | | | | | | | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF cumulative WC **Shadow receptor:** BU - H87

## Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | | April | | May | June | July | August | September | | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | | 07:14 | | 18:58 (5) | 06:10 | 05:25 | 05:22 | 05:58 | 06:48 | | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:24 | 18:16 | | 20:09 | 12 | 19:10 (5) | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | | 07:12 | | 19:00 (5) | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | | 20:11 | 8 | 19:08 (5) | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | | 07:10 | | | 06:06 | 05:23 | 05:24 | 06:02 | 06:51 | | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | | 20:13 | | | 21:03 | 21:48 | 21:59 | 21:24 | 20:22 | | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | | 07:08 | | | 06:04 | 05:23 | 05:24 | 06:03 | 06:53 | | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | | 20:15 | | | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | | 07:05 | | | 06:02 | 05:22 | 05:25 | 06:05 | 06:54 | | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | | 20:16 | | | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | | 07:03 | | | 06:01 | 05:21 | 05:26 | 06:06 | 06:56 | | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | | 20:18 | | | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | | 19:05 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | | 07:01 | | | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:26 | | 20:20 | | | 21:10 | 21:52 | 21:57 | 21:17 | 20:12 | | 19:03 | 17:00 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | | 06:59 | | | 05:57 | 05:20 | 05:28 | 06:09 | 06:59 | | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | | 20:21 | | | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | | 06:56 | | | 05:55 | 05:20 | 05:29 | 06:11 | 07:01 | | 07:50 | 07:44 | 08:31 |
| | 16:46 | 17:39 | 18:30 | | 20:23 | | | 21:13 | 21:53 | 21:55 | 21:14 | 20:08 | | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | | 06:54 | | | 05:54 | 05:19 | 05:30 | 06:12 | 07:02 | 18:54 (5) | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | | 20:25 | | | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 7 19:01 (5) | 18:56 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | | 06:52 | | | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 18:51 (5) | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | | 20:26 | | | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 11 19:02 (5) | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | | 06:50 | | | 05:50 | 05:19 | 05:32 | 06:16 | 07:06 | 18:49 (5) | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | | 20:28 | | | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 15 19:04 (5) | 18:52 | 16:52 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | | 06:47 | | | 05:49 | 05:18 | 05:33 | 06:17 | 07:07 | 18:47 (5) | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | | 20:30 | | | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 17 19:04 (5) | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | | 06:45 | | | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 18:47 (5) | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:48 | 18:39 | | 20:32 | | | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 17 19:04 (5) | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | | 06:43 | | | 05:46 | 05:18 | 05:35 | 06:20 | 07:10 | 18:46 (5) | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | | 20:33 | | | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | 19 19:05 (5) | 18:45 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | | 06:41 | | | 05:44 | 05:18 | 05:36 | 06:22 | 07:12 | 18:45 (5) | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | | 20:35 | | | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | 19 19:04 (5) | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | | 06:39 | | | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 18:46 (5) | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | | 20:37 | | | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | 18 19:04 (5) | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | | 06:37 | | | 05:41 | 05:18 | 05:39 | 06:25 | 07:15 | 18:45 (5) | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | | 20:38 | | | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 17 19:02 (5) | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | | 06:34 | | | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 18:46 (5) | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | | 20:40 | | | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 15 19:01 (5) | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | | 06:32 | | | 05:38 | 05:18 | 05:41 | 06:28 | 07:19 | 18:48 (5) | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | | 20:42 | | | 21:30 | 21:59 | 21:45 | 20:52 | 19:42 | 12 19:00 (5) | 18:35 | 16:42 | 16:28 |
| 21 | 08:32 | 07:42 | 06:40 | | 06:30 | | | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 18:49 (5) | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | | 20:43 | | | 21:31 | 22:00 | 21:44 | 20:50 | 19:40 | 7 18:56 (5) | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | 18:05 (5) | 06:28 | | | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 | | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:52 | 5 18:10 (5) | 20:45 | | | 21:33 | 22:00 | 21:42 | 20:48 | 19:38 | | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:37 | 06:35 | 18:02 (5) | 06:26 | | | 05:34 | 05:18 | 05:45 | 06:33 | 07:23 | | 08:14 | 08:08 | 08:43 |
| | 17:08 | 18:05 | 18:54 | 11 18:13 (5) | 20:47 | | | 21:34 | 22:00 | 21:41 | 20:46 | 19:35 | | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | 17:59 (5) | 06:24 | | | 05:33 | 05:19 | 05:47 | 06:35 | 07:25 | | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 14 18:13 (5) | 20:48 | | | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 17:58 (5) | 06:22 | | | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 16 18:14 (5) | 20:50 | | | 21:37 | 22:00 | 21:38 | 20:41 | 19:31 | | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 17:57 (5) | 06:20 | | | 05:31 | 05:19 | 05:50 | 06:38 | 07:28 | | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | 18 18:15 (5) | 20:52 | | | 21:38 | 22:00 | 21:37 | 20:39 | 19:28 | | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 17:57 (5) | 06:18 | | | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 | 18 18:15 (5) | 20:53 | | | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 17:56 (5) | 06:16 | | | 05:29 | 05:20 | 05:53 | 06:41 | 07:32 | | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 18 18:14 (5) | 20:55 | | | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 18:56 (5) | 06:14 | | | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 18 19:14 (5) | 20:57 | | | 21:42 | 22:00 | 21:33 | 20:33 | 19:21 | | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 18:57 (5) | 06:12 | | | 05:27 | 05:22 | 05:55 | 06:45 | 07:35 | | 07:26 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 17 19:14 (5) | 20:58 | | | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | 18:57 (5) | | | | 05:26 | | 05:57 | 06:46 | | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | 15 19:12 (5) | | | | 21:44 | | 21:29 | 20:28 | | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | | 416 | | | 485 | 498 | 501 | 453 | 381 | | 332 | 267 | 244 |
| Total, worst case | | | | 150 | | 20 | | | | | | | 174 | | | |
| Sun reduction | | | | 0.24 | | 0.35 | | | | | | | 0.28 | | | |
| Oper. time red. | | | | 1.00 | | 1.00 | | | | | | | 1.00 | | | |
| Wind dir. red. | | | | 0.66 | | 0.66 | | | | | | | 0.66 | | | |
| Total reduction | | | | 0.16 | | 0.24 | | | | | | | 0.19 | | | |
| Total, real | | | | 24 | | 5 | | | | | | | 33 | | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

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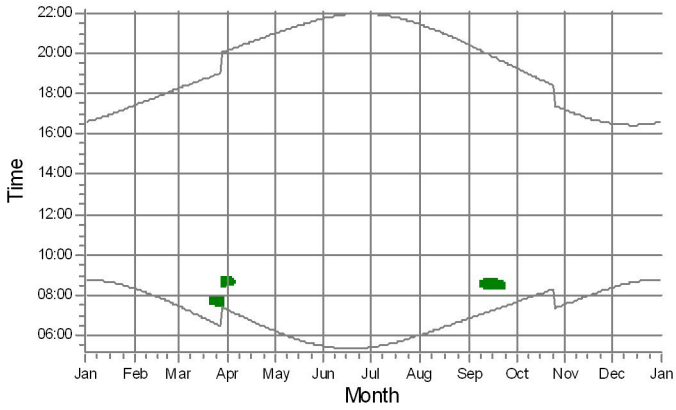
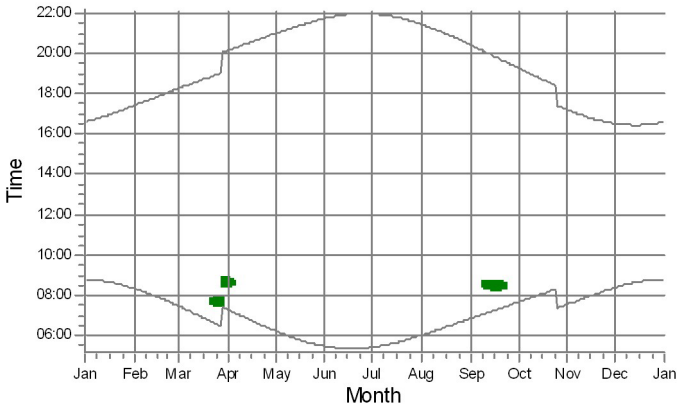
## SHADOW - Calendar, graphical

**Calculation:** 6460 Gortloughra WF cumulative WC

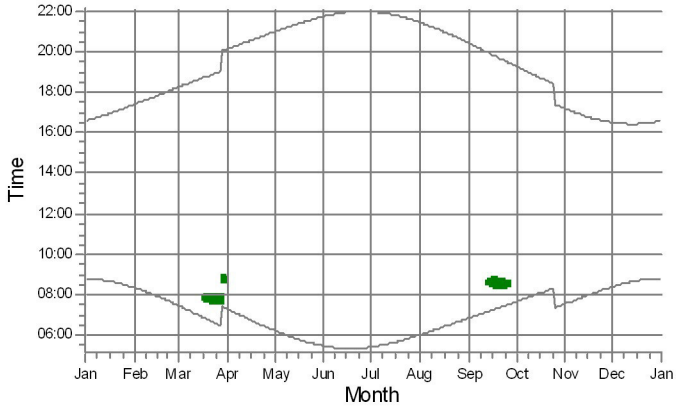
A: H1



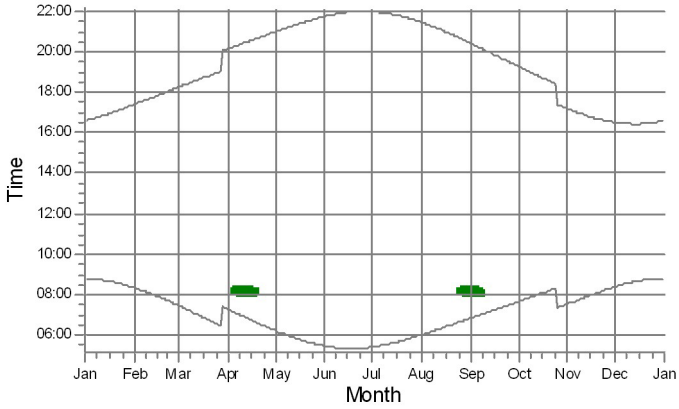

B: H2



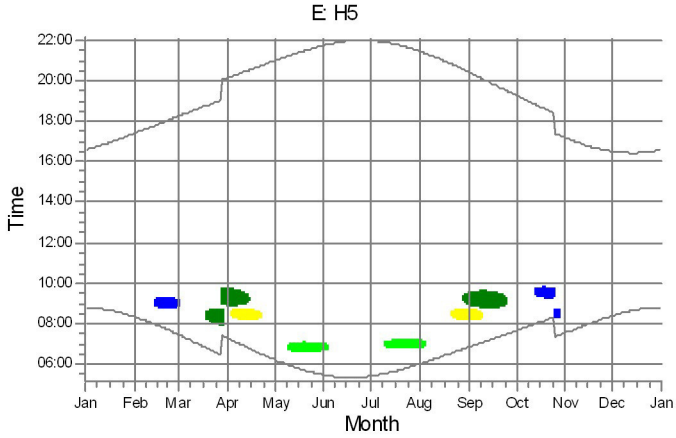

C: H3



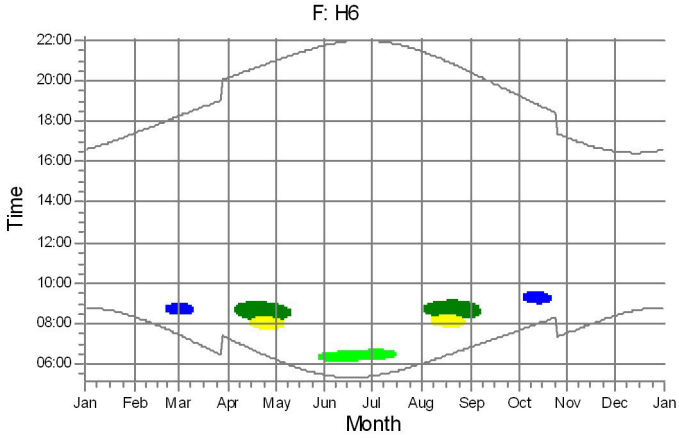

D: H4




E: H5




F: H6




WTGs

1: T01 2: T02 3: T03 9: Shehy More WF

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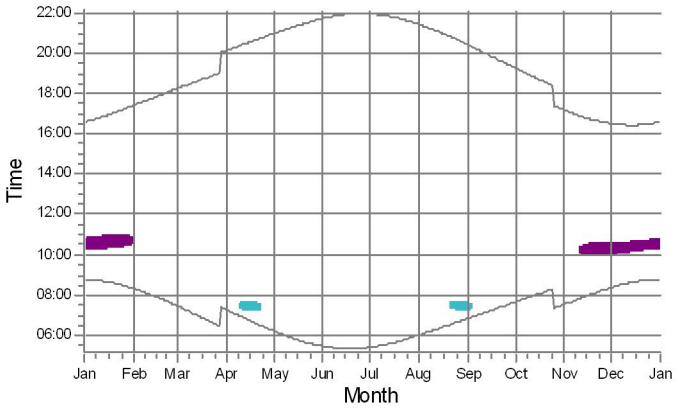
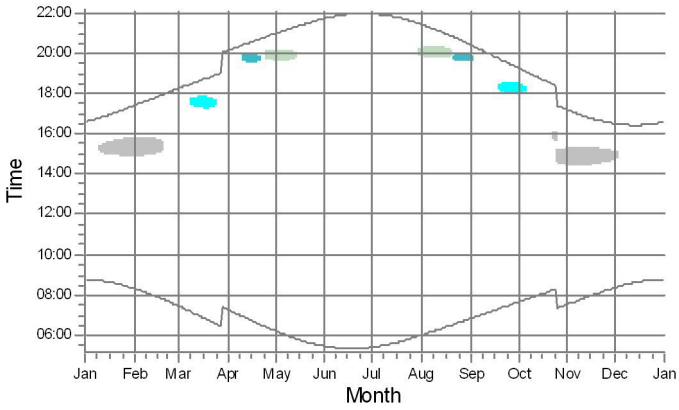
# SHADOW - Calendar, graphical

**Calculation:** 6460 Gortloughra WF cumulative WC

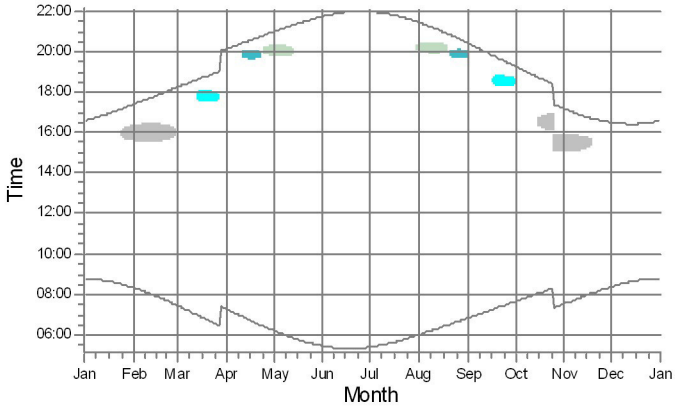
G: H7



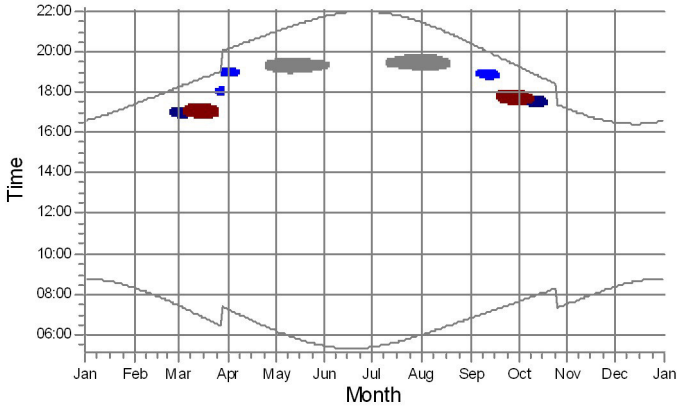

H: H8



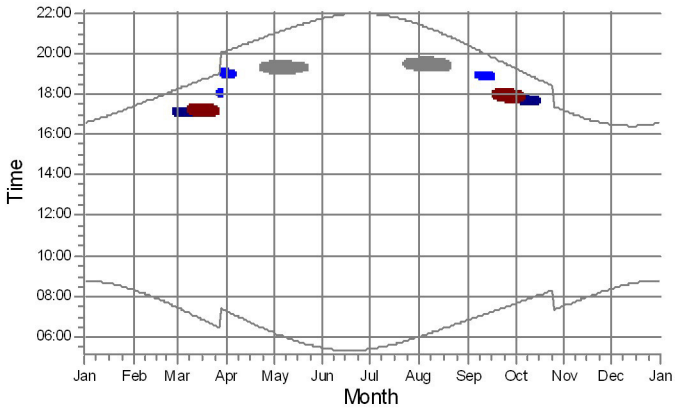

I: H9



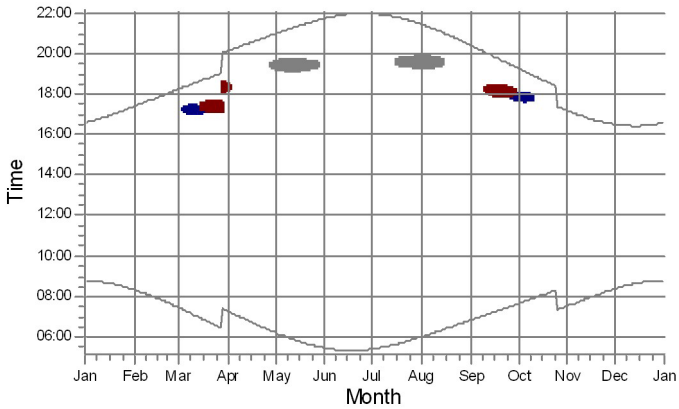

J: H10




K: H11




L: H12




WTGs

| | | |
|---|---|---|
| 3: T03 | 8: T09 | 13: Shehy More WF |
| 4: T04 | 11: Shehy More WF | 14: Shehy More WF |
| 7: T08 | 12: Shehy More WF | 19: Shehy More WF |

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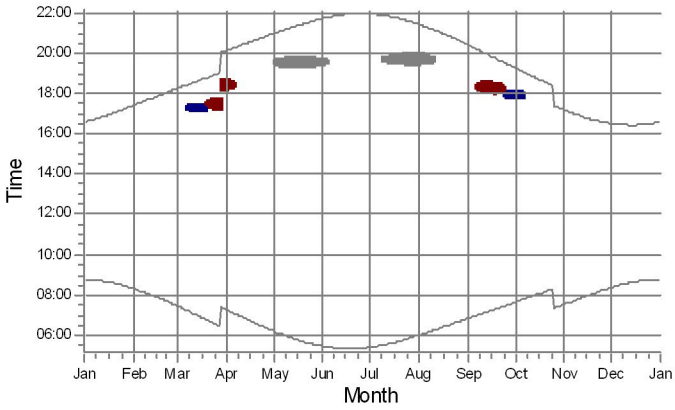
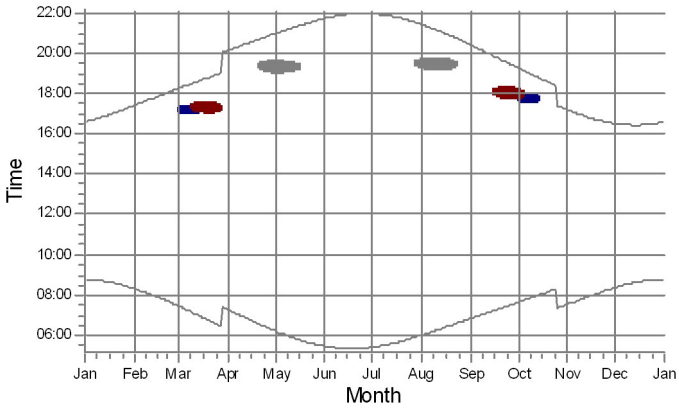
## SHADOW - Calendar, graphical

**Calculation:** 6460 Gortloughra WF cumulative WC

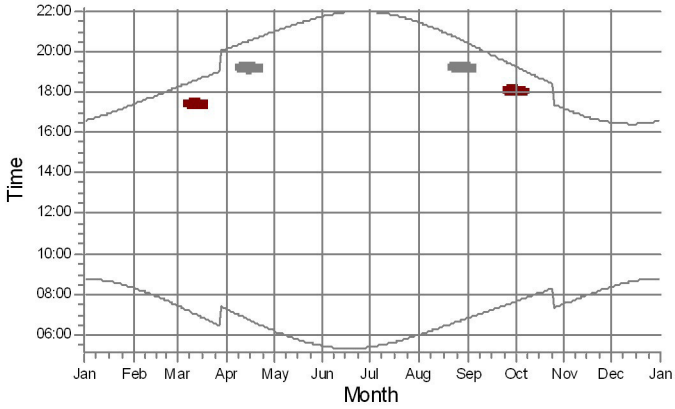
M: H13



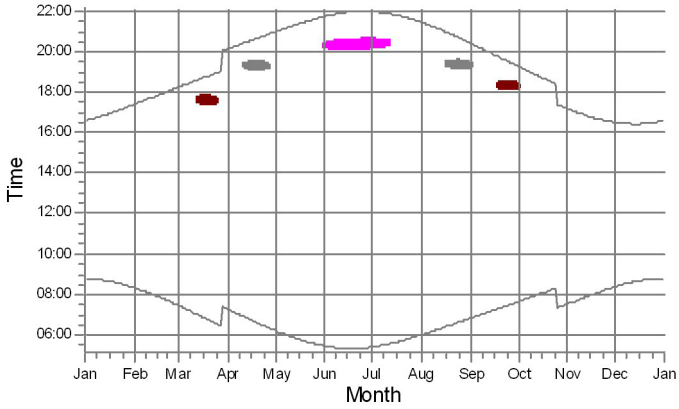

N: H14



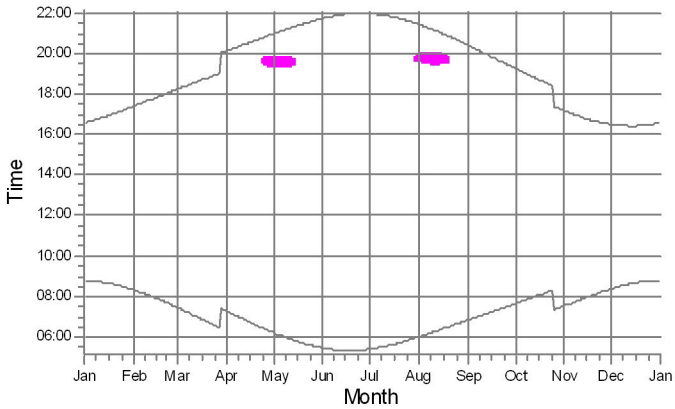

O: H15



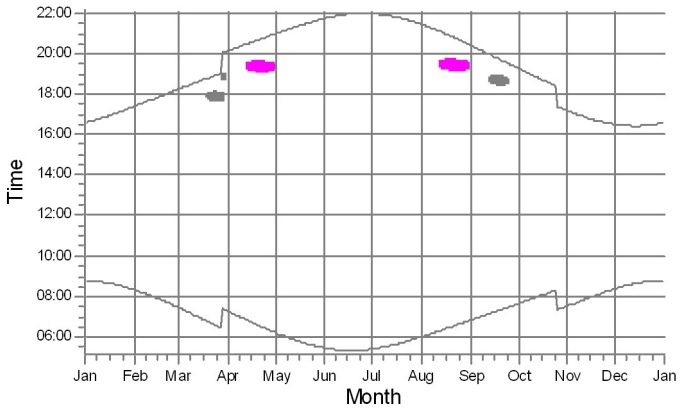

P: H17




Q: H18




R: H19




WTGs

4: T04 5: T06 7: T08 8: T09

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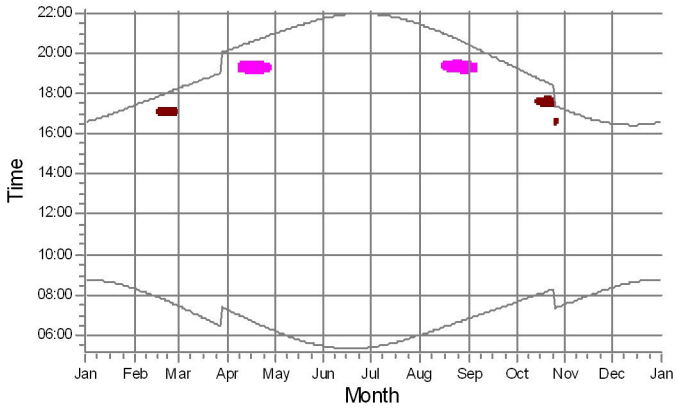
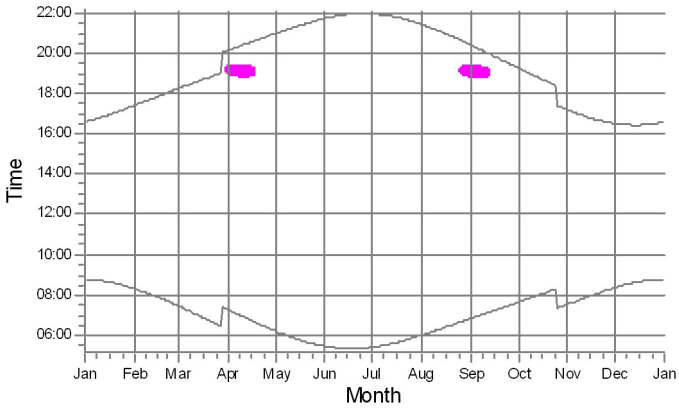
# SHADOW - Calendar, graphical

**Calculation:** 6460 Gortloughra WF cumulative WC

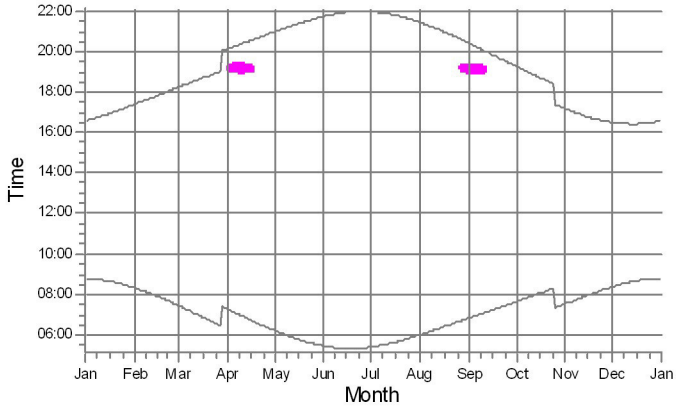
S: H20



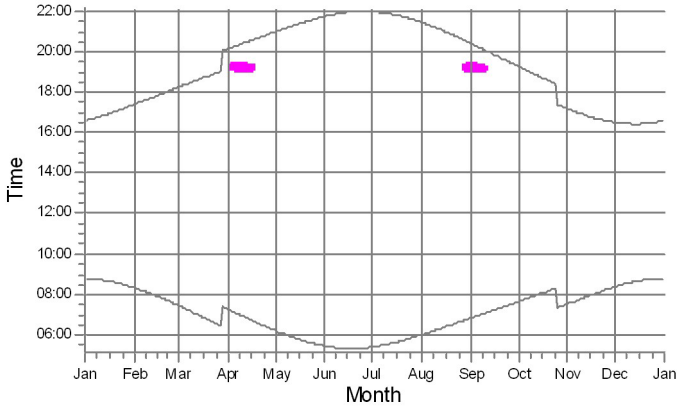

T: H21



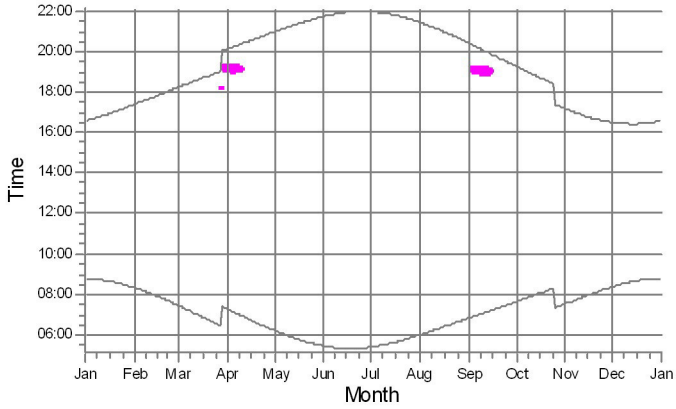

U: H22



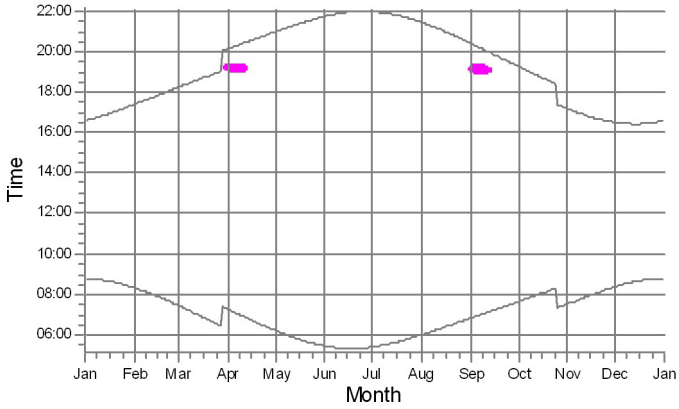

V: H23




W: H24




X: H25




WTGs

5: T06

8: T09

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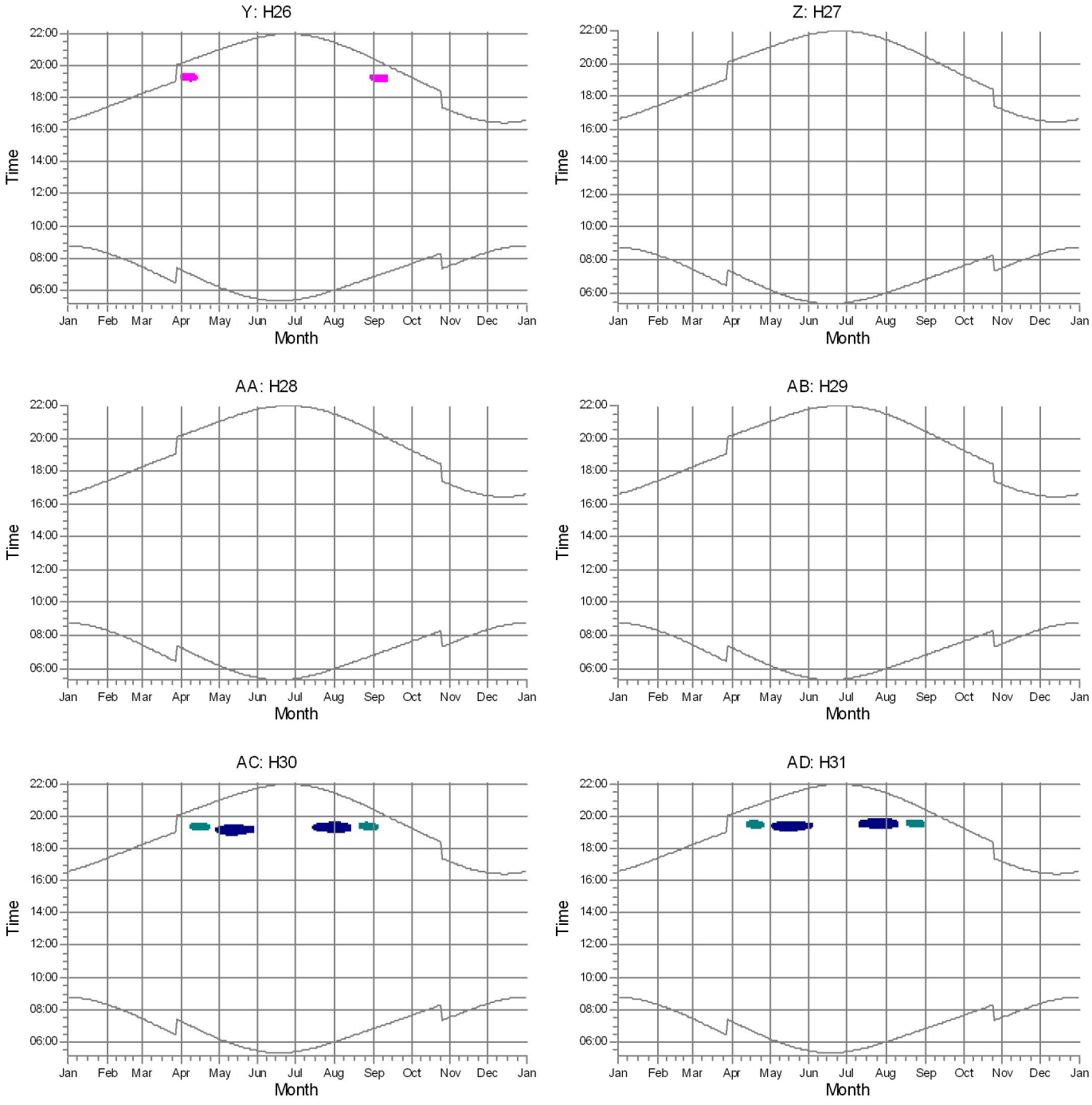
## SHADOW - Calendar, graphical

**Calculation:** 6460 Gortloughra WF cumulative WC



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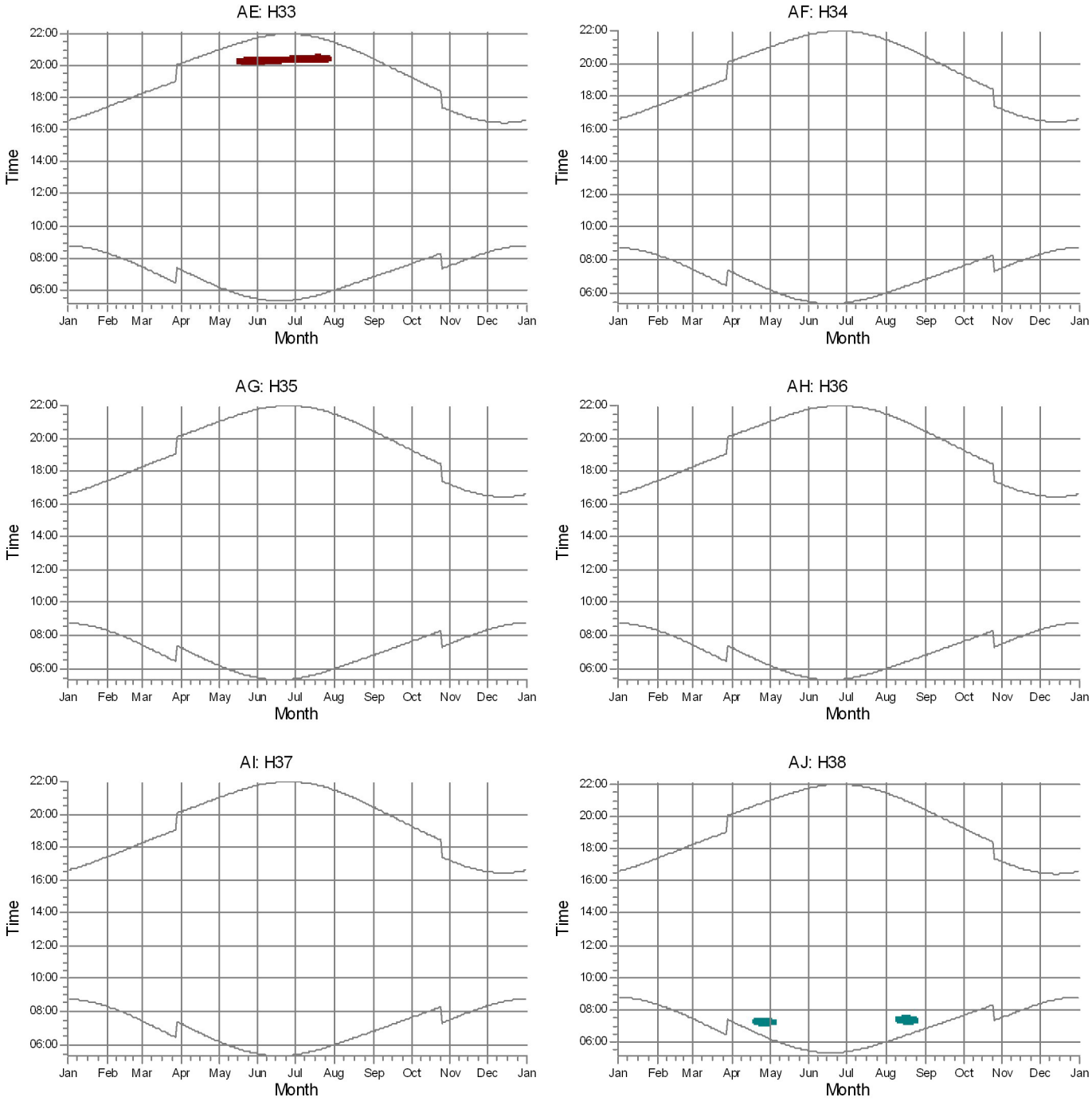
## SHADOW - Calendar, graphical

**Calculation:** 6460 Gortloughra WF cumulative WC



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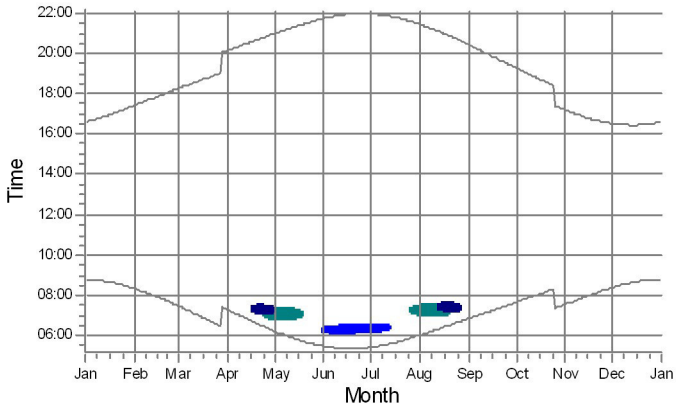
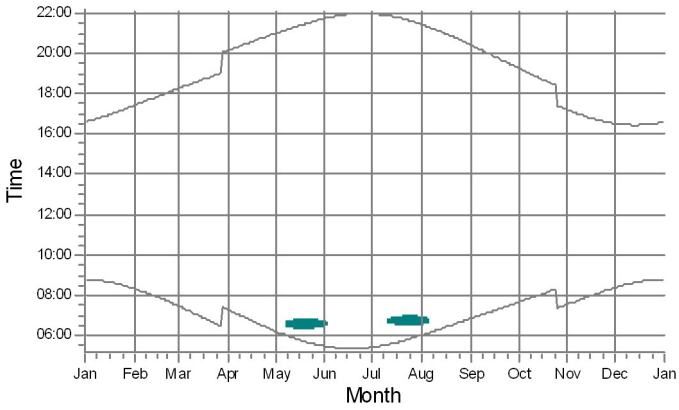
# SHADOW - Calendar, graphical

**Calculation:** 6460 Gortloughra WF cumulative WC

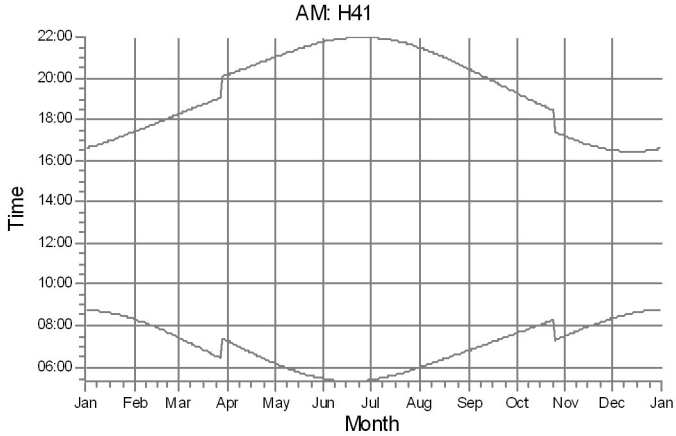
AK: H39



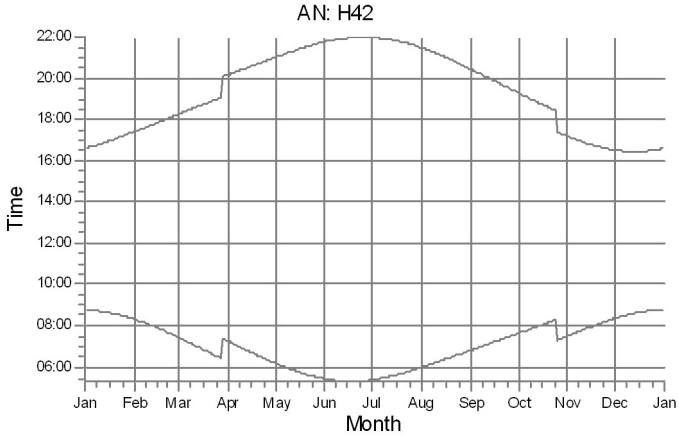

AL: H40



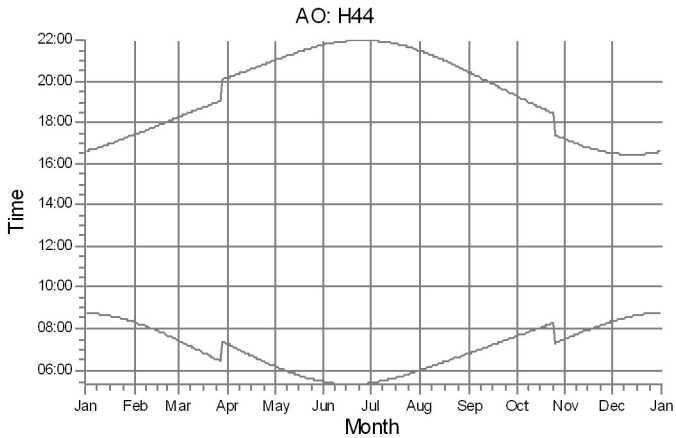

AM: H41



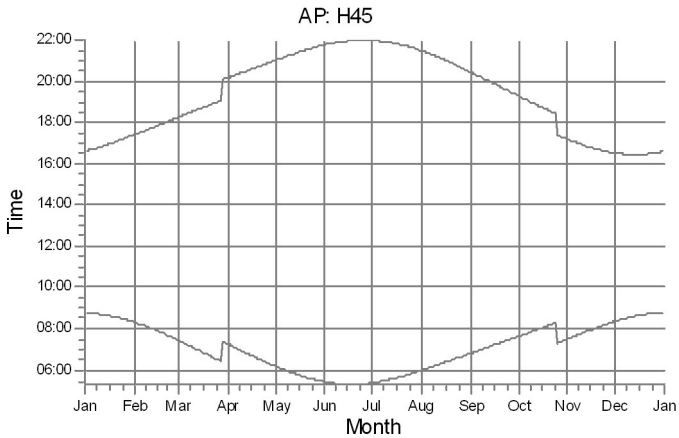

AN: H42




AO: H44




AP: H45




WTGs

3: T03 6: T07 7: T08

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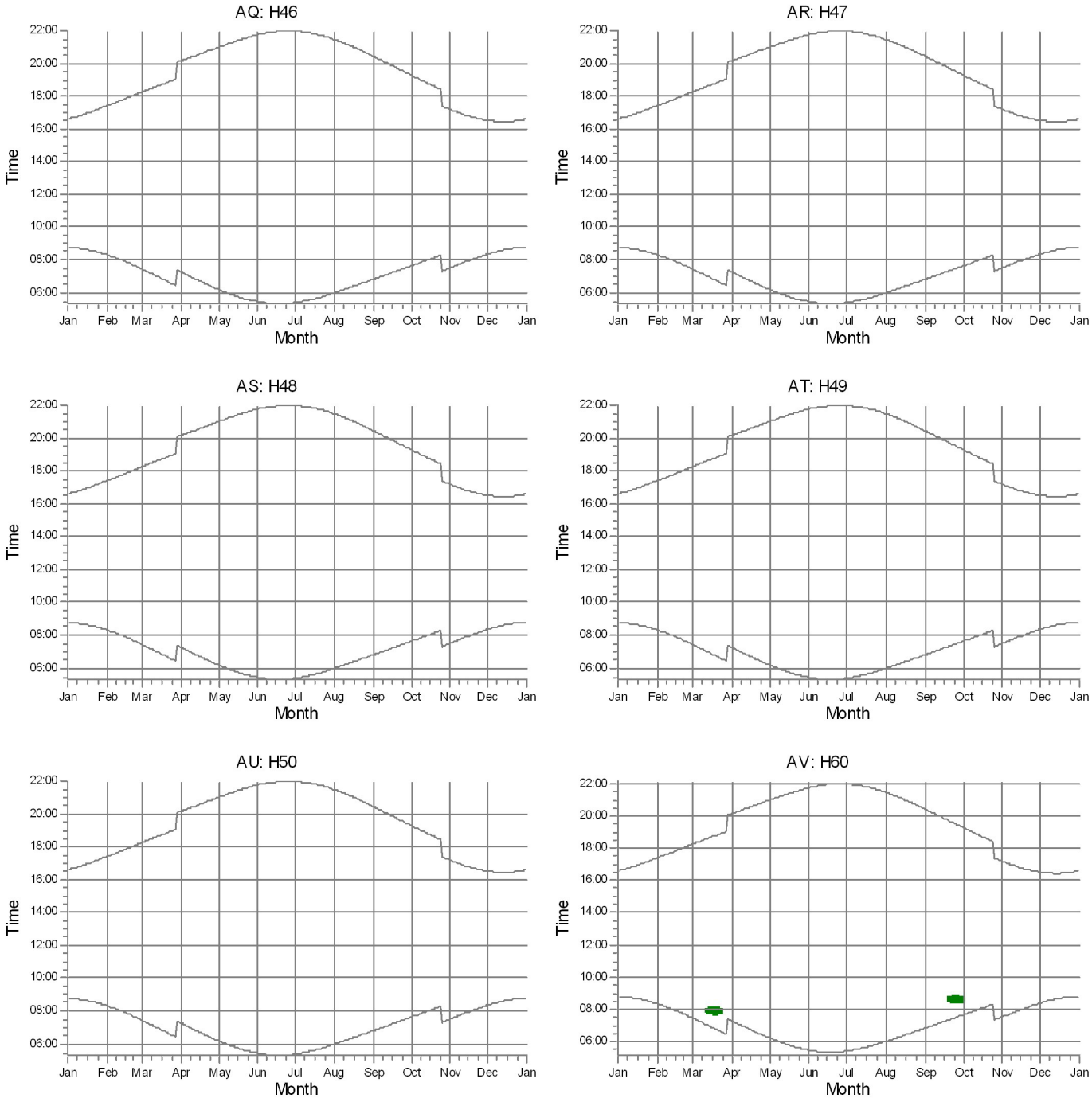
# SHADOW - Calendar, graphical

**Calculation:** 6460 Gortloughra WF cumulative WC




WTGs

1: T01

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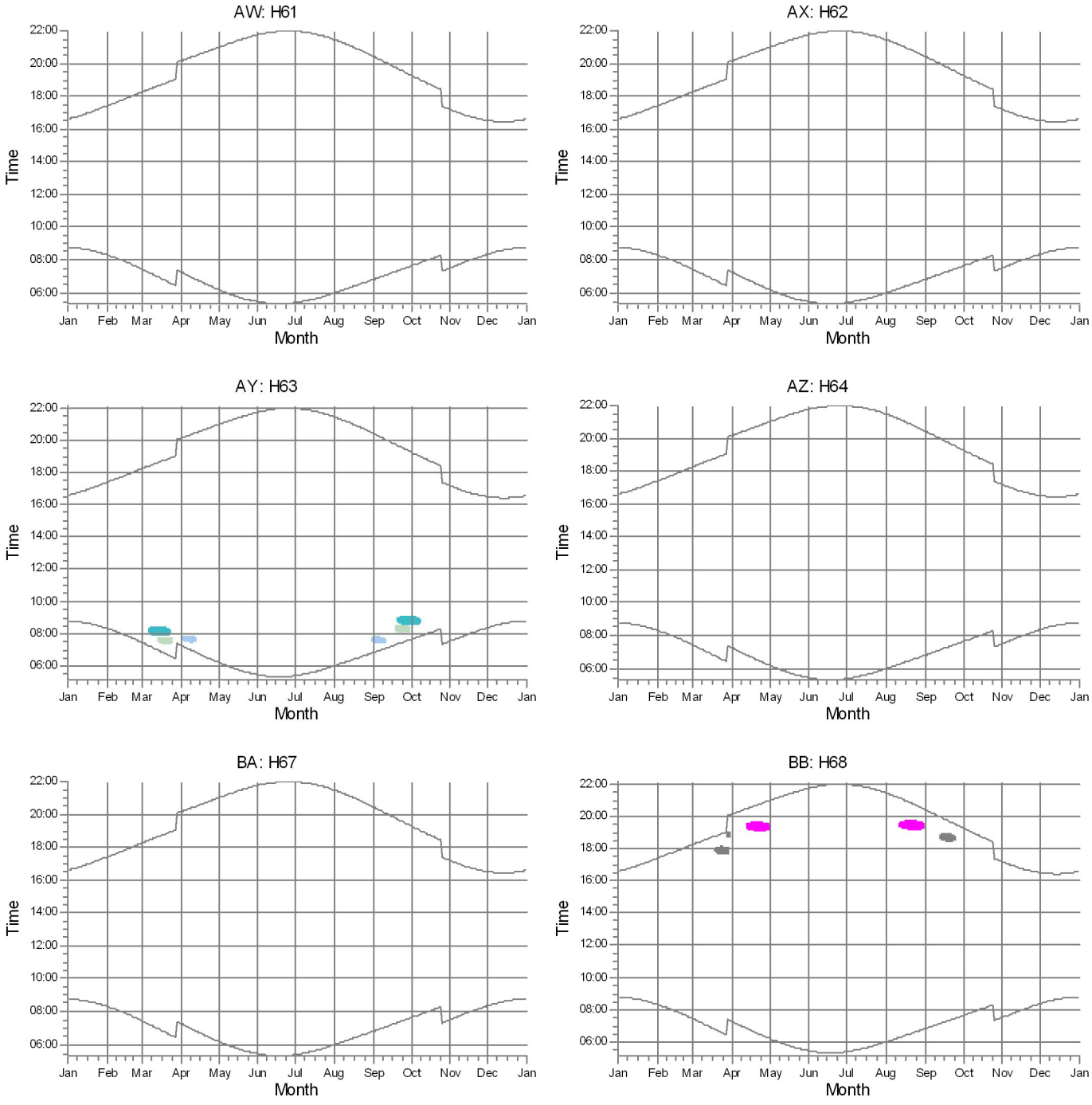
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar, graphical

**Calculation:** 6460 Gortloughra WF cumulative WC




WTGs

| | | | | | |
|---|---|---|---|---|---|
| | 4: T04 | | 14: Shehy More WF | | 19: Shehy More WF |
| | 5: T06 | | 15: Shehy More WF | | |

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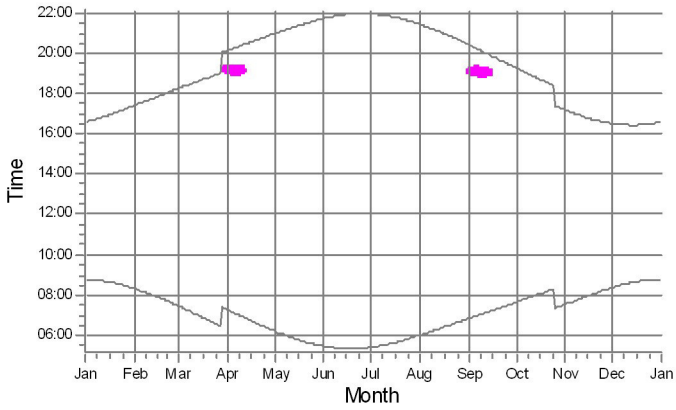
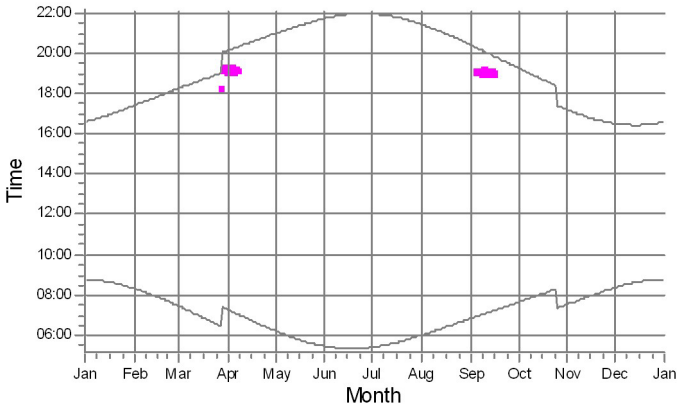
# SHADOW - Calendar, graphical

**Calculation:** 6460 Gortloughra WF cumulative WC

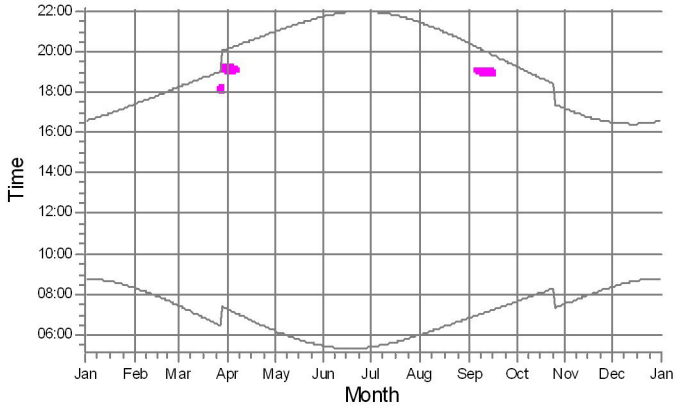
BC: H69



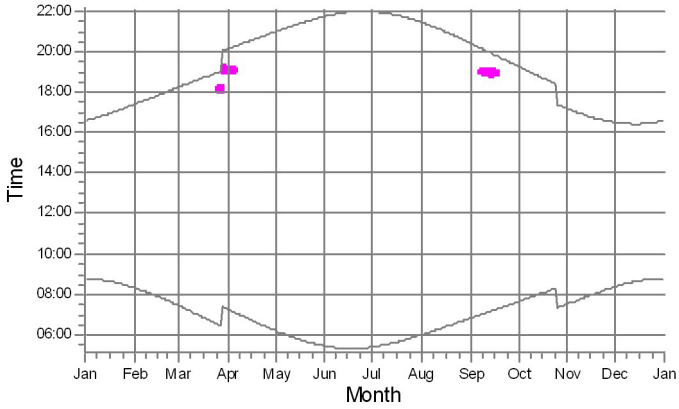

BD: H70



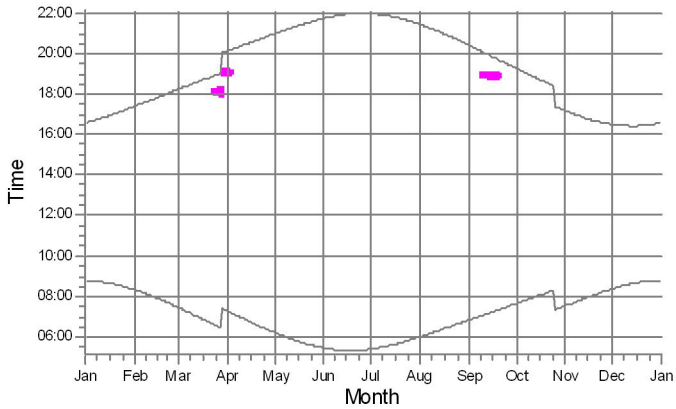

BE: H71



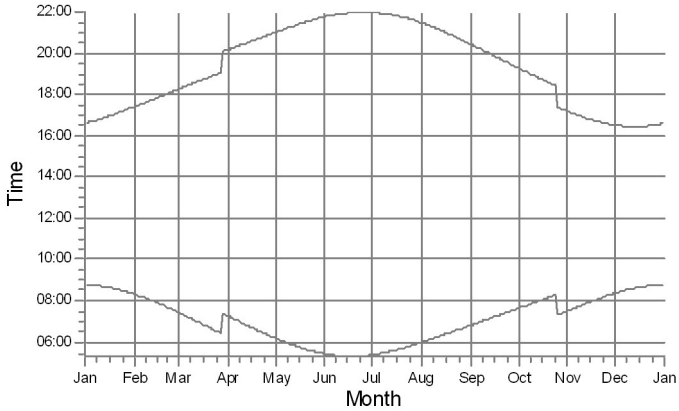

BF: H72




BG: H73




BH: H74




WTGs

5: T06

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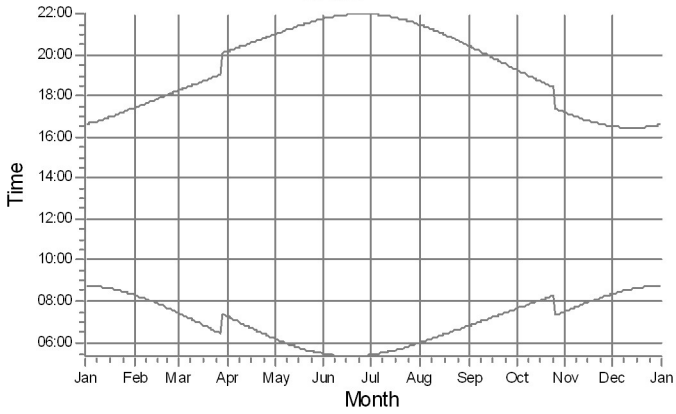
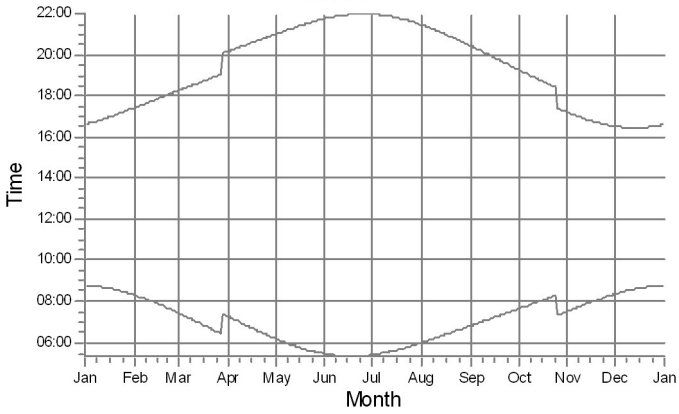
# SHADOW - Calendar, graphical

**Calculation:** 6460 Gortloughra WF cumulative WC

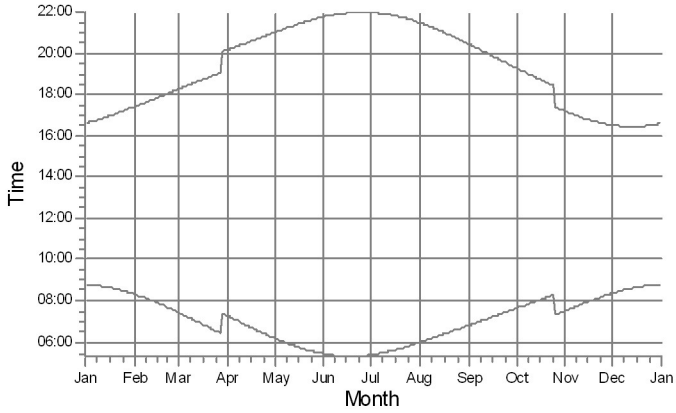
BI: H75



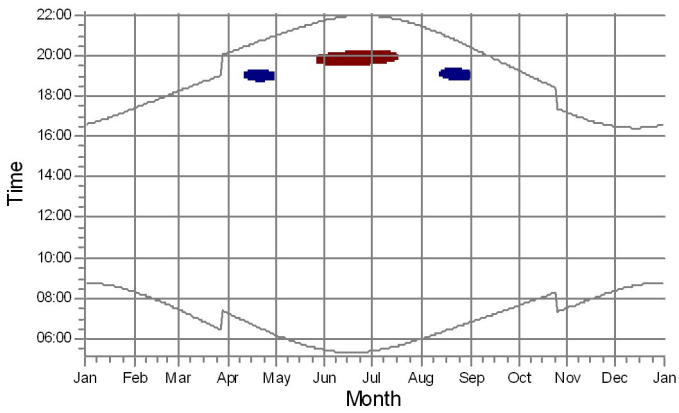

BJ: H76



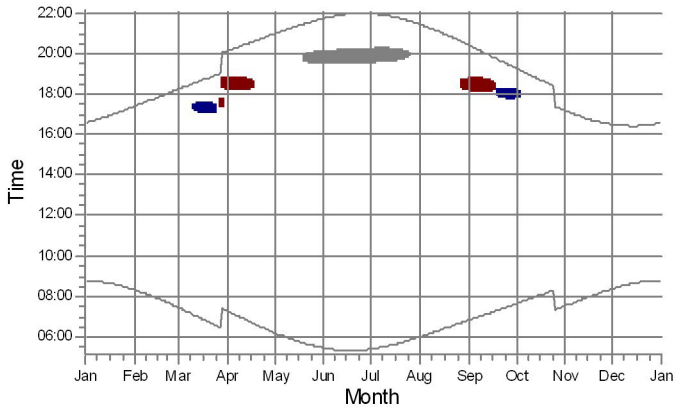

BK: H77



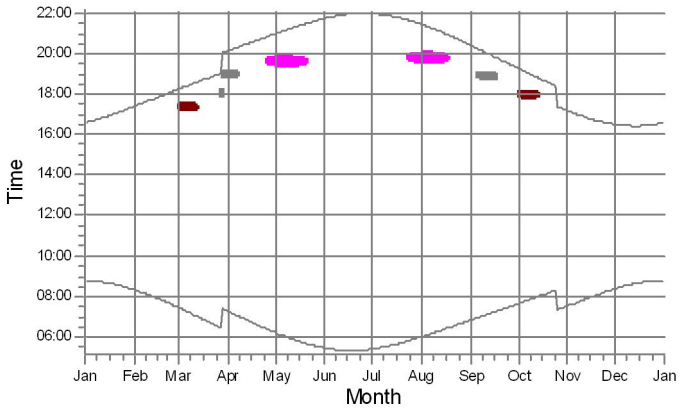

BL: H78




BM: H79




BN: H80




WTGs

4: T04 5: T06 7: T08 8: T09

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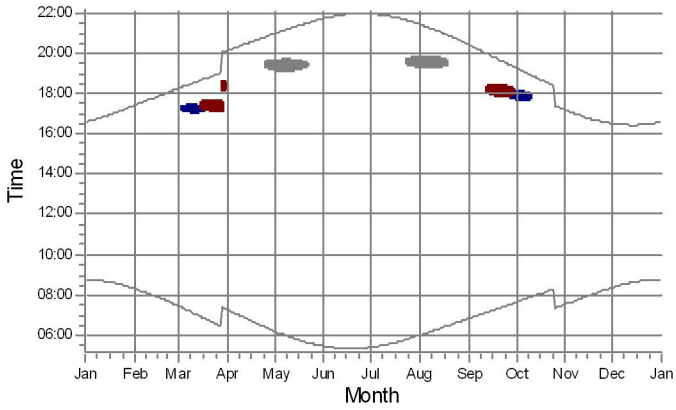
Calculated:
10/09/2024 10:49/4.0.552

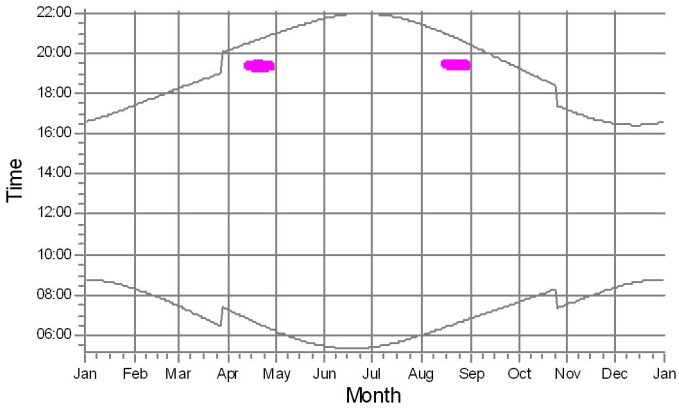
# SHADOW - Calendar, graphical

**Calculation:** 6460 Gortloughra WF cumulative WC

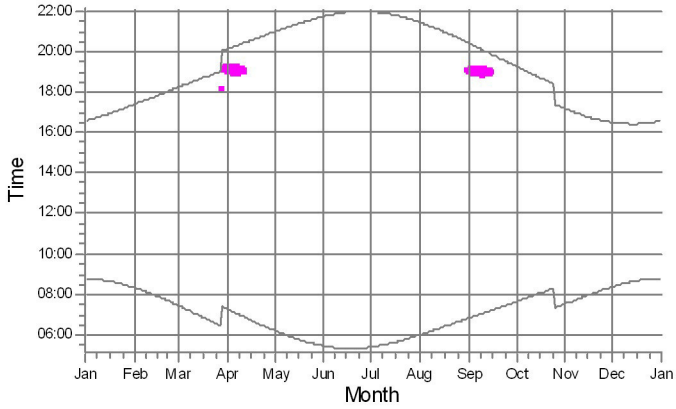
BO: H81



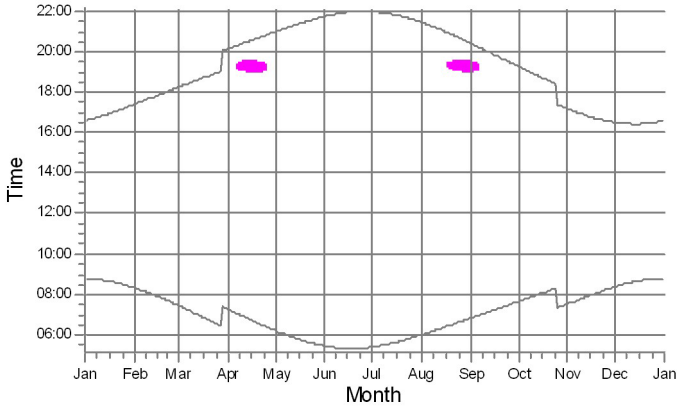

BP: H82



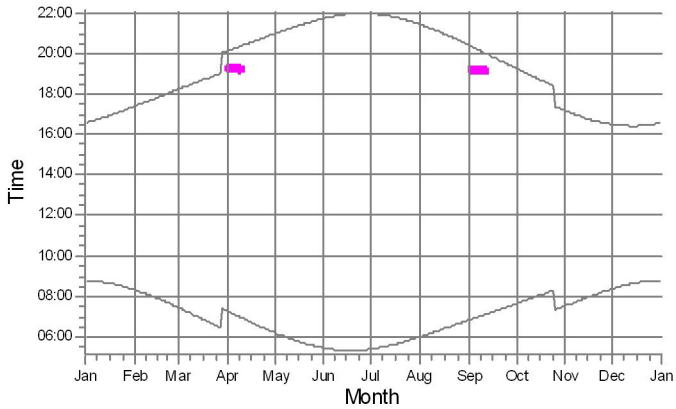

BQ: H83



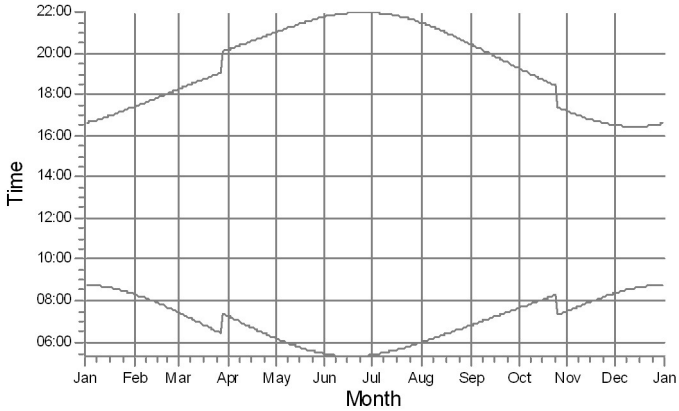

BR: H84




BS: H85




BT: H86




WTGs

4: T04 5: T06 7: T08 8: T09

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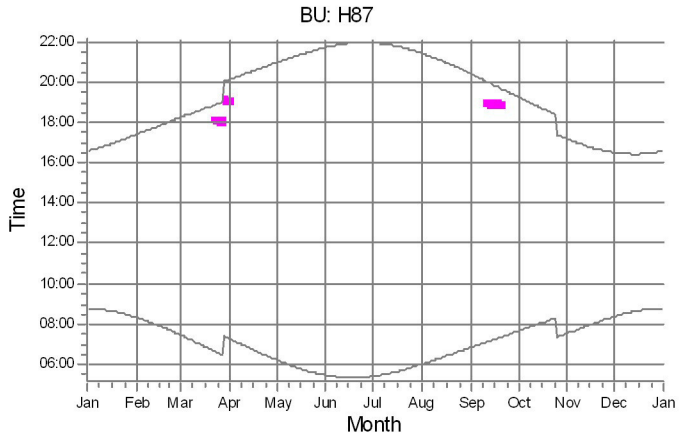
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar, graphical

**Calculation:** 6460 Gortloughra WF cumulative WC




WTGs

5: T06

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Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar per WTG

**Calculation:** 6460 Gortloughra WF cumulative WC **WTG:** 1 - T01

## Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | | April | | May | | June |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | | 07:15 | 08:57-09:39/42 | 06:10 | 08:15-08:52/37 | 05:25 |
| | 16:37 | 17:25 | 18:16 | | 20:10 | 08:27-08:48/21 | 21:00 | | 21:46 |
| 2 | 08:45 | 08:17 | 07:23 | | 07:12 | 08:57-09:38/41 | 06:08 | 08:16-08:51/35 | 05:24 |
| | 16:38 | 17:27 | 18:18 | | 20:11 | 08:28-08:46/18 | 21:02 | | 21:47 |
| 3 | 08:45 | 08:15 | 07:21 | | 07:10 | 08:57-09:38/41 | 06:06 | 08:16-08:49/33 | 05:24 |
| | 16:39 | 17:28 | 18:20 | | 20:13 | 08:30-08:44/14 | 21:04 | | 21:48 |
| 4 | 08:44 | 08:13 | 07:18 | | 07:08 | 08:57-09:37/40 08:32-08:40/8 | 06:05 | 08:17-08:47/30 | 05:23 |
| | 16:40 | 17:30 | 18:21 | | 20:15 | 08:06-08:17/11 | 21:05 | | 21:49 |
| 5 | 08:44 | 08:12 | 07:16 | | 07:06 | 08:57-09:36/39 | 06:03 | 08:19-08:46/27 | 05:22 |
| | 16:42 | 17:32 | 18:23 | | 20:16 | 08:03-08:18/15 | 21:07 | | 21:50 |
| 6 | 08:44 | 08:10 | 07:14 | | 07:03 | 08:38-08:43/5 08:01-08:20/19 | 06:01 | 08:20-08:44/24 | 05:22 |
| | 16:43 | 17:34 | 18:25 | | 20:18 | 08:57-09:35/38 | 21:09 | | 21:51 |
| 7 | 08:43 | 08:08 | 07:12 | | 07:01 | 08:32-08:49/17 08:00-08:21/21 | 05:59 | 08:21-08:42/21 | 05:21 |
| | 16:44 | 17:36 | 18:27 | | 20:20 | 08:58-09:34/36 | 21:10 | | 21:52 |
| 8 | 08:43 | 08:07 | 07:10 | | 06:59 | 08:29-08:52/23 07:59-08:22/23 | 05:57 | 08:24-08:40/16 | 05:21 |
| | 16:45 | 17:38 | 18:28 | | 20:22 | 08:59-09:33/34 | 21:12 | | 21:53 |
| 9 | 08:42 | 08:05 | 07:07 | | 06:57 | 08:26-08:53/27 07:57-08:21/24 | 05:56 | 08:28-08:35/7 | 05:20 |
| | 16:47 | 17:39 | 18:30 | | 20:23 | 08:59-09:30/31 | 21:13 | | 21:54 |
| 10 | 08:42 | 08:03 | 07:05 | | 06:54 | 08:24-08:55/31 07:57-08:21/24 | 05:54 | | 05:20 |
| | 16:48 | 17:41 | 18:32 | | 20:25 | 09:00-09:29/29 | 21:15 | | 21:54 |
| 11 | 08:41 | 08:01 | 07:03 | | 06:52 | 08:22-08:56/34 07:57-08:21/24 | 05:52 | | 05:19 |
| | 16:50 | 17:43 | 18:34 | | 20:27 | 09:01-09:27/26 | 21:17 | | 21:55 |
| 12 | 08:41 | 07:59 | 07:01 | 07:53-07:58/5 | 06:50 | 07:57-08:57/60 | 05:51 | | 05:19 |
| | 16:51 | 17:45 | 18:35 | | 20:28 | 09:03-09:24/21 | 21:18 | | 21:56 |
| 13 | 08:40 | 07:58 | 06:58 | 07:49-08:00/11 | 06:48 | 07:57-08:58/61 | 05:49 | | 05:19 |
| | 16:52 | 17:47 | 18:37 | | 20:30 | 09:06-09:21/15 | 21:20 | | 21:56 |
| 14 | 08:39 | 07:56 | 06:56 | 07:47-08:02/15 | 06:45 | 07:56-08:58/62 | 05:47 | | 05:18 |
| | 16:54 | 17:49 | 18:39 | | 20:32 | 09:11-09:13/2 | 21:21 | | 21:57 |
| 15 | 08:38 | 07:54 | 06:54 | 07:46-08:03/17 | 06:43 | 07:56-08:58/62 | 05:46 | | 05:18 |
| | 16:55 | 17:51 | 18:41 | | 20:33 | | 21:23 | | 21:58 |
| 16 | 08:38 | 07:52 | 06:51 | 07:44-08:03/19 | 06:41 | 07:57-08:59/62 | 05:44 | | 05:18 |
| | 16:57 | 17:52 | 18:42 | | 20:35 | | 21:24 | | 21:58 |
| 17 | 08:37 | 07:50 | 06:49 | 07:44-08:03/19 | 06:39 | 07:58-08:59/61 | 05:43 | | 05:18 |
| | 16:59 | 17:54 | 18:44 | | 20:37 | | 21:26 | | 21:59 |
| 18 | 08:36 | 07:48 | 06:47 | 07:43-08:03/20 | 06:37 | 08:15-08:59/44 | 05:41 | | 05:18 |
| | 17:00 | 17:56 | 18:46 | | 20:38 | 07:59-08:14/15 | 21:27 | | 21:59 |
| 19 | 08:35 | 07:46 | 06:45 | 07:40-08:02/22 | 06:35 | 08:14-08:59/45 | 05:40 | | 05:18 |
| | 17:02 | 17:58 | 18:48 | 08:16-08:29/13 | 20:40 | 08:02-08:12/10 | 21:29 | | 21:59 |
| 20 | 08:34 | 07:44 | 06:42 | 07:38-08:02/24 | 06:32 | 08:14-08:59/45 | 05:39 | | 05:18 |
| | 17:04 | 18:00 | 18:49 | 08:12-08:33/21 | 20:42 | | 21:30 | | 22:00 |
| 21 | 08:33 | 07:42 | 06:40 | 07:37-08:01/24 | 06:30 | 08:13-08:59/46 | 05:37 | | 05:18 |
| | 17:05 | 18:02 | 18:51 | 08:10-08:35/25 | 20:44 | | 21:32 | | 22:00 |
| 22 | 08:32 | 07:40 | 06:38 | 07:34-07:59/25 | 06:28 | 08:13-08:59/46 | 05:36 | | 05:18 |
| | 17:07 | 18:03 | 18:53 | 08:07-08:36/29 | 20:45 | | 21:33 | | 22:00 |
| 23 | 08:30 | 07:38 | 06:35 | 07:32-07:58/26 | 06:26 | 08:13-08:58/45 | 05:35 | | 05:19 |
| | 17:09 | 18:05 | 18:54 | 08:06-08:37/31 | 20:47 | | 21:34 | | 22:00 |
| 24 | 08:29 | 07:36 | 06:33 | 07:30-07:59/29 | 06:24 | 08:13-08:58/45 | 05:33 | | 05:19 |
| | 17:10 | 18:07 | 18:56 | 08:04-08:39/35 | 20:49 | | 21:36 | | 22:00 |
| 25 | 08:28 | 07:34 | 06:31 | 08:02-08:39/37 | 06:22 | 08:13-08:57/44 | 05:32 | | 05:19 |
| | 17:12 | 18:09 | 18:58 | 07:29-07:57/28 | 20:50 | | 21:37 | | 22:00 |
| 26 | 08:27 | 07:31 | 06:28 | 08:01-08:39/38 | 06:20 | 08:13-08:56/43 | 05:31 | | 05:20 |
| | 17:14 | 18:11 | 19:00 | 07:28-07:57/29 | 20:52 | | 21:39 | | 22:00 |
| 27 | 08:25 | 07:29 | 06:26 | 08:01-08:40/39 | 06:18 | 08:13-08:55/42 | 05:30 | | 05:20 |
| | 17:16 | 18:12 | 19:01 | 07:28-07:57/29 | 20:54 | | 21:40 | | 22:00 |
| 28 | 08:24 | 07:27 | 06:24 | 07:59-08:39/40 | 06:16 | 08:13-08:55/42 | 05:29 | | 05:21 |
| | 17:17 | 18:14 | 19:03 | 07:27-07:56/29 | 20:55 | | 21:41 | | 22:00 |
| 29 | 08:23 | | 07:22 | 08:59-09:40/41 | 06:14 | 08:13-08:53/40 | 05:28 | | 05:21 |
| | 17:19 | | 20:05 | 08:26-08:53/27 | 20:57 | | 21:42 | | 22:00 |
| 30 | 08:21 | | 07:19 | 08:58-09:40/42 | 06:12 | 08:14-08:52/38 | 05:27 | | 05:22 |
| | 17:21 | | 20:06 | 08:27-08:52/25 | 20:59 | | 21:43 | | 22:00 |
| 31 | 08:20 | | 07:17 | 08:58-09:40/42 | | | 05:26 | | |
| | 17:23 | | 20:08 | 08:27-08:50/23 | | | 21:45 | | |
| Potential sun hours | 260 | 278 | 367 | | 416 | | 485 | | 498 |
| Sum of minutes with flicker | 0 | 0 | 879 | | 1752 | | 230 | | 0 |

**Table layout: For each day in each month the following matrix apply**

| | | |
|---|---|---|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |
| | Sun set (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |

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Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar per WTG

**Calculation:** 6460 Gortloughra WF cumulative WC **WTG:** 1 - T01

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | July | August | September | October | November | December |
|---|---|---|---|---|---|---|
| 1 | 05:22 | 05:59 | 06:48 08:21-08:55/34 07:56-08:20/24 | 07:37 08:30-08:39/9 | 07:30 | 08:21 |
| | 22:00 | 21:28 | 20:26 09:00-09:26/26 | 19:17 | 17:11 | 16:31 |
| 2 | 05:23 | 06:00 | 06:50 08:23-08:54/31 07:56-08:20/24 | 07:38 | 07:32 | 08:22 |
| | 21:59 | 21:26 | 20:24 08:59-09:28/29 | 19:15 | 17:09 | 16:31 |
| 3 | 05:24 | 06:02 | 06:51 08:24-08:51/27 07:55-08:19/24 | 07:40 | 07:34 | 08:24 |
| | 21:59 | 21:25 | 20:22 08:57-09:28/31 | 19:13 | 17:08 | 16:30 |
| 4 | 05:25 | 06:03 08:37-08:47/10 | 06:53 08:26-08:49/23 07:56-08:19/23 | 07:42 | 07:36 | 08:25 |
| | 21:59 | 21:23 | 20:20 08:56-09:30/34 | 19:10 | 17:06 | 16:29 |
| 5 | 05:25 | 06:05 08:33-08:50/17 | 06:55 08:28-08:45/17 07:56-08:17/21 | 07:43 | 07:37 | 08:26 |
| | 21:58 | 21:21 | 20:17 08:54-09:30/36 | 19:08 | 17:04 | 16:29 |
| 6 | 05:26 | 06:06 08:31-08:53/22 | 06:56 08:34-08:40/6 07:57-08:16/19 | 07:45 | 07:39 | 08:28 |
| | 21:58 | 21:19 | 20:15 08:53-09:31/38 | 19:06 | 17:02 | 16:28 |
| 7 | 05:27 | 06:08 08:29-08:54/25 | 06:58 08:52-09:31/39 | 07:47 | 07:41 | 08:29 |
| | 21:57 | 21:18 | 20:13 07:58-08:14/16 | 19:03 | 17:01 | 16:28 |
| 8 | 05:28 | 06:10 08:28-08:56/28 | 06:59 08:52-09:32/40 08:27-08:34/7 | 07:48 | 07:43 | 08:30 |
| | 21:56 | 21:16 | 20:10 08:00-08:11/11 | 19:01 | 16:59 | 16:28 |
| 9 | 05:29 | 06:11 08:26-08:57/31 | 07:01 08:50-09:31/41 | 07:50 | 07:45 | 08:31 |
| | 21:56 | 21:14 | 20:08 08:24-08:38/14 | 18:59 | 16:57 | 16:27 |
| 10 | 05:30 | 06:13 08:25-08:58/33 | 07:03 08:50-09:32/42 | 07:52 | 07:46 | 08:32 |
| | 21:55 | 21:12 | 20:06 08:21-08:40/19 | 18:57 | 16:56 | 16:27 |
| 11 | 05:31 | 06:14 08:24-08:59/35 | 07:04 08:50-09:32/42 | 07:54 | 07:48 | 08:34 |
| | 21:54 | 21:10 | 20:03 08:20-08:41/21 | 18:54 | 16:54 | 16:27 |
| 12 | 05:32 | 06:16 08:23-09:00/37 | 07:06 08:49-09:31/42 | 07:55 | 07:50 | 08:35 |
| | 21:53 | 21:08 | 20:01 08:19-08:41/22 | 18:52 | 16:53 | 16:27 |
| 13 | 05:33 | 06:17 08:22-09:01/39 | 07:07 08:50-09:31/41 | 07:57 | 07:52 | 08:36 |
| | 21:52 | 21:06 | 19:59 08:18-08:43/25 | 18:50 | 16:51 | 16:27 |
| 14 | 05:34 | 06:19 08:22-09:02/40 | 07:09 08:49-09:30/41 | 07:59 | 07:53 | 08:37 |
| | 21:52 | 21:04 | 19:57 08:17-08:44/27 | 18:48 | 16:50 | 16:27 |
| 15 | 05:35 | 06:21 08:21-09:02/41 | 07:11 08:49-09:30/41 | 08:00 | 07:55 | 08:37 |
| | 21:51 | 21:02 | 19:54 08:17-08:45/28 | 18:46 | 16:48 | 16:27 |
| 16 | 05:37 | 06:22 08:21-09:03/42 | 07:12 08:49-09:28/39 | 08:02 | 07:57 | 08:38 |
| | 21:50 | 21:00 | 19:52 08:17-08:46/29 | 18:44 | 16:47 | 16:27 |
| 17 | 05:38 | 06:24 08:19-09:03/44 | 07:14 08:50-09:28/38 | 08:04 | 07:59 | 08:39 |
| | 21:49 | 20:58 | 19:50 08:16-08:45/29 | 18:41 | 16:46 | 16:27 |
| 18 | 05:39 | 06:25 08:19-09:04/45 | 07:16 08:50-09:27/37 | 08:06 | 08:00 | 08:40 |
| | 21:47 | 20:56 | 19:47 08:17-08:46/29 | 18:39 | 16:44 | 16:28 |
| 19 | 05:40 | 06:27 08:19-09:03/44 | 07:17 08:17-08:45/28 | 08:07 | 08:02 | 08:41 |
| | 21:46 | 20:54 | 19:45 08:50-09:25/35 | 18:37 | 16:43 | 16:28 |
| 20 | 05:42 | 06:29 08:19-09:04/45 | 07:19 08:18-08:45/27 | 08:09 | 08:04 | 08:41 |
| | 21:45 | 20:52 | 19:43 08:52-09:24/32 | 18:35 | 16:42 | 16:28 |
| 21 | 05:43 | 06:30 08:18-09:03/45 | 07:20 08:19-08:44/25 | 08:11 | 08:05 | 08:42 |
| | 21:44 | 20:50 | 19:40 08:52-09:22/30 | 18:33 | 16:41 | 16:29 |
| 22 | 05:44 | 06:32 08:18-09:04/46 | 07:22 08:21-08:45/24 | 08:13 | 08:07 | 08:42 |
| | 21:43 | 20:48 | 19:38 08:54-09:20/26 | 18:31 | 16:39 | 16:29 |
| 23 | 05:46 | 06:34 08:17-09:03/46 | 07:24 08:23-08:46/23 | 08:14 | 08:09 | 08:43 |
| | 21:41 | 20:46 | 19:36 08:56-09:18/22 | 18:29 | 16:38 | 16:30 |
| 24 | 05:47 | 06:35 08:18-09:03/45 | 07:25 08:23-08:46/23 | 08:16 | 08:10 | 08:43 |
| | 21:40 | 20:44 08:05-08:16/11 | 19:33 08:58-09:14/16 | 18:27 | 16:37 | 16:30 |
| 25 | 05:48 | 06:37 08:02-09:02/60 | 07:27 08:25-08:46/21 | 07:18 | 08:12 | 08:44 |
| | 21:39 | 20:42 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 05:50 | 06:38 08:01-09:02/61 | 07:29 08:26-08:46/20 | 07:20 | 08:13 | 08:44 |
| | 21:37 | 20:39 | 19:29 | 17:23 | 16:35 | 16:32 |
| 27 | 05:51 | 06:40 07:59-09:01/62 | 07:30 08:26-08:45/19 | 07:21 | 08:15 | 08:44 |
| | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 05:53 | 06:42 07:58-09:00/62 | 07:32 08:26-08:44/18 | 07:23 | 08:17 | 08:44 |
| | 21:34 | 20:35 | 19:24 | 17:19 | 16:34 | 16:33 |
| 29 | 05:54 | 06:43 07:57-08:59/62 | 07:33 08:27-08:43/16 | 07:25 | 08:18 | 08:45 |
| | 21:33 | 20:33 09:11-09:15/4 | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 05:56 | 06:45 07:57-08:58/61 | 07:35 08:28-08:41/13 | 07:27 | 08:20 | 08:45 |
| | 21:31 | 20:31 09:06-09:21/15 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 05:57 | 06:47 07:57-08:57/60 | | 07:28 | | 08:45 |
| | 21:30 | 20:28 09:03-09:24/21 | | 17:13 | | 16:36 |
| Potential sun hours | 501 | 453 | 381 | 332 | 267 | 244 |
| Sum of minutes with flicker | 0 | 1239 | 1645 | 9 | 0 | 0 |

**Table layout: For each day in each month the following matrix apply**

| | | |
|---|---|---|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |
| | Sun set (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |

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Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar per WTG

**Calculation:** 6460 Gortloughra WF cumulative WC **WTG:** 2 - T02

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:15 | 06:10 07:48-08:09/21 | 05:25 | 05:22 | 05:59 | 06:48 08:13-08:38/25 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | 21:00 | 21:46 | 22:00 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:45 | 08:17 | 07:23 | 07:12 | 06:08 07:49-08:08/19 | 05:24 | 05:23 | 06:00 | 06:50 08:14-08:38/24 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:31 |
| 3 | 08:44 | 08:15 | 07:21 | 07:10 | 06:06 07:49-08:06/17 | 05:24 | 05:24 | 06:02 | 06:51 08:13-08:37/24 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:20 | 20:13 | 21:04 | 21:48 | 21:59 | 21:25 | 20:22 | 19:12 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 08:28-08:31/3 | 06:05 07:51-08:04/13 | 05:23 | 05:25 | 06:03 | 06:53 08:14-08:36/22 | 07:42 | 07:36 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:59 | 21:23 | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:06 08:22-08:35/13 | 06:03 07:54-08:02/8 | 05:22 | 05:25 | 06:05 | 06:55 08:14-08:34/20 | 07:43 | 07:37 | 08:26 |
| | 16:42 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 08:20-08:37/17 | 06:01 | 05:22 | 05:26 | 06:06 | 06:56 08:16-08:33/17 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:09 | 21:51 | 21:58 | 21:19 | 20:15 | 19:06 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 08:18-08:38/20 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 08:17-08:30/13 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 21:10 | 21:52 | 21:57 | 21:18 | 20:13 | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:07 | 07:10 | 06:59 08:17-08:39/22 | 05:57 | 05:20 | 05:28 | 06:09 08:02-08:13/11 | 06:59 08:22-08:26/4 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:38 | 18:28 | 20:22 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 08:15-08:39/24 | 05:56 | 05:20 | 05:29 | 06:11 08:00-08:14/14 | 07:01 | 07:50 | 07:45 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 21:13 | 21:54 | 21:56 | 21:14 | 20:08 | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 08:15-08:39/24 | 05:54 | 05:20 | 05:30 | 06:13 07:58-08:15/17 | 07:03 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 08:14-08:39/25 | 05:52 | 05:19 | 05:31 | 06:14 07:57-08:17/20 | 07:04 | 07:54 | 07:48 | 08:34 |
| | 16:49 | 17:43 | 18:34 | 20:27 | 21:17 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:01 | 06:50 08:14-08:39/25 | 05:51 | 05:19 | 05:32 | 06:16 07:55-08:17/22 | 07:06 | 07:55 | 07:50 | 08:35 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:58 | 06:58 | 06:48 08:14-08:39/25 | 05:49 | 05:19 | 05:33 | 06:17 07:55-08:18/23 | 07:07 | 07:57 | 07:52 | 08:36 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:56 | 06:56 | 06:45 08:13-08:38/25 | 05:47 | 05:18 | 05:34 | 06:19 07:55-08:19/24 | 07:09 | 07:59 | 07:53 | 08:37 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 21:21 | 21:57 | 21:52 | 21:04 | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 08:13-08:37/24 | 05:46 | 05:18 | 05:35 | 06:21 07:54-08:19/25 | 07:11 | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:51 | 18:41 | 20:33 | 21:23 | 21:58 | 21:51 | 21:02 | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 08:38 | 07:52 | 06:51 | 06:41 07:58-08:05/7 | 05:44 | 05:18 | 05:37 | 06:22 07:54-08:20/26 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 08:13-08:36/23 | 21:24 | 21:58 | 21:50 | 21:00 | 19:52 | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 07:55-08:08/13 | 05:43 | 05:18 | 05:38 | 06:24 07:53-08:19/26 | 07:14 | 08:04 | 07:59 | 08:39 |
| | 16:59 | 17:54 | 18:44 | 20:37 08:14-08:35/21 | 21:26 | 21:59 | 21:49 | 20:58 | 19:50 | 18:41 | 16:46 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 07:53-08:10/17 | 05:41 | 05:18 | 05:39 | 06:25 07:53-08:20/27 | 07:16 | 08:06 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 08:15-08:34/19 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:28 |
| 19 | 08:35 | 07:46 | 06:45 | 06:35 07:51-08:11/20 | 05:40 | 05:18 | 05:40 | 06:27 07:53-08:19/26 | 07:17 | 08:07 | 08:02 | 08:41 |
| | 17:02 | 17:58 | 18:48 | 20:40 08:16-08:32/16 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 07:50-08:12/22 | 05:39 | 05:18 | 05:42 | 06:29 07:53-08:19/26 | 07:19 | 08:09 | 08:04 | 08:41 |
| | 17:04 | 18:00 | 18:49 | 20:42 08:18-08:30/12 | 21:30 | 22:00 | 21:45 | 20:52 | 19:43 | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 07:49-08:13/24 | 05:37 | 05:18 | 05:43 | 06:30 07:53-08:18/25 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:02 | 18:51 | 20:44 08:21-08:27/6 | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:41 | 16:29 |
| 22 | 08:32 | 07:40 | 06:38 | 06:28 07:48-08:13/25 | 05:36 | 05:18 | 05:44 | 06:32 07:54-08:17/23 | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | 21:33 | 22:00 | 21:43 | 20:48 08:25-08:32/7 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 07:47-08:13/26 | 05:35 | 05:19 | 05:46 | 06:34 07:54-08:16/22 | 07:24 | 08:14 | 08:09 | 08:43 |
| | 17:09 | 18:05 | 18:54 | 20:47 | 21:34 | 22:00 | 21:41 | 20:46 08:21-08:34/13 | 19:36 | 18:29 | 16:38 | 16:30 |
| 24 | 08:29 | 07:36 | 06:33 | 06:24 07:47-08:13/26 | 05:33 | 05:19 | 05:47 | 06:35 07:55-08:15/20 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:49 | 21:36 | 22:00 | 21:40 | 20:44 08:19-08:36/17 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 07:46-08:13/27 | 05:32 | 05:19 | 05:48 | 06:37 07:56-08:13/17 | 07:27 | 07:18 | 08:12 | 08:44 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:39 | 20:42 08:17-08:37/20 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:27 | 07:31 | 06:28 | 06:20 07:46-08:13/27 | 05:31 | 05:20 | 05:50 | 06:38 07:58-08:11/13 | 07:29 | 07:20 | 08:13 | 08:44 |
| | 17:14 | 18:11 | 18:59 | 20:52 | 21:38 | 22:00 | 21:37 | 20:39 08:17-08:38/21 | 19:29 | 17:23 | 16:35 | 16:32 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 07:46-08:12/26 | 05:30 | 05:20 | 05:51 | 06:40 08:01-08:06/5 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:12 | 19:01 | 20:54 | 21:40 | 22:00 | 21:36 | 20:37 08:15-08:38/23 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 07:46-08:11/25 | 05:29 | 05:21 | 05:53 | 06:42 08:15-08:39/24 | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:34 | 16:33 |
| 29 | 08:23 | | 07:22 | 06:14 07:46-08:11/25 | 05:28 | 05:21 | 05:54 | 06:43 08:14-08:39/25 | 07:33 | 07:25 | 08:18 | 08:45 |
| | 17:19 | | 20:05 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 07:47-08:10/23 | 05:27 | 05:22 | 05:56 | 06:45 08:14-08:39/25 | 07:35 | 07:27 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:59 | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:20 | | 07:17 | | 05:26 | | 05:57 | 06:46 08:14-08:39/25 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:45 | | 21:30 | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 244 |
| Sum of minutes with flicker | 0 | 0 | 0 | 677 | 78 | 0 | 0 | 612 | 149 | 0 | 0 | 0 |

**Table layout: For each day in each month the following matrix apply**

| | | |
|---|---|---|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |
| | Sun set (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |

Licensed user:
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Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar per WTG

**Calculation:** 6460 Gortloughra WF cumulative WC **WTG:** 3 - T03

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | | March | | April | | May | | June | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | | 07:25 | 08:30-08:54/24 | 07:15 | 18:51-19:13/22 | 06:10 | | 05:25 | 06:09-06:17/8 |
| | 16:37 | 17:25 | | 18:16 | | 20:10 | | 21:00 | | 21:46 | |
| 2 | 08:45 | 08:17 | | 07:23 | 08:30-08:54/24 | 07:12 | 18:51-19:12/21 | 06:08 | | 05:24 | 06:08-06:18/10 |
| | 16:38 | 17:27 | | 18:18 | | 20:11 | | 21:02 | | 21:47 | |
| 3 | 08:44 | 08:15 | | 07:21 | 08:30-08:54/24 | 07:10 | 18:52-19:12/20 | 06:06 | | 05:24 | 06:08-06:20/12 |
| | 16:39 | 17:28 | | 18:20 | | 20:13 | | 21:04 | | 21:48 | |
| 4 | 08:44 | 08:13 | | 07:18 | 08:30-08:53/23 | 07:08 | 18:52-19:10/18 | 06:05 | | 05:23 | 06:07-06:20/13 |
| | 16:40 | 17:30 | | 18:21 | | 20:15 | | 21:05 | | 21:49 | |
| 5 | 08:44 | 08:12 | | 07:16 | 08:31-08:53/22 | 07:06 | 18:53-19:09/16 | 06:03 | | 05:22 | 06:06-06:20/14 |
| | 16:42 | 17:32 | | 18:23 | | 20:16 | | 21:07 | | 21:50 | |
| 6 | 08:44 | 08:10 | | 07:14 | 08:31-08:51/20 | 07:03 | 18:55-19:06/11 | 06:01 | | 05:22 | 06:06-06:22/16 |
| | 16:43 | 17:34 | | 18:25 | | 20:18 | | 21:09 | | 21:51 | |
| 7 | 08:43 | 08:08 | | 07:12 | 08:32-08:49/17 | 07:01 | 18:59-19:01/2 | 05:59 | | 05:21 | 06:05-06:22/17 |
| | 16:44 | 17:36 | | 18:27 | | 20:20 | | 21:10 | | 21:52 | |
| 8 | 08:43 | 08:07 | | 07:10 | 08:34-08:47/13 | 06:59 | | 05:57 | | 05:21 | 06:05-06:23/18 |
| | 16:45 | 17:38 | | 18:28 | | 20:22 | | 21:12 | | 21:53 | |
| 9 | 08:42 | 08:05 | | 07:07 | 08:37-08:43/6 | 06:57 | | 05:56 | | 05:20 | 06:06-06:23/17 |
| | 16:47 | 17:39 | | 18:30 | | 20:23 | | 21:13 | | 21:54 | |
| 10 | 08:42 | 08:03 | | 07:05 | | 06:54 | | 05:54 | | 05:20 | 06:05-06:23/18 |
| | 16:48 | 17:41 | | 18:32 | | 20:25 | | 21:15 | | 21:54 | |
| 11 | 08:41 | 08:01 | | 07:03 | | 06:52 | | 05:52 | | 05:19 | 06:05-06:24/19 |
| | 16:50 | 17:43 | | 18:34 | | 20:27 | | 21:17 | | 21:55 | |
| 12 | 08:41 | 07:59 | | 07:01 | | 06:50 | | 05:51 | | 05:19 | 06:05-06:24/19 |
| | 16:51 | 17:45 | | 18:35 | | 20:28 | | 21:18 | | 21:56 | |
| 13 | 08:40 | 07:57 | | 06:58 | | 06:48 | | 05:49 | | 05:19 | 06:06-06:25/19 |
| | 16:52 | 17:47 | | 18:37 | | 20:30 | | 21:20 | | 21:56 | |
| 14 | 08:39 | 07:56 | 08:56-09:05/9 | 06:56 | | 06:45 | | 05:47 | | 05:18 | 06:05-06:25/20 |
| | 16:54 | 17:49 | | 18:39 | | 20:32 | | 21:21 | | 21:57 | |
| 15 | 08:38 | 07:54 | 08:53-09:08/15 | 06:54 | | 06:43 | | 05:46 | | 05:18 | 06:05-06:25/20 |
| | 16:55 | 17:51 | | 18:41 | | 20:33 | | 21:23 | | 21:58 | |
| 16 | 08:38 | 07:52 | 08:52-09:09/17 | 06:51 | | 06:41 | | 05:44 | | 05:18 | 06:05-06:25/20 |
| | 16:57 | 17:52 | | 18:42 | | 20:35 | | 21:24 | | 21:58 | |
| 17 | 08:37 | 07:50 | 08:51-09:10/19 | 06:49 | | 06:39 | | 05:43 | | 05:18 | 06:05-06:26/21 |
| | 16:59 | 17:54 | | 18:44 | | 20:37 | | 21:26 | | 21:59 | |
| 18 | 08:36 | 07:48 | 08:50-09:11/21 | 06:47 | | 06:37 | | 05:41 | | 05:18 | 06:06-06:26/20 |
| | 17:00 | 17:56 | | 18:46 | | 20:38 | | 21:27 | | 21:59 | |
| 19 | 08:35 | 07:46 | 08:50-09:12/22 | 06:45 | | 06:35 | | 05:40 | | 05:18 | 06:06-06:26/20 |
| | 17:02 | 17:58 | | 18:48 | | 20:40 | | 21:29 | | 21:59 | |
| 20 | 08:34 | 07:44 | 08:49-09:12/23 | 06:42 | | 06:32 | | 05:39 | | 05:18 | 06:07-06:27/20 |
| | 17:04 | 18:00 | | 18:49 | | 20:42 | | 21:30 | | 22:00 | |
| 21 | 08:33 | 07:42 | 08:49-09:12/23 | 06:40 | | 06:30 | | 05:37 | | 05:18 | 06:07-06:27/20 |
| | 17:05 | 18:02 | | 18:51 | | 20:43 | | 21:32 | | 22:00 | |
| 22 | 08:32 | 07:40 | 08:39-08:48/9 | 06:38 | | 06:28 | | 05:36 | | 05:18 | 06:07-06:27/20 |
| | 17:07 | 18:03 | 08:49-09:12/23 | 18:53 | | 20:45 | | 21:33 | | 22:00 | |
| 23 | 08:30 | 07:38 | 08:37-09:12/35 | 06:35 | | 06:26 | | 05:35 | | 05:19 | 06:07-06:27/20 |
| | 17:09 | 18:05 | | 18:54 | | 20:47 | | 21:34 | | 22:00 | |
| 24 | 08:29 | 07:36 | 08:34-09:10/36 | 06:33 | | 06:24 | | 05:33 | | 05:19 | 06:08-06:28/20 |
| | 17:10 | 18:07 | | 18:56 | | 20:49 | | 21:36 | | 22:00 | |
| 25 | 08:28 | 07:33 | 08:33-09:09/36 | 06:31 | 18:02-18:04/2 | 06:22 | | 05:32 | | 05:19 | 06:07-06:28/21 |
| | 17:12 | 18:09 | | 18:58 | | 20:50 | | 21:37 | | 22:00 | |
| 26 | 08:27 | 07:31 | 08:32-09:08/36 | 06:28 | 17:58-18:09/11 | 06:20 | | 05:31 | | 05:20 | 06:07-06:27/20 |
| | 17:14 | 18:11 | | 18:59 | | 20:52 | | 21:38 | | 22:00 | |
| 27 | 08:25 | 07:29 | 08:31-09:07/36 | 06:26 | 17:56-18:11/15 | 06:18 | | 05:30 | | 05:20 | 06:08-06:28/20 |
| | 17:16 | 18:12 | | 19:01 | | 20:54 | | 21:40 | | 22:00 | |
| 28 | 08:24 | 07:27 | 08:31-09:04/33 | 06:24 | 17:54-18:12/18 | 06:16 | | 05:29 | | 05:21 | 06:08-06:28/20 |
| | 17:17 | 18:14 | | 19:03 | | 20:55 | | 21:41 | | 22:00 | |
| 29 | 08:22 | | | 07:22 | 18:53-19:13/20 | 06:14 | | 05:28 | | 05:21 | 06:09-06:28/19 |
| | 17:19 | | | 20:05 | | 20:57 | | 21:42 | | 22:00 | |
| 30 | 08:21 | | | 07:19 | 18:52-19:13/21 | 06:12 | | 05:27 | | 05:22 | 06:09-06:28/19 |
| | 17:21 | | | 20:06 | | 20:59 | | 21:43 | | 22:00 | |
| 31 | 08:20 | | | 07:17 | 18:51-19:13/22 | | | 05:26 | 06:12-06:14/2 | | |
| | 17:23 | | | 20:08 | | | | 21:45 | | | |
| Potential sun hours | 260 | 278 | | 367 | | 416 | | 485 | | 498 | |
| Sum of minutes with flicker | 0 | 393 | | 282 | | 110 | | 2 | | 540 | |

**Table layout: For each day in each month the following matrix apply**

| | | |
|---|---|---|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |
| | Sun set (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |

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Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar per WTG

**Calculation:** 6460 Gortloughra WF cumulative WC **WTG:** 3 - T03

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | July | | August | September | | October | | November | December |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 05:22 | 06:09-06:28/19 | 05:59 | 06:48 | | 07:37 | | 07:30 | 08:21 |
| | 22:00 | | 21:28 | 20:26 | | 19:17 | | 17:11 | 16:31 |
| 2 | 05:23 | 06:10-06:28/18 | 06:00 | 06:50 | | 07:38 | | 07:32 | 08:22 |
| | 21:59 | | 21:26 | 20:24 | | 19:15 | | 17:09 | 16:31 |
| 3 | 05:24 | 06:10-06:28/18 | 06:02 | 06:51 | | 07:40 | | 07:34 | 08:24 |
| | 21:59 | | 21:25 | 20:22 | | 19:12 | | 17:08 | 16:30 |
| 4 | 05:25 | 06:11-06:28/17 | 06:03 | 06:53 | | 07:42 | | 07:36 | 08:25 |
| | 21:58 | | 21:23 | 20:19 | | 19:10 | | 17:06 | 16:29 |
| 5 | 05:25 | 06:11-06:28/17 | 06:05 | 06:55 | 18:55-18:57/2 | 07:43 | 09:12-09:23/11 | 07:37 | 08:26 |
| | 21:58 | | 21:21 | 20:17 | | 19:08 | | 17:04 | 16:29 |
| 6 | 05:26 | 06:12-06:28/16 | 06:06 | 06:56 | 18:51-19:02/11 | 07:45 | 09:09-09:24/15 | 07:39 | 08:28 |
| | 21:58 | | 21:19 | 20:15 | | 19:06 | | 17:02 | 16:28 |
| 7 | 05:27 | 06:13-06:28/15 | 06:08 | 06:58 | 18:48-19:04/16 | 07:47 | 09:08-09:26/18 | 07:41 | 08:29 |
| | 21:57 | | 21:18 | 20:13 | | 19:03 | | 17:01 | 16:28 |
| 8 | 05:28 | 06:13-06:27/14 | 06:10 | 06:59 | 18:47-19:05/18 | 07:48 | 09:07-09:27/20 | 07:43 | 08:30 |
| | 21:56 | | 21:16 | 20:10 | | 19:01 | | 16:59 | 16:28 |
| 9 | 05:29 | 06:14-06:26/12 | 06:11 | 07:01 | 18:45-19:05/20 | 07:50 | 09:05-09:27/22 | 07:45 | 08:31 |
| | 21:56 | | 21:14 | 20:08 | | 18:59 | | 16:57 | 16:27 |
| 10 | 05:30 | 06:15-06:26/11 | 06:13 | 07:03 | 18:45-19:05/20 | 07:52 | 09:04-09:28/24 | 07:46 | 08:32 |
| | 21:55 | | 21:12 | 20:06 | | 18:57 | | 16:56 | 16:27 |
| 11 | 05:31 | 06:16-06:25/9 | 06:14 | 07:04 | 18:43-19:05/22 | 07:54 | 09:04-09:28/24 | 07:48 | 08:34 |
| | 21:54 | | 21:10 | 20:03 | | 18:54 | | 16:54 | 16:27 |
| 12 | 05:32 | 06:18-06:23/5 | 06:16 | 07:06 | 18:43-19:05/22 | 07:55 | 09:04-09:28/24 | 07:50 | 08:35 |
| | 21:53 | | 21:08 | 20:01 | | 18:52 | | 16:53 | 16:27 |
| 13 | 05:33 | | 06:17 | 07:07 | 18:43-19:05/22 | 07:57 | 09:04-09:28/24 | 07:52 | 08:36 |
| | 21:52 | | 21:06 | 19:59 | | 18:50 | 09:31-09:34/3 | 16:51 | 16:27 |
| 14 | 05:34 | | 06:19 | 07:09 | 18:43-19:03/20 | 07:59 | 09:03-09:38/35 | 07:53 | 08:36 |
| | 21:52 | | 21:04 | 19:56 | | 18:48 | | 16:50 | 16:27 |
| 15 | 05:35 | | 06:21 | 07:11 | 18:44-19:02/18 | 08:00 | 09:04-09:40/36 | 07:55 | 08:37 |
| | 21:51 | | 21:02 | 19:54 | | 18:46 | | 16:48 | 16:27 |
| 16 | 05:37 | | 06:22 | 07:12 | 18:44-19:00/16 | 08:02 | 09:04-09:41/37 | 07:57 | 08:38 |
| | 21:50 | | 21:00 | 19:52 | | 18:44 | | 16:47 | 16:27 |
| 17 | 05:38 | | 06:24 | 07:14 | 18:46-18:58/12 | 08:04 | 09:05-09:42/37 | 07:59 | 08:39 |
| | 21:48 | | 20:58 | 19:50 | | 18:41 | | 16:46 | 16:27 |
| 18 | 05:39 | | 06:25 | 07:16 | 18:48-18:53/5 | 08:06 | 09:07-09:43/36 | 08:00 | 08:40 |
| | 21:47 | | 20:56 | 19:47 | | 18:39 | | 16:44 | 16:28 |
| 19 | 05:40 | | 06:27 | 07:17 | | 08:07 | 09:08-09:42/34 | 08:02 | 08:41 |
| | 21:46 | | 20:54 | 19:45 | | 18:37 | | 16:43 | 16:28 |
| 20 | 05:42 | | 06:29 | 07:19 | | 08:09 | 09:11-09:17/6 | 08:04 | 08:41 |
| | 21:45 | | 20:52 | 19:43 | | 18:35 | 09:20-09:42/22 | 16:42 | 16:28 |
| 21 | 05:43 | | 06:30 | 07:20 | | 08:11 | 09:20-09:42/22 | 08:05 | 08:42 |
| | 21:44 | | 20:50 | 19:40 | | 18:33 | | 16:41 | 16:29 |
| 22 | 05:44 | | 06:32 | 07:22 | | 08:12 | 09:20-09:42/22 | 08:07 | 08:42 |
| | 21:43 | | 20:48 | 19:38 | | 18:31 | | 16:39 | 16:29 |
| 23 | 05:46 | | 06:34 | 07:24 | | 08:14 | 09:20-09:42/22 | 08:09 | 08:43 |
| | 21:41 | | 20:46 | 19:36 | | 18:29 | | 16:38 | 16:30 |
| 24 | 05:47 | | 06:35 | 07:25 | | 08:16 | 09:21-09:41/20 | 08:10 | 08:43 |
| | 21:40 | | 20:44 | 19:33 | | 18:27 | | 16:37 | 16:30 |
| 25 | 05:48 | | 06:37 | 07:27 | | 07:18 | 08:22-08:40/18 | 08:12 | 08:44 |
| | 21:39 | | 20:42 | 19:31 | | 17:25 | | 16:36 | 16:31 |
| 26 | 05:50 | | 06:38 | 07:29 | | 07:20 | 08:22-08:38/16 | 08:13 | 08:44 |
| | 21:37 | | 20:39 | 19:29 | | 17:23 | | 16:35 | 16:32 |
| 27 | 05:51 | | 06:40 | 07:30 | | 07:21 | 08:23-08:37/14 | 08:15 | 08:44 |
| | 21:36 | | 20:37 | 19:26 | | 17:21 | | 16:34 | 16:32 |
| 28 | 05:53 | | 06:42 | 07:32 | | 07:23 | 08:26-08:34/8 | 08:16 | 08:44 |
| | 21:34 | | 20:35 | 19:24 | | 17:19 | | 16:34 | 16:33 |
| 29 | 05:54 | | 06:43 | 07:33 | | 07:25 | | 08:18 | 08:45 |
| | 21:33 | | 20:33 | 19:22 | | 17:17 | | 16:33 | 16:34 |
| 30 | 05:56 | | 06:45 | 07:35 | | 07:27 | | 08:19 | 08:45 |
| | 21:31 | | 20:31 | 19:19 | | 17:15 | | 16:32 | 16:35 |
| 31 | 05:57 | | 06:46 | | | 07:28 | | | 08:45 |
| | 21:30 | | 20:28 | | | 17:13 | | | 16:36 |
| Potential sun hours | 501 | | 453 | 381 | | 332 | | 267 | 244 |
| Sum of minutes with flicker | 171 | | 0 | 224 | | 570 | | 0 | 0 |

**Table layout: For each day in each month the following matrix apply**

| | | |
|---|---|---|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |
| | Sun set (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |

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Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar per WTG

**Calculation:** 6460 Gortloughra WF cumulative WC **WTG:** 4 - T04

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | | April | | May | | June | |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | | 07:15 | 18:52-19:12/20 | 06:10 | 19:04-19:39/35 | 05:25 | 19:29-20:07/38 |
| | 16:37 | 17:25 | 18:16 | | 20:10 | | 21:00 | | 21:46 | 19:17-19:28/11 |
| 2 | 08:45 | 08:16 | 07:23 | | 07:12 | 18:52-19:12/20 | 06:08 | 19:04-19:40/36 | 05:24 | 19:30-20:07/37 |
| | 16:38 | 17:26 | 18:18 | | 20:11 | | 21:02 | | 21:47 | 19:19-19:26/7 |
| 3 | 08:44 | 08:15 | 07:21 | | 07:10 | 18:52-19:11/19 | 06:06 | 19:03-19:41/38 | 05:24 | 19:31-20:07/36 |
| | 16:39 | 17:28 | 18:20 | | 20:13 | | 21:04 | | 21:48 | |
| 4 | 08:44 | 08:13 | 07:18 | | 07:08 | 18:52-19:10/18 | 06:04 | 19:02-19:42/40 | 05:23 | 19:34-20:08/34 |
| | 16:40 | 17:30 | 18:21 | | 20:15 | | 21:05 | | 21:49 | |
| 5 | 08:44 | 08:12 | 07:16 | | 07:05 | 18:53-19:09/16 | 06:03 | 19:02-19:43/41 | 05:22 | 19:36-20:08/32 |
| | 16:42 | 17:32 | 18:23 | | 20:16 | | 21:07 | | 21:50 | |
| 6 | 08:44 | 08:10 | 07:14 | | 07:03 | 18:54-19:08/14 | 06:01 | 19:02-19:45/43 | 05:22 | 19:36-20:09/33 |
| | 16:43 | 17:34 | 18:25 | | 20:18 | | 21:08 | | 21:51 | |
| 7 | 08:43 | 08:08 | 07:12 | | 07:01 | 18:56-19:06/10 | 05:59 | 19:01-19:46/45 | 05:21 | 19:36-20:09/33 |
| | 16:44 | 17:36 | 18:27 | | 20:20 | 19:12-19:19/7 | 21:10 | | 21:52 | |
| 8 | 08:43 | 08:07 | 07:09 | | 06:59 | 19:08-19:21/13 | 05:57 | 19:01-19:46/45 | 05:20 | 19:36-20:09/33 |
| | 16:45 | 17:38 | 18:28 | | 20:21 | | 21:12 | | 21:53 | |
| 9 | 08:42 | 08:05 | 07:07 | | 06:56 | 19:06-19:23/17 | 05:56 | 19:01-19:47/46 | 05:20 | 19:36-20:09/33 |
| | 16:47 | 17:39 | 18:30 | | 20:23 | | 21:13 | | 21:53 | |
| 10 | 08:42 | 08:03 | 07:05 | | 06:54 | 19:04-19:24/20 | 05:54 | 19:00-19:47/47 | 05:20 | 19:36-20:10/34 |
| | 16:48 | 17:41 | 18:32 | | 20:25 | | 21:15 | | 21:54 | |
| 11 | 08:41 | 08:01 | 07:03 | | 06:52 | 19:03-19:25/22 | 05:52 | 19:01-19:48/47 | 05:19 | 19:37-20:10/33 |
| | 16:49 | 17:43 | 18:34 | | 20:27 | | 21:17 | | 21:55 | |
| 12 | 08:41 | 07:59 | 07:00 | | 06:50 | 19:03-19:29/26 | 05:51 | 19:01-19:48/47 | 05:19 | 19:37-20:11/34 |
| | 16:51 | 17:45 | 18:35 | | 20:28 | | 21:18 | | 21:56 | |
| 13 | 08:40 | 07:57 | 06:58 | | 06:48 | 19:01-19:29/28 | 05:49 | 19:01-19:49/48 | 05:19 | 19:36-20:10/34 |
| | 16:52 | 17:47 | 18:37 | | 20:30 | | 21:20 | | 21:56 | |
| 14 | 08:39 | 07:56 | 06:56 | | 06:45 | 19:01-19:31/30 | 05:47 | 19:01-19:48/47 | 05:18 | 19:37-20:11/34 |
| | 16:54 | 17:49 | 18:39 | | 20:32 | | 21:21 | | 21:57 | |
| 15 | 08:38 | 07:54 | 06:54 | | 06:43 | 19:00-19:31/31 | 05:46 | 19:02-19:49/47 | 05:18 | 19:37-20:11/34 |
| | 16:55 | 17:50 | 18:41 | | 20:33 | | 21:23 | | 21:58 | |
| 16 | 08:38 | 07:52 | 06:51 | | 06:41 | 19:01-19:32/31 | 05:44 | 19:01-19:48/47 | 05:18 | 19:37-20:11/34 |
| | 16:57 | 17:52 | 18:42 | | 20:35 | | 21:24 | | 21:58 | |
| 17 | 08:37 | 07:50 | 06:49 | | 06:39 | 19:01-19:32/31 | 05:43 | 19:02-19:49/47 | 05:18 | 19:37-20:11/34 |
| | 16:59 | 17:54 | 18:44 | | 20:37 | | 21:26 | | 21:59 | |
| 18 | 08:36 | 07:48 | 06:47 | | 06:37 | 19:01-19:32/31 | 05:41 | 19:03-19:49/46 | 05:18 | 19:38-20:12/34 |
| | 17:00 | 17:56 | 18:46 | | 20:38 | | 21:27 | | 21:59 | |
| 19 | 08:35 | 07:46 | 06:44 | 17:54-17:57/3 | 06:35 | 19:02-19:32/30 | 05:40 | 19:04-19:49/45 | 05:18 | 19:38-20:12/34 |
| | 17:02 | 17:58 | 18:47 | | 20:40 | | 21:29 | | 21:59 | |
| 20 | 08:34 | 07:44 | 06:42 | 17:50-18:01/11 | 06:32 | 19:03-19:31/28 | 05:39 | 19:03-19:54/51 | 05:18 | 19:38-20:12/34 |
| | 17:03 | 18:00 | 18:49 | | 20:42 | | 21:30 | | 22:00 | |
| 21 | 08:33 | 07:42 | 06:40 | 17:47-18:01/14 | 06:30 | 19:04-19:31/27 | 05:37 | 19:04-19:57/53 | 05:18 | 19:39-20:13/34 |
| | 17:05 | 18:01 | 18:51 | | 20:43 | | 21:32 | | 22:00 | |
| 22 | 08:31 | 07:40 | 06:38 | 17:46-18:02/16 | 06:28 | 19:05-19:30/25 | 05:36 | 19:05-19:59/54 | 05:18 | 19:39-20:13/34 |
| | 17:07 | 18:03 | 18:53 | | 20:45 | | 21:33 | | 22:00 | |
| 23 | 08:30 | 07:38 | 06:35 | 17:46-18:03/17 | 06:26 | 19:08-19:32/24 | 05:35 | 19:06-20:00/54 | 05:19 | 19:39-20:13/34 |
| | 17:09 | 18:05 | 18:54 | | 20:47 | | 21:34 | | 22:00 | |
| 24 | 08:29 | 07:36 | 06:33 | 17:45-18:04/19 | 06:24 | 19:11-19:33/22 | 05:33 | 19:07-20:01/54 | 05:19 | 19:39-20:13/34 |
| | 17:10 | 18:07 | 18:56 | | 20:49 | | 21:36 | | 22:00 | |
| 25 | 08:28 | 07:33 | 06:31 | 17:44-18:03/19 | 06:22 | 19:10-19:34/24 | 05:32 | 19:08-20:02/54 | 05:19 | 19:40-20:13/33 |
| | 17:12 | 18:09 | 18:58 | | 20:50 | | 21:37 | | 22:00 | |
| 26 | 08:27 | 07:31 | 06:28 | 17:44-18:02/18 | 06:20 | 19:09-19:35/26 | 05:31 | 19:09-20:03/54 | 05:20 | 19:39-20:13/34 |
| | 17:14 | 18:11 | 18:59 | | 20:52 | | 21:38 | | 22:00 | |
| 27 | 08:25 | 07:29 | 06:26 | 17:45-18:09/24 | 06:18 | 19:08-19:36/28 | 05:30 | 19:10-20:04/54 | 05:20 | 19:40-20:14/34 |
| | 17:16 | 18:12 | 19:01 | | 20:54 | | 21:40 | | 22:00 | |
| 28 | 08:24 | 07:27 | 06:24 | 17:45-18:10/25 | 06:16 | 19:07-19:37/30 | 05:29 | 19:11-20:05/54 | 05:21 | 19:40-20:14/34 |
| | 17:17 | 18:14 | 19:03 | | 20:55 | | 21:41 | | 22:00 | |
| 29 | 08:22 | | 07:21 | 18:46-19:11/25 | 06:14 | 19:06-19:38/32 | 05:28 | 19:12-20:05/53 | 05:21 | 19:41-20:14/33 |
| | 17:19 | | 20:05 | | 20:57 | | 21:42 | | 22:00 | |
| 30 | 08:21 | | 07:19 | 18:48-19:12/24 | 06:12 | 19:05-19:39/34 | 05:27 | 19:13-20:05/52 | 05:22 | 19:40-20:14/34 |
| | 17:21 | | 20:06 | | 20:59 | | 21:43 | | 22:00 | |
| 31 | 08:20 | | 07:17 | 18:52-19:12/20 | | | 05:26 | 19:14-20:06/52 | | |
| | 17:23 | | 20:08 | | | | 21:45 | | | |
| Potential sun hours | 260 | 278 | 367 | | 416 | | 485 | | 498 | |
| Sum of minutes with flicker | 0 | 0 | 235 | | 734 | | 1476 | | 1038 | |

**Table layout: For each day in each month the following matrix apply**

| | | |
|---|---|---|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |
| | Sun set (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |

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Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar per WTG

**Calculation:** 6460 Gortloughra WF cumulative WC **WTG:** 4 - T04

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | July | August | September | October | November | December |
|---|---|---|---|---|---|---|
| 1 | 05:22 19:41-20:14/33<br>22:00 | 05:59 19:11-19:58/47<br>21:28 | 06:48 19:02-19:24/22<br>20:26 | 07:37<br>19:17 | 07:30<br>17:11 | 08:21<br>16:31 |
| 2 | 05:23 19:40-20:14/34<br>21:59 | 06:00 19:11-19:59/48<br>21:26 | 06:50 19:02-19:22/20<br>20:24 | 07:38<br>19:15 | 07:32<br>17:09 | 08:22<br>16:31 |
| 3 | 05:24 19:41-20:14/33<br>21:59 | 06:02 19:11-19:58/47<br>21:25 | 06:51 19:04-19:21/17<br>20:22 | 07:40<br>19:12 | 07:34<br>17:08 | 08:24<br>16:30 |
| 4 | 05:24 19:41-20:15/34<br>21:58 | 06:03 19:10-19:57/47<br>21:23 | 06:53 19:06-19:19/13<br>20:19 | 07:42<br>19:10 | 07:36<br>17:06 | 08:25<br>16:29 |
| 5 | 05:25 19:42-20:15/33<br>21:58 | 06:05 19:11-19:56/45<br>21:21 | 06:55 18:52-19:02/10<br>20:17 19:08-19:15/7 | 07:43<br>19:08 | 07:37<br>17:04 | 08:26<br>16:29 |
| 6 | 05:26 19:41-20:14/33<br>21:57 | 06:06 19:11-19:55/44<br>21:19 | 06:56 18:50-19:04/14<br>20:15 | 07:45<br>19:06 | 07:39<br>17:02 | 08:28<br>16:28 |
| 7 | 05:27 19:42-20:14/32<br>21:57 | 06:08 19:11-19:54/43<br>21:18 | 06:58 18:48-19:04/16<br>20:13 | 07:47<br>19:03 | 07:41<br>17:01 | 08:29<br>16:28 |
| 8 | 05:28 19:42-20:15/33<br>21:56 | 06:09 19:11-19:52/41<br>21:16 | 06:59 18:47-19:05/18<br>20:10 | 07:48<br>19:01 | 07:43<br>16:59 | 08:30<br>16:28 |
| 9 | 05:29 19:39-20:15/36<br>21:56 | 06:11 19:12-19:51/39<br>21:14 | 07:01 18:46-19:05/19<br>20:08 | 07:50<br>18:59 | 07:44<br>16:57 | 08:31<br>16:27 |
| 10 | 05:30 19:38-20:15/37<br>21:55 19:28-19:31/3 | 06:13 19:12-19:49/37<br>21:12 | 07:03 18:45-19:05/20<br>20:06 | 07:52<br>18:57 | 07:46<br>16:56 | 08:32<br>16:27 |
| 11 | 05:31 19:37-20:15/38<br>21:54 19:25-19:35/10 | 06:14 19:13-19:49/36<br>21:10 | 07:04 18:44-19:04/20<br>20:03 | 07:53<br>18:54 | 07:48<br>16:54 | 08:33<br>16:27 |
| 12 | 05:32 19:23-20:14/51<br>21:53 | 06:16 19:13-19:47/34<br>21:08 | 07:06 18:45-19:04/19<br>20:01 | 07:55<br>18:52 | 07:50<br>16:53 | 08:35<br>16:27 |
| 13 | 05:33 19:22-20:14/52<br>21:52 | 06:17 19:14-19:47/33<br>21:06 | 07:07 18:40-19:04/24<br>19:59 | 07:57<br>18:50 | 07:52<br>16:51 | 08:36<br>16:27 |
| 14 | 05:34 19:21-20:14/53<br>21:51 | 06:19 19:14-19:45/31<br>21:04 | 07:09 18:37-19:02/25<br>19:56 | 07:59<br>18:48 | 07:53<br>16:50 | 08:36<br>16:27 |
| 15 | 05:35 19:20-20:13/53<br>21:51 | 06:21 19:15-19:44/29<br>21:02 | 07:11 18:35-19:01/26<br>19:54 | 08:00<br>18:46 | 07:55<br>16:48 | 08:37<br>16:27 |
| 16 | 05:37 19:19-20:13/54<br>21:50 | 06:22 19:15-19:42/27<br>21:00 | 07:12 18:34-18:58/24<br>19:52 | 08:02<br>18:43 | 07:57<br>16:47 | 08:38<br>16:27 |
| 17 | 05:38 19:19-20:13/54<br>21:48 | 06:24 19:15-19:42/27<br>20:58 | 07:14 18:33-18:54/21<br>19:49 | 08:04<br>18:41 | 07:58<br>16:45 | 08:39<br>16:27 |
| 18 | 05:39 19:18-20:12/54<br>21:47 | 06:25 19:16-19:40/24<br>20:56 | 07:15 18:32-18:50/18<br>19:47 | 08:05<br>18:39 | 08:00<br>16:44 | 08:40<br>16:28 |
| 19 | 05:40 19:17-20:11/54<br>21:46 | 06:27 19:17-19:39/22<br>20:54 | 07:17 18:32-18:50/18<br>19:45 | 08:07<br>18:37 | 08:02<br>16:43 | 08:40<br>16:28 |
| 20 | 05:42 19:16-20:10/54<br>21:45 | 06:29 19:12-19:37/25<br>20:52 | 07:19 18:32-18:50/18<br>19:43 | 08:09<br>18:35 | 08:04<br>16:42 | 08:41<br>16:28 |
| 21 | 05:43 19:15-20:09/54<br>21:44 | 06:30 19:10-19:35/25<br>20:50 | 07:20 18:32-18:48/16<br>19:40 | 08:11<br>18:33 | 08:05<br>16:41 | 08:42<br>16:29 |
| 22 | 05:44 19:15-20:08/53<br>21:43 | 06:32 19:07-19:35/28<br>20:48 | 07:22 18:33-18:47/14<br>19:38 | 08:12<br>18:31 | 08:07<br>16:39 | 08:42<br>16:29 |
| 23 | 05:46 19:14-20:06/52<br>21:41 | 06:33 19:06-19:35/29<br>20:46 | 07:24 18:33-18:45/12<br>19:36 | 08:14<br>18:29 | 08:09<br>16:38 | 08:43<br>16:30 |
| 24 | 05:47 19:14-20:02/48<br>21:40 | 06:35 19:05-19:36/31<br>20:44 | 07:25 18:36-18:42/6<br>19:33 | 08:16<br>18:27 | 08:10<br>16:37 | 08:43<br>16:30 |
| 25 | 05:48 19:14-19:59/45<br>21:39 | 06:37 19:04-19:35/31<br>20:42 | 07:27<br>19:31 | 07:18<br>17:25 | 08:12<br>16:36 | 08:44<br>16:31 |
| 26 | 05:50 19:13-19:59/46<br>21:37 | 06:38 19:03-19:35/32<br>20:39 | 07:28<br>19:29 | 07:19<br>17:23 | 08:13<br>16:35 | 08:44<br>16:31 |
| 27 | 05:51 19:12-19:59/47<br>21:36 | 06:40 19:02-19:34/32<br>20:37 | 07:30<br>19:26 | 07:21<br>17:21 | 08:15<br>16:34 | 08:44<br>16:32 |
| 28 | 05:53 19:13-20:00/47<br>21:34 | 06:42 19:02-19:33/31<br>20:35 | 07:32<br>19:24 | 07:23<br>17:19 | 08:16<br>16:33 | 08:44<br>16:33 |
| 29 | 05:54 19:12-19:59/47<br>21:33 | 06:43 19:02-19:31/29<br>20:33 | 07:33<br>19:22 | 07:25<br>17:17 | 08:18<br>16:33 | 08:45<br>16:34 |
| 30 | 05:56 19:11-19:59/48<br>21:31 | 06:45 19:02-19:30/28<br>20:31 | 07:35<br>19:19 | 07:27<br>17:15 | 08:19<br>16:32 | 08:45<br>16:35 |
| 31 | 05:57 19:12-19:59/47<br>21:30 | 06:46 19:01-19:27/26<br>20:28 | | 07:28<br>17:13 | | 08:45<br>16:36 |
| Potential sun hours | 501 | 453 | 381 | 332 | 267 | 244 |
| Sum of minutes with flicker | 1402 | 1048 | 437 | 0 | 0 | 0 |

**Table layout: For each day in each month the following matrix apply**

| | | |
|---|---|---|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |
| | Sun set (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |

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Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar per WTG

**Calculation:** 6460 Gortloughra WF cumulative WC **WTG:** 5 - T06

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | | April | | May | | June | |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | | 07:15 | 18:58-19:24/26 | 06:10 | 19:26-19:52/26 | 05:25 | 20:19-20:23/4 |
| | 16:37 | 17:25 | 18:16 | | 20:10 | | 21:00 | | 21:46 | |
| 2 | 08:45 | 08:16 | 07:23 | | 07:12 | 18:57-19:25/28 | 06:08 | 19:27-19:54/27 | 05:24 | 20:16-20:26/10 |
| | 16:38 | 17:26 | 18:18 | | 20:11 | | 21:02 | | 21:47 | |
| 3 | 08:44 | 08:15 | 07:21 | | 07:10 | 18:56-19:26/30 | 06:06 | 19:27-19:54/27 | 05:24 | 20:15-20:27/12 |
| | 16:39 | 17:28 | 18:19 | | 20:13 | | 21:04 | | 21:48 | |
| 4 | 08:44 | 08:13 | 07:18 | | 07:08 | 18:55-19:26/31 | 06:04 | 19:26-19:54/28 | 05:23 | 20:14-20:29/15 |
| | 16:40 | 17:30 | 18:21 | | 20:15 | | 21:05 | | 21:49 | |
| 5 | 08:44 | 08:12 | 07:16 | | 07:05 | 18:55-19:26/31 | 06:03 | 19:26-19:54/28 | 05:22 | 20:13-20:29/16 |
| | 16:41 | 17:32 | 18:23 | | 20:16 | | 21:07 | | 21:50 | |
| 6 | 08:44 | 08:10 | 07:14 | | 07:03 | 18:55-19:27/32 | 06:01 | 19:27-19:54/27 | 05:22 | 20:13-20:31/18 |
| | 16:43 | 17:34 | 18:25 | | 20:18 | | 21:08 | | 21:51 | |
| 7 | 08:43 | 08:08 | 07:12 | | 07:01 | 18:55-19:27/32 | 05:59 | 19:26-19:54/28 | 05:21 | 20:12-20:31/19 |
| | 16:44 | 17:36 | 18:27 | | 20:20 | | 21:10 | | 21:52 | |
| 8 | 08:43 | 08:07 | 07:09 | | 06:59 | 18:54-19:26/32 | 05:57 | 19:26-19:53/27 | 05:20 | 20:12-20:32/20 |
| | 16:45 | 17:37 | 18:28 | | 20:21 | | 21:12 | | 21:53 | |
| 9 | 08:42 | 08:05 | 07:07 | | 06:56 | 18:54-19:29/35 | 05:56 | 19:27-19:54/27 | 05:20 | 20:12-20:32/20 |
| | 16:47 | 17:39 | 18:30 | | 20:23 | | 21:13 | | 21:53 | |
| 10 | 08:42 | 08:03 | 07:05 | | 06:54 | 18:54-19:30/36 | 05:54 | 19:27-19:53/26 | 05:19 | 20:12-20:33/21 |
| | 16:48 | 17:41 | 18:32 | | 20:25 | | 21:15 | | 21:54 | |
| 11 | 08:41 | 08:01 | 07:03 | | 06:52 | 18:55-19:32/37 | 05:52 | 19:28-19:53/25 | 05:19 | 20:12-20:34/22 |
| | 16:49 | 17:43 | 18:34 | | 20:27 | | 21:17 | | 21:55 | |
| 12 | 08:41 | 07:59 | 07:00 | | 06:50 | 18:55-19:33/38 | 05:50 | 19:28-19:52/24 | 05:19 | 20:11-20:33/22 |
| | 16:51 | 17:45 | 18:35 | | 20:28 | | 21:18 | | 21:56 | |
| 13 | 08:40 | 07:57 | 06:58 | | 06:48 | 18:55-19:32/37 | 05:49 | 19:29-19:52/23 | 05:19 | 20:11-20:34/23 |
| | 16:52 | 17:47 | 18:37 | | 20:30 | | 21:20 | | 21:56 | |
| 14 | 08:39 | 07:56 | 06:56 | | 06:45 | 18:56-19:33/37 | 05:47 | 19:29-19:51/22 | 05:18 | 20:11-20:35/24 |
| | 16:54 | 17:49 | 18:39 | | 20:32 | | 21:21 | | 21:57 | |
| 15 | 08:38 | 07:54 | 06:54 | | 06:43 | 18:57-19:34/37 | 05:46 | 19:30-19:51/21 | 05:18 | 20:12-20:35/23 |
| | 16:55 | 17:50 | 18:41 | | 20:33 | | 21:23 | | 21:58 | |
| 16 | 08:38 | 07:52 | 06:51 | | 06:41 | 18:58-19:35/37 | 05:44 | 19:30-19:49/19 | 05:18 | 20:12-20:36/24 |
| | 16:57 | 17:52 | 18:42 | | 20:35 | | 21:24 | | 21:58 | |
| 17 | 08:37 | 07:50 | 06:49 | | 06:39 | 19:00-19:36/36 | 05:43 | 19:32-19:48/16 | 05:18 | 20:12-20:36/24 |
| | 16:59 | 17:54 | 18:44 | | 20:37 | | 21:26 | | 21:59 | |
| 18 | 08:36 | 07:48 | 06:47 | | 06:37 | 19:04-19:36/32 | 05:41 | 19:34-19:47/13 | 05:18 | 20:12-20:36/24 |
| | 17:00 | 17:56 | 18:46 | | 20:38 | | 21:27 | | 21:59 | |
| 19 | 08:35 | 07:46 | 06:44 | | 06:34 | 19:04-19:37/33 | 05:40 | 19:35-19:45/10 | 05:18 | 20:12-20:36/24 |
| | 17:02 | 17:58 | 18:47 | | 20:40 | | 21:29 | | 21:59 | |
| 20 | 08:34 | 07:44 | 06:42 | | 06:32 | 19:04-19:37/33 | 05:39 | 19:39-19:41/2 | 05:18 | 20:12-20:36/24 |
| | 17:03 | 18:00 | 18:49 | | 20:42 | | 21:30 | | 22:00 | |
| 21 | 08:33 | 07:42 | 06:40 | | 06:30 | 19:05-19:37/32 | 05:37 | | 05:18 | 20:12-20:36/24 |
| | 17:05 | 18:01 | 18:51 | | 20:43 | | 21:32 | | 22:00 | |
| 22 | 08:31 | 07:40 | 06:38 | 18:05-18:10/5 | 06:28 | 19:05-19:37/32 | 05:36 | | 05:18 | 20:13-20:37/24 |
| | 17:07 | 18:03 | 18:53 | | 20:45 | | 21:33 | | 22:00 | |
| 23 | 08:30 | 07:38 | 06:35 | 18:02-18:13/11 | 06:26 | 19:06-19:36/30 | 05:35 | | 05:19 | 20:13-20:37/24 |
| | 17:09 | 18:05 | 18:54 | | 20:47 | | 21:34 | | 22:00 | |
| 24 | 08:29 | 07:36 | 06:33 | 17:59-18:14/15 | 06:24 | 19:07-19:45/38 | 05:33 | | 05:19 | 20:13-20:37/24 |
| | 17:10 | 18:07 | 18:56 | | 20:48 | | 21:36 | | 22:00 | |
| 25 | 08:28 | 07:33 | 06:31 | 17:58-18:15/17 | 06:22 | 19:08-19:47/39 | 05:32 | | 05:19 | 20:14-20:38/24 |
| | 17:12 | 18:09 | 18:58 | | 20:50 | | 21:37 | | 22:00 | |
| 26 | 08:27 | 07:31 | 06:28 | 17:57-18:16/19 | 06:20 | 19:10-19:48/38 | 05:31 | | 05:20 | 20:14-20:38/24 |
| | 17:14 | 18:11 | 18:59 | | 20:52 | | 21:38 | | 22:00 | |
| 27 | 08:25 | 07:29 | 06:26 | 17:57-18:17/20 | 06:18 | 19:13-19:49/36 | 05:30 | | 05:20 | 20:15-20:38/23 |
| | 17:16 | 18:12 | 19:01 | | 20:54 | | 21:40 | | 22:00 | |
| 28 | 08:24 | 07:27 | 06:24 | 17:56-18:18/22 | 06:16 | 19:14-19:50/36 | 05:29 | | 05:21 | 20:14-20:38/24 |
| | 17:17 | 18:14 | 19:03 | | 20:55 | | 21:41 | | 22:00 | |
| 29 | 08:22 | | 07:21 | 18:56-19:19/23 | 06:14 | 19:15-19:51/36 | 05:28 | | 05:21 | 20:15-20:38/23 |
| | 17:19 | | 20:05 | | 20:57 | | 21:42 | | 22:00 | |
| 30 | 08:21 | | 07:19 | 18:57-19:20/23 | 06:12 | 19:17-19:52/35 | 05:27 | | 05:22 | 20:15-20:38/23 |
| | 17:21 | | 20:06 | | 20:59 | | 21:43 | | 22:00 | |
| 31 | 08:20 | | 07:17 | 18:57-19:21/24 | | | 05:26 | | | |
| | 17:23 | | 20:08 | | | | 21:45 | | | |
| Potential sun hours | 260 | 278 | 367 | | 416 | | 485 | | 498 | |
| Sum of minutes with flicker | 0 | 0 | 179 | | 1022 | | 446 | | 626 | |

**Table layout: For each day in each month the following matrix apply**

| | | |
|---|---|---|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |
| | Sun set (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |

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Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar per WTG

**Calculation:** 6460 Gortloughra WF cumulative WC **WTG:** 5 - T06

## Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | July | | August | | September | | October | November | December |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 05:22 | 20:16-20:38/22 | 05:59 | 19:38-20:03/25 | 06:48 | 18:54-19:31/37 | 07:37 | 07:30 | 08:21 |
| | 22:00 | | 21:28 | | 20:26 | | 19:17 | 17:11 | 16:31 |
| 2 | 05:23 | 20:16-20:37/21 | 06:00 | 19:38-20:04/26 | 06:50 | 18:52-19:28/36 | 07:38 | 07:32 | 08:22 |
| | 21:59 | | 21:26 | | 20:24 | | 19:15 | 17:09 | 16:30 |
| 3 | 05:24 | 20:17-20:37/20 | 06:02 | 19:37-20:04/27 | 06:51 | 18:52-19:27/35 | 07:40 | 07:34 | 08:24 |
| | 21:59 | | 21:25 | | 20:22 | | 19:12 | 17:08 | 16:30 |
| 4 | 05:24 | 20:17-20:37/20 | 06:03 | 19:36-20:03/27 | 06:53 | 18:51-19:25/34 | 07:42 | 07:36 | 08:25 |
| | 21:58 | | 21:23 | | 20:19 | | 19:10 | 17:06 | 16:29 |
| 5 | 05:25 | 20:18-20:37/19 | 06:05 | 19:37-20:04/27 | 06:54 | 18:51-19:23/32 | 07:43 | 07:37 | 08:26 |
| | 21:58 | | 21:21 | | 20:17 | | 19:08 | 17:04 | 16:29 |
| 6 | 05:26 | 20:18-20:36/18 | 06:06 | 19:36-20:03/27 | 06:56 | 18:51-19:23/32 | 07:45 | 07:39 | 08:28 |
| | 21:57 | | 21:19 | | 20:15 | | 19:06 | 17:02 | 16:28 |
| 7 | 05:27 | 20:19-20:36/17 | 06:08 | 19:36-20:04/28 | 06:58 | 18:50-19:22/32 | 07:47 | 07:41 | 08:29 |
| | 21:57 | | 21:18 | | 20:13 | | 19:03 | 17:01 | 16:28 |
| 8 | 05:28 | 20:20-20:35/15 | 06:09 | 19:36-20:03/27 | 06:59 | 18:50-19:21/31 | 07:48 | 07:43 | 08:30 |
| | 21:56 | | 21:16 | | 20:10 | | 19:01 | 16:59 | 16:28 |
| 9 | 05:29 | 20:21-20:35/14 | 06:11 | 19:36-20:03/27 | 07:01 | 18:49-19:19/30 | 07:50 | 07:44 | 08:31 |
| | 21:56 | | 21:14 | | 20:08 | | 18:59 | 16:57 | 16:27 |
| 10 | 05:30 | 20:23-20:34/11 | 06:13 | 19:35-20:02/27 | 07:03 | 18:50-19:18/28 | 07:52 | 07:46 | 08:32 |
| | 21:55 | | 21:12 | | 20:06 | | 18:57 | 16:56 | 16:27 |
| 11 | 05:31 | 20:25-20:32/7 | 06:14 | 19:36-20:02/26 | 07:04 | 18:50-19:16/26 | 07:53 | 07:48 | 08:33 |
| | 21:54 | | 21:10 | | 20:03 | | 18:54 | 16:54 | 16:27 |
| 12 | 05:32 | | 06:16 | 19:35-20:01/26 | 07:06 | 18:49-19:14/25 | 07:55 | 07:50 | 08:35 |
| | 21:53 | | 21:08 | 19:29-19:32/3 | 20:01 | | 18:52 | 16:53 | 16:27 |
| 13 | 05:33 | | 06:17 | 19:25-20:00/35 | 07:07 | 18:47-19:11/24 | 07:57 | 07:52 | 08:36 |
| | 21:52 | | 21:06 | | 19:59 | | 18:50 | 16:51 | 16:27 |
| 14 | 05:34 | | 06:19 | 19:23-19:58/35 | 07:09 | 18:47-19:09/22 | 07:59 | 07:53 | 08:36 |
| | 21:51 | | 21:04 | | 19:56 | | 18:48 | 16:50 | 16:27 |
| 15 | 05:35 | | 06:21 | 19:21-19:57/36 | 07:11 | 18:46-19:09/23 | 08:00 | 07:55 | 08:37 |
| | 21:51 | | 21:02 | | 19:54 | | 18:46 | 16:48 | 16:27 |
| 16 | 05:36 | | 06:22 | 19:18-19:56/38 | 07:12 | 18:45-19:06/21 | 08:02 | 07:57 | 08:38 |
| | 21:50 | | 21:00 | | 19:52 | | 18:43 | 16:47 | 16:27 |
| 17 | 05:38 | | 06:24 | 19:16-19:55/39 | 07:14 | 18:46-19:05/19 | 08:04 | 07:58 | 08:39 |
| | 21:48 | | 20:58 | | 19:49 | | 18:41 | 16:45 | 16:27 |
| 18 | 05:39 | | 06:25 | 19:13-19:52/39 | 07:15 | 18:45-19:03/18 | 08:05 | 08:00 | 08:40 |
| | 21:47 | | 20:56 | | 19:47 | | 18:39 | 16:44 | 16:27 |
| 19 | 05:40 | | 06:27 | 19:12-19:50/38 | 07:17 | 18:46-19:01/15 | 08:07 | 08:02 | 08:40 |
| | 21:46 | | 20:54 | | 19:45 | | 18:37 | 16:43 | 16:28 |
| 20 | 05:42 | | 06:29 | 19:10-19:41/31 | 07:19 | 18:48-19:00/12 | 08:09 | 08:04 | 08:41 |
| | 21:45 | | 20:52 | | 19:42 | | 18:35 | 16:42 | 16:28 |
| 21 | 05:43 | | 06:30 | 19:10-19:41/31 | 07:20 | 18:49-18:56/7 | 08:11 | 08:05 | 08:42 |
| | 21:44 | | 20:50 | | 19:40 | | 18:33 | 16:40 | 16:29 |
| 22 | 05:44 | | 06:32 | 19:08-19:41/33 | 07:22 | | 08:12 | 08:07 | 08:42 |
| | 21:43 | | 20:48 | | 19:38 | | 18:31 | 16:39 | 16:29 |
| 23 | 05:46 | | 06:33 | 19:08-19:41/33 | 07:24 | | 08:14 | 08:09 | 08:43 |
| | 21:41 | | 20:46 | | 19:35 | | 18:29 | 16:38 | 16:30 |
| 24 | 05:47 | 19:47-19:54/7 | 06:35 | 19:08-19:41/33 | 07:25 | | 08:16 | 08:10 | 08:43 |
| | 21:40 | | 20:44 | | 19:33 | | 18:27 | 16:37 | 16:30 |
| 25 | 05:48 | 19:44-19:56/12 | 06:37 | 19:07-19:39/32 | 07:27 | | 07:18 | 08:12 | 08:44 |
| | 21:39 | | 20:42 | | 19:31 | | 17:25 | 16:36 | 16:31 |
| 26 | 05:50 | 19:44-19:58/14 | 06:38 | 19:03-19:39/36 | 07:28 | | 07:19 | 08:13 | 08:44 |
| | 21:37 | | 20:39 | | 19:29 | | 17:23 | 16:35 | 16:31 |
| 27 | 05:51 | 19:42-19:59/17 | 06:40 | 19:00-19:37/37 | 07:30 | | 07:21 | 08:15 | 08:44 |
| | 21:36 | | 20:37 | | 19:26 | | 17:21 | 16:34 | 16:32 |
| 28 | 05:53 | 19:41-20:01/20 | 06:42 | 18:58-19:36/38 | 07:32 | | 07:23 | 08:16 | 08:44 |
| | 21:34 | | 20:35 | | 19:24 | | 17:19 | 16:33 | 16:33 |
| 29 | 05:54 | 19:40-20:01/21 | 06:43 | 18:56-19:34/38 | 07:33 | | 07:25 | 08:18 | 08:45 |
| | 21:33 | | 20:33 | | 19:22 | | 17:17 | 16:33 | 16:34 |
| 30 | 05:56 | 19:39-20:02/23 | 06:45 | 18:56-19:33/37 | 07:35 | | 07:27 | 08:19 | 08:45 |
| | 21:31 | | 20:31 | | 19:19 | | 17:15 | 16:32 | 16:35 |
| 31 | 05:57 | 19:39-20:03/24 | 06:46 | 18:54-19:31/37 | | | 07:28 | | 08:45 |
| | 21:30 | | 20:28 | | | | 17:13 | | 16:36 |
| Potential sun hours | 501 | | 453 | | 381 | | 332 | 267 | 244 |
| Sum of minutes with flicker | | 322 | | 999 | | 539 | 0 | 0 | 0 |

**Table layout: For each day in each month the following matrix apply**

| | | |
|---|---|---|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |
| | Sun set (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |

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10/09/2024 10:49/4.0.552

# SHADOW - Calendar per WTG

**Calculation:** 6460 Gortloughra WF cumulative WC **WTG:** 6 - T07

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | | May | | June | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:15 | | 06:10 | 06:51-07:22/31 | 05:25 | 06:32-06:35/3 |
| | 16:37 | 17:25 | 18:16 | 20:10 | | 21:00 | | 21:46 | |
| 2 | 08:45 | 08:17 | 07:23 | 07:12 | | 06:08 | 06:50-07:20/30 | 05:24 | |
| | 16:38 | 17:27 | 18:18 | 20:11 | | 21:02 | | 21:47 | |
| 3 | 08:44 | 08:15 | 07:21 | 07:10 | | 06:06 | 06:49-07:19/30 | 05:24 | |
| | 16:39 | 17:28 | 18:20 | 20:13 | | 21:04 | | 21:48 | |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | | 06:05 | 06:49-07:18/29 | 05:23 | |
| | 16:40 | 17:30 | 18:21 | 20:15 | | 21:05 | | 21:49 | |
| 5 | 08:44 | 08:12 | 07:16 | 07:06 | | 06:03 | 06:50-07:19/29 | 05:22 | |
| | 16:42 | 17:32 | 18:23 | 20:16 | | 21:07 | | 21:50 | |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | | 06:01 | 06:49-07:18/29 | 05:22 | |
| | 16:43 | 17:34 | 18:25 | 20:18 | | 21:09 | | 21:51 | |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | | 05:59 | 06:49-07:18/29 | 05:21 | |
| | 16:44 | 17:36 | 18:27 | 20:20 | | 21:10 | | 21:52 | |
| 8 | 08:43 | 08:07 | 07:10 | 06:59 | | 05:57 | 06:50-07:18/28 | 05:21 | |
| | 16:45 | 17:38 | 18:28 | 20:22 | | 21:12 | | 21:53 | |
| 9 | 08:42 | 08:05 | 07:07 | 06:57 | 19:23-19:27/4 | 05:56 | 06:28-06:36/8 | 05:20 | |
| | 16:47 | 17:39 | 18:30 | 20:23 | | 21:13 | 06:50-07:17/27 | 21:54 | |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 19:19-19:30/11 | 05:54 | 06:26-06:38/12 | 05:20 | |
| | 16:48 | 17:41 | 18:32 | 20:25 | | 21:15 | 06:50-07:16/26 | 21:54 | |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 19:17-19:32/15 | 05:52 | 06:25-06:40/15 | 05:19 | |
| | 16:50 | 17:43 | 18:34 | 20:27 | | 21:17 | 06:51-07:16/25 | 21:55 | |
| 12 | 08:41 | 07:59 | 07:01 | 06:50 | 19:16-19:33/17 | 05:51 | 06:24-06:40/16 | 05:19 | |
| | 16:51 | 17:45 | 18:35 | 20:28 | | 21:18 | 06:51-07:15/24 | 21:56 | |
| 13 | 08:40 | 07:57 | 06:58 | 06:48 | 19:14-19:37/23 | 05:49 | 06:23-06:41/18 | 05:19 | |
| | 16:52 | 17:47 | 18:37 | 20:30 | | 21:20 | 06:52-07:14/22 | 21:56 | |
| 14 | 08:39 | 07:56 | 06:56 | 06:45 | 19:14-19:39/25 | 05:47 | 06:22-06:41/19 | 05:18 | |
| | 16:54 | 17:49 | 18:39 | 20:32 | | 21:21 | 06:53-07:13/20 | 21:57 | |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 19:13-19:40/27 | 05:46 | 06:22-06:42/20 | 05:18 | |
| | 16:56 | 17:51 | 18:41 | 20:33 | | 21:23 | 06:54-07:12/18 | 21:58 | |
| 16 | 08:38 | 07:52 | 06:51 | 06:41 | 19:13-19:41/28 | 05:44 | 06:22-06:43/21 | 05:18 | |
| | 16:57 | 17:52 | 18:42 | 20:35 | | 21:24 | 06:56-07:11/15 | 21:58 | |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 19:13-19:41/28 | 05:43 | 06:21-06:42/21 | 05:18 | |
| | 16:59 | 17:54 | 18:44 | 20:37 | | 21:26 | 06:57-07:08/11 | 21:59 | |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 07:10-07:20/10 | 05:41 | 06:22-06:43/21 | 05:18 | |
| | 17:00 | 17:56 | 18:46 | 20:38 | 19:14-19:41/27 | 21:27 | 07:01-07:05/4 | 21:59 | |
| 19 | 08:35 | 07:46 | 06:45 | 06:35 | 07:08-07:22/14 | 05:40 | 06:22-06:43/21 | 05:18 | |
| | 17:02 | 17:58 | 18:48 | 20:40 | 19:14-19:41/27 | 21:29 | | 21:59 | |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 07:06-07:24/18 | 05:39 | 06:22-06:43/21 | 05:18 | |
| | 17:04 | 18:00 | 18:49 | 20:42 | 19:15-19:41/26 | 21:30 | | 22:00 | |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | 07:05-07:24/19 | 05:37 | 06:22-06:42/20 | 05:18 | |
| | 17:05 | 18:02 | 18:51 | 20:44 | 19:16-19:40/24 | 21:32 | | 22:00 | |
| 22 | 08:32 | 07:40 | 06:38 | 06:28 | 07:04-07:25/21 | 05:36 | 06:22-06:42/20 | 05:18 | |
| | 17:07 | 18:03 | 18:53 | 20:45 | 19:18-19:40/22 | 21:33 | | 22:00 | |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 07:03-07:25/22 | 05:35 | 06:23-06:42/19 | 05:19 | |
| | 17:09 | 18:05 | 18:54 | 20:47 | 19:24-19:38/14 | 21:34 | | 22:00 | |
| 24 | 08:29 | 07:36 | 06:33 | 06:24 | 07:00-07:25/25 | 05:34 | 06:23-06:42/19 | 05:19 | |
| | 17:10 | 18:07 | 18:56 | 20:49 | 19:25-19:37/12 | 21:36 | | 22:00 | |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 06:57-07:25/28 | 05:32 | 06:24-06:41/17 | 05:19 | |
| | 17:12 | 18:09 | 18:58 | 20:50 | 19:27-19:35/8 | 21:37 | | 22:00 | |
| 26 | 08:27 | 07:31 | 06:28 | 06:20 | 06:55-07:25/30 | 05:31 | 06:25-06:41/16 | 05:20 | |
| | 17:14 | 18:11 | 18:59 | 20:52 | | 21:38 | | 22:00 | |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 06:54-07:24/30 | 05:30 | 06:25-06:40/15 | 05:20 | |
| | 17:16 | 18:12 | 19:01 | 20:54 | | 21:40 | | 22:00 | |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 06:52-07:24/32 | 05:29 | 06:26-06:40/14 | 05:21 | |
| | 17:17 | 18:14 | 19:03 | 20:55 | | 21:41 | | 22:00 | |
| 29 | 08:22 | | 07:22 | 06:14 | 06:51-07:23/32 | 05:28 | 06:27-06:39/12 | 05:21 | |
| | 17:19 | | 20:05 | 20:57 | | 21:42 | | 22:00 | |
| 30 | 08:21 | | 07:19 | 06:12 | 06:50-07:22/32 | 05:27 | 06:28-06:38/10 | 05:22 | |
| | 17:21 | | 20:06 | 20:59 | | 21:43 | | 22:00 | |
| 31 | 08:20 | | 07:17 | | | 05:26 | 06:30-06:37/7 | | |
| | 17:23 | | 20:08 | | | 21:45 | | | |
| Potential sun hours | 260 | 278 | 367 | 416 | | 485 | | 498 | |
| Sum of minutes with flicker | 0 | 0 | 0 | 651 | | 809 | | 3 | |

**Table layout: For each day in each month the following matrix apply**

| | | |
|---|---|---|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |
| | Sun set (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |

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10/09/2024 10:49/4.0.552

# SHADOW - Calendar per WTG

**Calculation:** 6460 Gortloughra WF cumulative WC **WTG:** 6 - T07

## Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | July | | August | | September | | October | November | December |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 05:22 | | 05:59 | 06:34-06:50/16 | 06:48 | 19:16-19:31/15 | 07:37 | 07:30 | 08:21 |
| | 22:00 | | 21:28 | 07:01-07:26/25 | 20:26 | | 19:17 | 17:11 | 16:31 |
| 2 | 05:23 | | 06:00 | 06:36-06:50/14 | 06:50 | 19:17-19:28/11 | 07:38 | 07:32 | 08:22 |
| | 21:59 | | 21:26 | 07:01-07:27/26 | 20:24 | | 19:15 | 17:09 | 16:31 |
| 3 | 05:24 | | 06:02 | 06:37-06:48/11 | 06:51 | 19:21-19:25/4 | 07:40 | 07:34 | 08:24 |
| | 21:59 | | 21:25 | 07:00-07:27/27 | 20:22 | | 19:12 | 17:08 | 16:30 |
| 4 | 05:25 | | 06:03 | 06:40-06:46/6 | 06:53 | | 07:42 | 07:36 | 08:25 |
| | 21:58 | | 21:23 | 07:00-07:28/28 | 20:19 | | 19:10 | 17:06 | 16:29 |
| 5 | 05:25 | | 06:05 | 06:59-07:28/29 | 06:55 | | 07:43 | 07:37 | 08:26 |
| | 21:58 | | 21:21 | | 20:17 | | 19:08 | 17:04 | 16:29 |
| 6 | 05:26 | | 06:06 | 06:59-07:28/29 | 06:56 | | 07:45 | 07:39 | 08:28 |
| | 21:57 | | 21:19 | | 20:15 | | 19:06 | 17:02 | 16:29 |
| 7 | 05:27 | | 06:08 | 06:59-07:28/29 | 06:58 | | 07:47 | 07:41 | 08:29 |
| | 21:57 | | 21:18 | | 20:13 | | 19:03 | 17:01 | 16:28 |
| 8 | 05:28 | | 06:10 | 06:59-07:28/29 | 06:59 | | 07:48 | 07:43 | 08:30 |
| | 21:56 | | 21:16 | | 20:10 | | 19:01 | 16:59 | 16:28 |
| 9 | 05:29 | | 06:11 | 06:59-07:28/29 | 07:01 | | 07:50 | 07:45 | 08:31 |
| | 21:56 | | 21:14 | | 20:08 | | 18:59 | 16:57 | 16:28 |
| 10 | 05:30 | | 06:13 | 06:59-07:28/29 | 07:03 | | 07:52 | 07:46 | 08:32 |
| | 21:55 | | 21:12 | | 20:06 | | 18:57 | 16:56 | 16:27 |
| 11 | 05:31 | | 06:14 | 06:59-07:29/30 | 07:04 | | 07:54 | 07:48 | 08:34 |
| | 21:54 | | 21:10 | | 20:03 | | 18:54 | 16:54 | 16:27 |
| 12 | 05:32 | 06:38-06:44/6 | 06:16 | 06:59-07:31/32 | 07:06 | | 07:55 | 07:50 | 08:35 |
| | 21:53 | | 21:08 | | 20:01 | | 18:52 | 16:53 | 16:27 |
| 13 | 05:33 | 06:37-06:46/9 | 06:17 | 06:59-07:31/32 | 07:07 | | 07:57 | 07:52 | 08:36 |
| | 21:52 | | 21:06 | | 19:59 | | 18:50 | 16:51 | 16:27 |
| 14 | 05:34 | 06:36-06:47/11 | 06:19 | 07:00-07:32/32 | 07:09 | | 07:59 | 07:53 | 08:36 |
| | 21:52 | | 21:04 | | 19:57 | | 18:48 | 16:50 | 16:27 |
| 15 | 05:35 | 06:36-06:49/13 | 06:21 | 07:00-07:32/32 | 07:11 | | 08:00 | 07:55 | 08:37 |
| | 21:51 | | 21:02 | | 19:54 | | 18:46 | 16:48 | 16:27 |
| 16 | 05:37 | 06:35-06:50/15 | 06:22 | 07:02-07:32/30 | 07:12 | | 08:02 | 07:57 | 08:38 |
| | 21:50 | | 21:00 | | 19:52 | | 18:44 | 16:47 | 16:27 |
| 17 | 05:38 | 06:34-06:50/16 | 06:24 | 07:02-07:32/30 | 07:14 | | 08:04 | 07:59 | 08:39 |
| | 21:48 | | 20:58 | | 19:50 | | 18:41 | 16:46 | 16:27 |
| 18 | 05:39 | 06:34-06:51/17 | 06:26 | 07:04-07:32/28 | 07:16 | | 08:06 | 08:00 | 08:40 |
| | 21:47 | | 20:56 | 19:32-19:41/9 | 19:47 | | 18:39 | 16:44 | 16:28 |
| 19 | 05:40 | 06:33-06:51/18 | 06:27 | 07:06-07:31/25 | 07:17 | | 08:07 | 08:02 | 08:40 |
| | 21:46 | | 20:54 | 19:30-19:43/13 | 19:45 | | 18:37 | 16:43 | 16:28 |
| 20 | 05:42 | 06:33-06:51/18 | 06:29 | 07:09-07:31/22 | 07:19 | | 08:09 | 08:04 | 08:41 |
| | 21:45 | | 20:52 | 19:28-19:43/15 | 19:43 | | 18:35 | 16:42 | 16:28 |
| 21 | 05:43 | 06:33-06:53/20 | 06:30 | 07:09-07:29/20 | 07:20 | | 08:11 | 08:05 | 08:42 |
| | 21:44 | | 20:50 | 19:23-19:44/21 | 19:40 | | 18:33 | 16:41 | 16:29 |
| 22 | 05:44 | 06:33-06:53/20 | 06:32 | 07:10-07:29/19 | 07:22 | | 08:12 | 08:07 | 08:42 |
| | 21:43 | | 20:48 | 19:21-19:45/24 | 19:38 | | 18:31 | 16:39 | 16:29 |
| 23 | 05:46 | 06:32-06:53/21 | 06:34 | 07:10-07:27/17 | 07:24 | | 08:14 | 08:09 | 08:43 |
| | 21:41 | | 20:46 | 19:19-19:45/26 | 19:36 | | 18:29 | 16:38 | 16:30 |
| 24 | 05:47 | 06:32-06:53/21 | 06:35 | 07:12-07:26/14 | 07:25 | | 08:16 | 08:10 | 08:43 |
| | 21:40 | | 20:44 | 19:18-19:45/27 | 19:33 | | 18:27 | 16:37 | 16:30 |
| 25 | 05:48 | 06:32-06:53/21 | 06:37 | 07:13-07:23/10 | 07:27 | | 07:18 | 08:12 | 08:44 |
| | 21:39 | | 20:42 | 19:16-19:44/28 | 19:31 | | 17:25 | 16:36 | 16:31 |
| 26 | 05:50 | 06:32-06:53/21 | 06:38 | 19:16-19:44/28 | 07:29 | | 07:20 | 08:13 | 08:44 |
| | 21:37 | 07:10-07:18/8 | 20:39 | | 19:29 | | 17:23 | 16:35 | 16:32 |
| 27 | 05:51 | 06:32-06:53/21 | 06:40 | 19:15-19:43/28 | 07:30 | | 07:21 | 08:15 | 08:44 |
| | 21:36 | 07:07-07:20/13 | 20:37 | | 19:26 | | 17:21 | 16:34 | 16:32 |
| 28 | 05:53 | 06:33-06:53/20 | 06:42 | 19:15-19:42/27 | 07:32 | | 07:23 | 08:16 | 08:44 |
| | 21:34 | 07:06-07:22/16 | 20:35 | | 19:24 | | 17:19 | 16:34 | 16:33 |
| 29 | 05:54 | 06:33-06:52/19 | 06:43 | 19:15-19:40/25 | 07:33 | | 07:25 | 08:18 | 08:45 |
| | 21:33 | 07:04-07:23/19 | 20:33 | | 19:22 | | 17:17 | 16:33 | 16:34 |
| 30 | 05:56 | 06:34-06:52/18 | 06:45 | 19:15-19:38/23 | 07:35 | | 07:27 | 08:19 | 08:45 |
| | 21:31 | 07:04-07:25/21 | 20:31 | | 19:19 | | 17:15 | 16:32 | 16:35 |
| 31 | 05:57 | 06:34-06:51/17 | 06:47 | 19:15-19:32/17 | | | 07:28 | | 08:45 |
| | 21:30 | 07:02-07:25/23 | 20:28 | | | | 17:13 | | 16:36 |
| Potential sun hours | 501 | | 453 | | 381 | | 332 | 267 | 244 |
| Sum of minutes with flicker | | 442 | | 1011 | | 30 | 0 | 0 | 0 |

**Table layout: For each day in each month the following matrix apply**

| | | |
|---|---|---|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |
| | Sun set (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |

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Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar per WTG

**Calculation:** 6460 Gortloughra WF cumulative WC **WTG:** 7 - T08

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | | March | | April | | May | | June | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | | 07:25 | 16:49-17:17/28 | 07:15 | | 06:10 | 19:01-19:19/18 | 05:25 | 19:23-19:32/9 |
| | 16:37 | 17:25 | | 18:16 | | 20:10 | | 21:00 | | 21:46 | |
| 2 | 08:45 | 08:16 | | 07:23 | 16:49-17:20/31 | 07:12 | | 06:08 | 19:01-19:21/20 | 05:24 | 19:25-19:30/5 |
| | 16:38 | 17:27 | | 18:18 | | 20:11 | | 21:02 | | 21:47 | |
| 3 | 08:44 | 08:15 | | 07:21 | 16:49-17:21/32 | 07:10 | | 06:06 | 19:24-19:27/3 | 05:24 | |
| | 16:39 | 17:28 | | 18:20 | | 20:13 | | 21:04 | 18:59-19:22/23 | 21:48 | |
| 4 | 08:44 | 08:13 | | 07:18 | 16:49-17:22/33 | 07:08 | | 06:05 | 18:58-19:31/33 | 05:23 | |
| | 16:40 | 17:30 | | 18:21 | | 20:15 | | 21:05 | | 21:49 | |
| 5 | 08:44 | 08:12 | | 07:16 | 16:49-17:23/34 | 07:06 | | 06:03 | 18:57-19:32/35 | 05:22 | |
| | 16:42 | 17:32 | | 18:23 | | 20:16 | | 21:07 | | 21:50 | |
| 6 | 08:44 | 08:10 | | 07:14 | 16:50-17:24/34 | 07:03 | | 06:01 | 18:57-19:35/38 | 05:22 | |
| | 16:43 | 17:34 | | 18:25 | | 20:18 | | 21:08 | | 21:51 | |
| 7 | 08:43 | 08:08 | | 07:12 | 16:51-17:25/34 | 07:01 | | 05:59 | 18:56-19:35/39 | 05:21 | |
| | 16:44 | 17:36 | | 18:27 | | 20:20 | | 21:10 | | 21:52 | |
| 8 | 08:43 | 08:07 | | 07:10 | 16:52-17:26/34 | 06:59 | | 05:57 | 18:55-19:36/41 | 05:21 | |
| | 16:45 | 17:38 | | 18:28 | | 20:21 | | 21:12 | | 21:53 | |
| 9 | 08:42 | 08:05 | | 07:07 | 16:53-17:27/34 | 06:56 | | 05:56 | 18:55-19:37/42 | 05:20 | |
| | 16:47 | 17:39 | | 18:30 | | 20:23 | | 21:13 | | 21:53 | |
| 10 | 08:42 | 08:03 | | 07:05 | 16:58-17:28/30 | 06:54 | | 05:54 | 18:55-19:37/42 | 05:20 | |
| | 16:48 | 17:41 | | 18:32 | | 20:25 | | 21:15 | | 21:54 | |
| 11 | 08:41 | 08:01 | | 07:03 | 17:02-17:29/27 | 06:52 | | 05:52 | 18:55-19:38/43 | 05:19 | |
| | 16:50 | 17:43 | | 18:34 | | 20:27 | | 21:17 | | 21:55 | |
| 12 | 08:41 | 07:59 | | 07:01 | 17:04-17:29/25 | 06:50 | 19:00-19:08/8 | 05:51 | 18:55-19:38/43 | 05:19 | |
| | 16:51 | 17:45 | | 18:35 | | 20:28 | | 21:18 | | 21:56 | |
| 13 | 08:40 | 07:57 | | 06:58 | 17:04-17:30/26 | 06:48 | 18:56-19:10/14 | 05:49 | 18:55-19:39/44 | 05:19 | |
| | 16:52 | 17:47 | | 18:37 | | 20:30 | | 21:20 | | 21:56 | |
| 14 | 08:39 | 07:56 | | 06:56 | 17:05-17:31/26 | 06:45 | 18:54-19:12/18 | 05:47 | 18:55-19:38/43 | 05:18 | |
| | 16:54 | 17:49 | | 18:39 | | 20:32 | | 21:21 | | 21:57 | |
| 15 | 08:38 | 07:54 | | 06:54 | 17:06-17:31/25 | 06:43 | 18:53-19:13/20 | 05:46 | 18:56-19:39/43 | 05:18 | |
| | 16:55 | 17:51 | | 18:41 | | 20:33 | | 21:23 | | 21:58 | |
| 16 | 08:38 | 07:52 | | 06:51 | 17:08-17:31/23 | 06:41 | 18:52-19:14/22 | 05:44 | 18:56-19:38/42 | 05:18 | |
| | 16:57 | 17:52 | | 18:42 | | 20:35 | | 21:24 | | 21:58 | |
| 17 | 08:37 | 07:50 | | 06:49 | 17:10-17:32/22 | 06:39 | 18:51-19:14/23 | 05:43 | 18:56-19:39/43 | 05:18 | |
| | 16:59 | 17:54 | | 18:44 | | 20:37 | 07:13-07:23/10 | 21:26 | | 21:58 | |
| 18 | 08:36 | 07:48 | | 06:47 | 17:09-17:31/22 | 06:37 | 18:50-19:15/25 | 05:41 | 18:57-19:39/42 | 05:18 | |
| | 17:00 | 17:56 | | 18:46 | | 20:38 | 07:11-07:25/14 | 21:27 | | 21:59 | |
| 19 | 08:35 | 07:46 | | 06:45 | 17:09-17:31/22 | 06:35 | 18:50-19:15/25 | 05:40 | 18:58-19:39/41 | 05:18 | |
| | 17:02 | 17:58 | | 18:48 | | 20:40 | 07:10-07:26/16 | 21:29 | | 21:59 | |
| 20 | 08:34 | 07:44 | | 06:42 | 17:10-17:30/20 | 06:32 | 18:49-19:15/26 | 05:39 | 18:58-19:38/40 | 05:18 | |
| | 17:04 | 18:00 | | 18:49 | | 20:42 | 07:09-07:26/17 | 21:30 | | 22:00 | |
| 21 | 08:33 | 07:42 | | 06:40 | 17:10-17:30/20 | 06:30 | 18:49-19:15/26 | 05:37 | 18:59-19:38/39 | 05:18 | |
| | 17:05 | 18:02 | | 18:51 | | 20:43 | 07:08-07:27/19 | 21:32 | | 22:00 | |
| 22 | 08:31 | 07:40 | | 06:38 | 17:11-17:28/17 | 06:28 | 18:49-19:15/26 | 05:36 | 19:00-19:38/38 | 05:18 | |
| | 17:07 | 18:03 | | 18:53 | | 20:45 | 07:08-07:27/19 | 21:33 | | 22:00 | |
| 23 | 08:30 | 07:38 | | 06:35 | 17:12-17:26/14 | 06:26 | 18:50-19:14/24 | 05:35 | 19:01-19:38/37 | 05:19 | |
| | 17:09 | 18:05 | | 18:54 | | 20:47 | 07:07-07:27/20 | 21:34 | | 22:00 | |
| 24 | 08:29 | 07:36 | 16:57-17:05/8 | 06:33 | 17:15-17:23/8 | 06:24 | 18:50-19:13/23 | 05:33 | 19:02-19:37/35 | 05:19 | |
| | 17:10 | 18:07 | | 18:56 | | 20:49 | 07:07-07:26/19 | 21:36 | | 22:00 | |
| 25 | 08:28 | 07:33 | 16:54-17:08/14 | 06:31 | | 06:22 | 18:50-19:13/23 | 05:32 | 19:03-19:37/34 | 05:19 | |
| | 17:12 | 18:09 | | 18:58 | | 20:50 | 07:07-07:26/19 | 21:37 | | 22:00 | |
| 26 | 08:27 | 07:31 | 16:53-17:10/17 | 06:28 | | 06:20 | 18:51-19:11/20 | 05:31 | 19:04-19:36/32 | 05:20 | |
| | 17:14 | 18:11 | | 18:59 | | 20:52 | 07:08-07:25/17 | 21:38 | | 22:00 | |
| 27 | 08:25 | 07:29 | 16:52-17:14/22 | 06:26 | | 06:18 | 18:52-19:10/18 | 05:30 | 19:06-19:36/30 | 05:20 | |
| | 17:16 | 18:12 | | 19:01 | | 20:54 | 07:08-07:24/16 | 21:40 | | 22:00 | |
| 28 | 08:24 | 07:27 | 16:51-17:16/25 | 06:24 | | 06:16 | 18:53-19:08/15 | 05:29 | 19:17-19:35/18 | 05:21 | |
| | 17:17 | 18:14 | | 19:03 | | 20:55 | 07:09-07:23/14 | 21:41 | 19:08-19:16/8 | 22:00 | |
| 29 | 08:22 | | | 07:22 | | 06:14 | 18:55-19:06/11 | 19:08-19:13/5 | 05:28 | 19:18-19:34/16 | 05:21 |
| | 17:19 | | | 20:05 | | 20:57 | 07:10-07:21/11 | | 21:42 | | 22:00 |
| 30 | 08:21 | | | 07:19 | | 06:12 | 07:13-07:18/5 | | 05:27 | 19:19-19:33/14 | 05:22 |
| | 17:21 | | | 20:06 | | 20:59 | 19:04-19:17/13 | | 21:43 | | 22:00 |
| 31 | 08:20 | | | 07:17 | | | | | 05:26 | 19:20-19:32/12 | |
| | 17:23 | | | 20:08 | | | | | 21:45 | | |
| Potential sun hours | 260 | 278 | | 367 | | 416 | | 485 | | 498 | |
| Sum of minutes with flicker | 0 | 86 | | 621 | | 601 | | 1071 | | 14 | |

**Table layout: For each day in each month the following matrix apply**

| | | |
|---|---|---|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |
| | Sun set (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |

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Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar per WTG

**Calculation:** 6460 Gortloughra WF cumulative WC **WTG:** 7 - T08

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | July | August | September | October | November | December |
|---|---|---|---|---|---|---|
| 1 | 05:22<br>22:00 | 05:59 19:05-19:48/43<br>21:28 | 06:48<br>20:26 | 07:37 17:44-18:09/25<br>19:17 | 07:30<br>17:11 | 08:21<br>16:31 |
| 2 | 05:23<br>21:59 | 06:00 19:06-19:48/42<br>21:26 | 06:50<br>20:24 | 07:38 17:42-18:07/25<br>19:15 | 07:32<br>17:09 | 08:22<br>16:31 |
| 3 | 05:24<br>21:59 | 06:02 19:05-19:47/42<br>21:25 | 06:51<br>20:22 | 07:40 17:38-18:07/29<br>19:12 | 07:34<br>17:08 | 08:24<br>16:30 |
| 4 | 05:25<br>21:58 | 06:03 19:06-19:47/41<br>21:23 | 06:53<br>20:19 | 07:42 17:33-18:06/33<br>19:10 | 07:36<br>17:06 | 08:25<br>16:29 |
| 5 | 05:25<br>21:58 | 06:05 19:06-19:46/40<br>21:21 | 06:55<br>20:17 | 07:43 17:29-18:03/34<br>19:08 | 07:37<br>17:04 | 08:26<br>16:29 |
| 6 | 05:26<br>21:57 | 06:06 19:05-19:44/39<br>21:19 | 06:56<br>20:15 | 07:45 17:27-18:02/35<br>19:06 | 07:39<br>17:02 | 08:28<br>16:28 |
| 7 | 05:27<br>21:57 | 06:08 19:06-19:44/38<br>21:18 | 06:58<br>20:13 | 07:47 17:26-18:01/35<br>19:03 | 07:41<br>17:01 | 08:29<br>16:28 |
| 8 | 05:28<br>21:56 | 06:10 19:06-19:41/35<br>21:16 | 06:59<br>20:10 | 07:48 17:25-18:00/35<br>19:01 | 07:43<br>16:59 | 08:30<br>16:28 |
| 9 | 05:29<br>21:56 | 06:11 19:08-19:39/31<br>21:14 | 07:01<br>20:08 | 07:50 17:24-17:56/32<br>18:59 | 07:44<br>16:57 | 08:31<br>16:27 |
| 10 | 05:30<br>21:55 | 06:13 19:08-19:30/22<br>21:12 | 07:03<br>20:06 | 07:52 17:23-17:56/33<br>18:57 | 07:46<br>16:56 | 08:32<br>16:27 |
| 11 | 05:31 19:31-19:38/7<br>21:54 | 06:14 19:10-19:29/19<br>21:10 | 07:04<br>20:03 | 07:53 17:23-17:55/32<br>18:54 | 07:48<br>16:54 | 08:33<br>16:27 |
| 12 | 05:32 19:29-19:40/11<br>21:53 | 06:16 19:10-19:27/17<br>21:08 | 07:06<br>20:01 | 07:55 17:23-17:53/30<br>18:52 | 07:50<br>16:53 | 08:35<br>16:27 |
| 13 | 05:33 19:28-19:41/13<br>21:52 | 06:17 19:06-19:12/6 19:13-19:25/12<br>21:06 07:20-07:27/7 | 07:07<br>19:59 | 07:57 17:23-17:49/26<br>18:50 | 07:52<br>16:51 | 08:36<br>16:27 |
| 14 | 05:34 19:27-19:42/15<br>21:51 | 06:19 19:02-19:14/12<br>21:04 07:18-07:30/12 | 07:09<br>19:56 | 07:59 17:23-17:47/24<br>18:48 | 07:53<br>16:50 | 08:36<br>16:27 |
| 15 | 05:35 19:26-19:43/17<br>21:51 19:18-19:23/5 | 06:21 19:01-19:16/15<br>21:02 07:16-07:31/15 | 07:11<br>19:54 | 08:00 17:24-17:45/21<br>18:46 | 07:55<br>16:48 | 08:37<br>16:27 |
| 16 | 05:37 19:15-19:44/29<br>21:50 | 06:22 18:58-19:17/19<br>21:00 07:16-07:32/16 | 07:12<br>19:52 | 08:02 17:25-17:41/16<br>18:43 | 07:57<br>16:47 | 08:38<br>16:27 |
| 17 | 05:38 19:15-19:46/31<br>21:48 | 06:24 18:58-19:18/20<br>20:58 07:14-07:32/18 | 07:14<br>19:50 | 08:04 17:27-17:40/13<br>18:41 | 07:58<br>16:46 | 08:39<br>16:27 |
| 18 | 05:39 19:13-19:46/33<br>21:47 | 06:25 18:56-19:18/22<br>20:56 07:14-07:33/19 | 07:16<br>19:47 | 08:05 17:29-17:35/6<br>18:39 | 08:00<br>16:44 | 08:40<br>16:28 |
| 19 | 05:40 19:12-19:47/35<br>21:46 | 06:27 18:55-19:19/24<br>20:54 07:13-07:32/19 | 07:17 18:03-18:09/6<br>19:45 | 08:07<br>18:37 | 08:02<br>16:43 | 08:40<br>16:28 |
| 20 | 05:42 19:11-19:47/36<br>21:45 | 06:29 18:54-19:19/25<br>20:52 07:13-07:32/19 | 07:19 17:59-18:12/13<br>19:43 | 08:09<br>18:35 | 08:04<br>16:42 | 08:41<br>16:28 |
| 21 | 05:43 19:10-19:47/37<br>21:44 | 06:30 18:54-19:19/25<br>20:50 07:12-07:32/20 | 07:20 17:57-18:13/16<br>19:40 | 08:11<br>18:33 | 08:05<br>16:41 | 08:42<br>16:29 |
| 22 | 05:44 19:10-19:48/38<br>21:43 | 06:32 18:54-19:20/26<br>20:48 07:13-07:31/18 | 07:22 17:55-18:14/19<br>19:38 | 08:12<br>18:31 | 08:07<br>16:39 | 08:42<br>16:29 |
| 23 | 05:46 19:09-19:49/40<br>21:41 | 06:34 18:53-19:19/26<br>20:46 07:13-07:30/17 | 07:24 17:53-18:14/21<br>19:36 | 08:14<br>18:29 | 08:09<br>16:38 | 08:43<br>16:30 |
| 24 | 05:47 19:08-19:49/41<br>21:40 | 06:35 18:54-19:19/25<br>20:44 07:14-07:29/15 | 07:25 17:53-18:14/21<br>19:33 | 08:16<br>18:27 | 08:10<br>16:37 | 08:43<br>16:30 |
| 25 | 05:48 19:08-19:49/41<br>21:39 | 06:37 18:53-19:18/25<br>20:42 07:14-07:27/13 | 07:27 17:53-18:14/21<br>19:31 | 07:18<br>17:25 | 08:12<br>16:36 | 08:44<br>16:31 |
| 26 | 05:50 19:07-19:49/42<br>21:37 | 06:38 18:54-19:17/23<br>20:39 07:17-07:26/9 | 07:29 17:51-18:13/22<br>19:29 | 07:20<br>17:23 | 08:13<br>16:35 | 08:44<br>16:32 |
| 27 | 05:51 19:06-19:49/43<br>21:36 | 06:40 18:54-19:16/22<br>20:37 | 07:30 17:51-18:13/22<br>19:26 | 07:21<br>17:21 | 08:15<br>16:34 | 08:44<br>16:32 |
| 28 | 05:53 19:07-19:50/43<br>21:34 | 06:42 18:55-19:15/20<br>20:35 | 07:32 17:48-18:13/25<br>19:24 | 07:23<br>17:19 | 08:16<br>16:34 | 08:44<br>16:33 |
| 29 | 05:54 19:06-19:49/43<br>21:33 | 06:43 18:55-19:13/18<br>20:33 | 07:33 17:46-18:11/25<br>19:22 | 07:25<br>17:17 | 08:18<br>16:33 | 08:45<br>16:34 |
| 30 | 05:56 19:05-19:49/44<br>21:31 | 06:45 18:57-19:11/14<br>20:31 | 07:35 17:44-18:10/26<br>19:19 | 07:27<br>17:15 | 08:19<br>16:32 | 08:45<br>16:35 |
| 31 | 05:57 19:06-19:49/43<br>21:30 | 06:46 18:59-19:07/8<br>20:28 | | 07:28<br>17:13 | | 08:45<br>16:36 |
| Potential sun hours | 501 | 453 | 381 | 332 | 267 | 244 |
| Sum of minutes with flicker | 687 | 1013 | 237 | 484 | 0 | 0 |

**Table layout: For each day in each month the following matrix apply**

| | | |
|---|---|---|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |
| | Sun set (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |

Licensed user:
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Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar per WTG

**Calculation:** 6460 Gortloughra WF cumulative WC **WTG:** 8 - T09

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | | March | | April | | May | | June | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | | 07:25 | 17:20-17:28/8 | 07:15 | 18:14-18:48/34 | 06:10 | | 05:25 | 19:41-20:02/21 |
| | 16:37 | 17:25 | | 18:16 | | 20:10 | | 21:00 | | 21:46 | 20:08-20:29/21 |
| 2 | 08:45 | 08:16 | | 07:23 | 17:18-17:30/12 | 07:12 | 18:16-18:49/33 | 06:08 | | 05:24 | 19:40-20:03/23 |
| | 16:38 | 17:26 | | 18:18 | | 20:11 | | 21:02 | | 21:47 | 20:08-20:29/21 |
| 3 | 08:44 | 08:15 | | 07:21 | 17:16-17:32/16 | 07:10 | 18:17-18:49/32 | 06:06 | | 05:24 | 19:39-20:03/24 |
| | 16:39 | 17:28 | | 18:20 | | 20:13 | | 21:04 | | 21:48 | 20:08-20:29/21 |
| 4 | 08:44 | 08:13 | | 07:18 | 17:16-17:33/17 | 07:08 | 18:17-18:49/32 | 06:04 | | 05:23 | 19:39-20:05/26 |
| | 16:40 | 17:30 | | 18:21 | | 20:15 | | 21:05 | | 21:49 | 20:09-20:29/20 |
| 5 | 08:44 | 08:12 | | 07:16 | 17:14-17:32/18 | 07:05 | 18:17-18:49/32 | 06:03 | | 05:22 | 19:38-20:05/27 |
| | 16:42 | 17:32 | | 18:23 | 17:01-17:12/11 | 20:16 | | 21:07 | | 21:50 | 20:09-20:29/20 |
| 6 | 08:44 | 08:10 | | 07:14 | 16:57-17:33/36 | 07:03 | 18:16-18:49/33 | 06:01 | | 05:22 | 19:38-20:06/28 |
| | 16:43 | 17:34 | | 18:25 | | 20:18 | | 21:08 | | 21:51 | 20:10-20:29/19 |
| 7 | 08:43 | 08:08 | | 07:12 | 16:55-17:34/39 | 07:01 | 18:17-18:49/32 | 05:59 | | 05:21 | 19:38-20:06/28 |
| | 16:44 | 17:36 | | 18:27 | | 20:20 | | 21:10 | | 21:52 | 20:10-20:29/19 |
| 8 | 08:43 | 08:07 | | 07:09 | 16:54-17:34/40 | 06:59 | 18:16-18:47/31 | 05:57 | | 05:20 | 19:38-20:07/29 |
| | 16:45 | 17:38 | | 18:28 | | 20:21 | | 21:12 | | 21:53 | 20:10-20:29/19 |
| 9 | 08:42 | 08:05 | | 07:07 | 16:52-17:36/44 | 06:56 | 18:16-18:47/31 | 05:56 | | 05:20 | 19:37-20:07/30 |
| | 16:47 | 17:39 | | 18:30 | | 20:23 | | 21:13 | | 21:53 | 20:10-20:28/18 |
| 10 | 08:42 | 08:03 | | 07:05 | 16:51-17:36/45 | 06:54 | 18:17-18:46/29 | 05:54 | | 05:20 | 19:37-20:08/31 |
| | 16:48 | 17:41 | | 18:32 | | 20:25 | | 21:15 | | 21:54 | 20:11-20:29/18 |
| 11 | 08:41 | 08:01 | | 07:03 | 16:50-17:37/47 | 06:52 | 18:18-18:46/28 | 05:52 | | 05:19 | 19:38-20:08/30 |
| | 16:49 | 17:43 | | 18:34 | | 20:27 | | 21:17 | | 21:55 | 20:12-20:29/17 |
| 12 | 08:41 | 07:59 | | 07:00 | 16:48-17:36/48 | 06:50 | 18:19-18:45/26 | 05:51 | | 05:19 | 19:38-20:09/31 |
| | 16:51 | 17:45 | | 18:35 | | 20:28 | | 21:18 | | 21:56 | 20:12-20:29/17 |
| 13 | 08:40 | 07:57 | | 06:58 | 16:48-17:43/55 | 06:48 | 18:19-18:42/23 | 05:49 | | 05:19 | 19:37-20:09/32 |
| | 16:52 | 17:47 | | 18:37 | | 20:30 | | 21:20 | | 21:56 | 20:12-20:28/16 |
| 14 | 08:39 | 07:56 | | 06:56 | 16:48-17:46/58 | 06:45 | 18:20-18:41/21 | 05:47 | | 05:18 | 19:37-20:09/32 |
| | 16:54 | 17:49 | | 18:39 | | 20:32 | | 21:21 | | 21:57 | 20:13-20:28/15 |
| 15 | 08:38 | 07:54 | | 06:54 | 16:47-17:46/59 | 06:43 | 18:22-18:39/17 | 05:46 | | 05:18 | 19:37-20:10/33 |
| | 16:55 | 17:50 | | 18:41 | | 20:33 | | 21:23 | | 21:58 | 20:13-20:29/16 |
| 16 | 08:38 | 07:52 | 17:02-17:12/10 | 06:51 | 16:47-17:47/60 | 06:41 | 18:25-18:35/10 | 05:44 | 20:12-20:21/9 | 05:18 | 19:38-20:10/32 |
| | 16:57 | 17:52 | | 18:42 | | 20:35 | | 21:24 | | 21:58 | 20:14-20:29/15 |
| 17 | 08:37 | 07:50 | 17:01-17:14/13 | 06:49 | 16:47-17:48/61 | 06:39 | | 05:43 | 20:11-20:23/12 | 05:18 | 19:38-20:10/32 |
| | 16:59 | 17:54 | | 18:44 | | 20:37 | | 21:26 | | 21:58 | 20:14-20:29/15 |
| 18 | 08:36 | 07:48 | 16:59-17:15/16 | 06:47 | 16:47-17:47/60 | 06:37 | | 05:41 | 20:10-20:24/14 | 05:18 | 19:38-20:11/33 |
| | 17:00 | 17:56 | | 18:46 | | 20:38 | | 21:27 | | 21:59 | 20:14-20:29/15 |
| 19 | 08:35 | 07:46 | 16:59-17:16/17 | 06:44 | 16:47-17:47/60 | 06:35 | | 05:40 | 20:09-20:26/17 | 05:18 | 19:38-20:11/33 |
| | 17:02 | 17:58 | | 18:47 | | 20:40 | | 21:29 | | 21:59 | 20:15-20:29/14 |
| 20 | 08:34 | 07:44 | 16:58-17:16/18 | 06:42 | 16:48-17:47/59 | 06:32 | | 05:39 | 20:08-20:26/18 | 05:18 | 19:38-20:11/33 |
| | 17:04 | 18:00 | | 18:49 | | 20:42 | | 21:30 | | 22:00 | 20:15-20:29/14 |
| 21 | 08:33 | 07:42 | 16:58-17:16/18 | 06:40 | 16:49-17:46/57 | 06:30 | | 05:37 | 20:07-20:26/19 | 05:18 | 19:39-20:12/33 |
| | 17:05 | 18:02 | | 18:51 | | 20:43 | | 21:32 | | 22:00 | 20:16-20:30/14 |
| 22 | 08:31 | 07:40 | 16:58-17:17/19 | 06:38 | 16:50-17:45/55 | 06:28 | | 05:36 | 20:07-20:27/20 | 05:18 | 19:39-20:12/33 |
| | 17:07 | 18:03 | | 18:53 | | 20:45 | | 21:33 | | 22:00 | 20:16-20:30/14 |
| 23 | 08:30 | 07:38 | 16:57-17:15/18 | 06:35 | 16:51-17:44/53 | 06:26 | | 05:35 | 20:07-20:28/21 | 05:19 | 19:39-20:12/33 |
| | 17:09 | 18:05 | | 18:54 | | 20:47 | | 21:34 | | 22:00 | 20:16-20:30/14 |
| 24 | 08:29 | 07:36 | 16:58-17:15/17 | 06:33 | 16:53-17:43/50 | 06:24 | | 05:33 | 20:07-20:28/21 | 05:19 | 19:39-20:12/33 |
| | 17:10 | 18:07 | | 18:56 | | 20:48 | | 21:36 | | 22:00 | 20:15-20:30/15 |
| 25 | 08:28 | 07:33 | 16:59-17:14/15 | 06:31 | 16:55-17:43/48 | 06:22 | | 05:32 | 20:07-20:28/21 | 05:19 | 19:40-20:12/32 |
| | 17:12 | 18:09 | | 18:58 | | 20:50 | | 21:37 | | 22:00 | 20:16-20:31/15 |
| 26 | 08:27 | 07:31 | 17:00-17:13/13 | 06:28 | 17:06-17:44/38 | 06:20 | | 05:31 | 20:07-20:29/22 | 05:20 | 19:40-20:12/32 |
| | 17:14 | 18:11 | | 18:59 | | 20:52 | | 21:38 | | 22:00 | 20:16-20:31/15 |
| 27 | 08:25 | 07:29 | 17:02-17:11/9 | 06:26 | 17:09-17:44/35 | 06:18 | | 05:30 | 20:07-20:29/22 | 05:20 | 19:40-20:13/33 |
| | 17:16 | 18:12 | | 19:01 | | 20:54 | | 21:40 | | 22:00 | 20:16-20:32/16 |
| 28 | 08:24 | 07:27 | | 06:24 | 17:09-17:43/34 | 06:16 | | 05:29 | 19:45-19:56/11 | 05:21 | 19:40-20:12/32 |
| | 17:17 | 18:14 | | 19:03 | | 20:55 | | 21:41 | 20:07-20:29/22 | 22:00 | 20:16-20:31/15 |
| 29 | 08:22 | | | 07:21 | 18:09-18:45/36 | 06:14 | | 05:28 | 19:43-19:58/15 | 05:21 | 19:41-20:13/32 |
| | 17:19 | | | 20:05 | | 20:57 | | 21:42 | 20:07-20:29/22 | 22:00 | 20:16-20:32/16 |
| 30 | 08:21 | | | 07:19 | 18:11-18:47/36 | 06:12 | | 05:27 | 19:42-19:59/17 | 05:22 | 19:41-20:12/31 |
| | 17:21 | | | 20:06 | | 20:59 | | 21:43 | 20:07-20:29/22 | 22:00 | 20:16-20:32/16 |
| 31 | 08:20 | | | 07:17 | 18:11-18:47/36 | | | 05:26 | 19:41-20:00/19 | | |
| | 17:23 | | | 20:08 | | | | 21:45 | 20:07-20:29/22 | | |
| Potential sun hours | 260 | 278 | | 367 | | 416 | | 485 | | 498 | |
| Sum of minutes with flicker | 0 | 183 | | 1331 | | 444 | | 366 | | 1412 | |

**Table layout: For each day in each month the following matrix apply**

| | | |
|---|---|---|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |
| | Sun set (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |

Licensed user:
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kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar per WTG

**Calculation:** 6460 Gortloughra WF cumulative WC **WTG:** 8 - T09

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | July | | August | | September | | October | | November | December |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 05:22 | 19:42-20:13/31 | 05:59 | | 06:48 | 18:17-18:45/28 | 07:37 | 18:17-18:20/3 | 07:30 | 08:21 |
| | 22:00 | 20:16-20:33/17 | 21:28 | | 20:26 | | 19:17 | 17:28-18:16/48 | 17:11 | 16:31 |
| 2 | 05:23 | 19:42-20:13/31 | 06:00 | | 06:50 | 18:15-18:44/29 | 07:38 | 17:28-18:15/47 | 07:32 | 08:22 |
| | 21:59 | 20:15-20:33/18 | 21:26 | | 20:24 | | 19:15 | | 17:09 | 16:31 |
| 3 | 05:24 | 19:42-20:12/30 | 06:02 | | 06:51 | 18:14-18:45/31 | 07:40 | 17:28-18:15/47 | 07:34 | 08:24 |
| | 21:59 | 20:16-20:34/18 | 21:25 | | 20:22 | | 19:12 | | 17:08 | 16:30 |
| 4 | 05:25 | 19:43-20:12/29 | 06:03 | | 06:53 | 18:14-18:45/31 | 07:42 | 17:29-18:14/45 | 07:36 | 08:25 |
| | 21:58 | 20:16-20:34/18 | 21:23 | | 20:19 | | 19:10 | | 17:06 | 16:29 |
| 5 | 05:25 | 19:44-20:12/28 | 06:05 | | 06:55 | 18:13-18:45/32 | 07:43 | 17:29-18:12/43 | 07:37 | 08:26 |
| | 21:58 | 20:16-20:35/19 | 21:21 | | 20:17 | | 19:08 | | 17:04 | 16:29 |
| 6 | 05:26 | 19:44-20:12/28 | 06:06 | | 06:56 | 18:13-18:45/32 | 07:45 | 17:31-18:11/40 | 07:39 | 08:28 |
| | 21:57 | 20:15-20:34/19 | 21:19 | | 20:15 | | 19:06 | | 17:02 | 16:28 |
| 7 | 05:27 | 19:44-20:11/27 | 06:08 | | 06:58 | 18:12-18:44/32 | 07:47 | 17:32-18:09/37 | 07:41 | 08:29 |
| | 21:57 | 20:15-20:35/20 | 21:18 | | 20:13 | | 19:03 | | 17:01 | 16:28 |
| 8 | 05:28 | 19:45-20:11/26 | 06:09 | | 06:59 | 18:12-18:44/32 | 07:48 | 17:35-18:08/33 | 07:43 | 08:30 |
| | 21:56 | 20:15-20:36/21 | 21:16 | | 20:10 | | 19:01 | | 16:59 | 16:28 |
| 9 | 05:29 | 19:46-20:11/25 | 06:11 | | 07:01 | 18:10-18:43/33 | 07:50 | 17:49-18:07/18 | 07:44 | 08:31 |
| | 21:56 | 20:15-20:36/21 | 21:14 | | 20:08 | | 18:59 | 17:39-17:44/5 | 16:57 | 16:27 |
| 10 | 05:30 | 19:47-20:10/23 | 06:13 | | 07:03 | 18:09-18:42/33 | 07:52 | 17:50-18:06/16 | 07:46 | 08:32 |
| | 21:55 | 20:15-20:36/21 | 21:12 | | 20:06 | | 18:57 | | 16:56 | 16:27 |
| 11 | 05:31 | 19:48-20:10/22 | 06:14 | | 07:04 | 18:06-18:40/34 | 07:53 | 17:51-18:05/14 | 07:48 | 08:33 |
| | 21:54 | 20:15-20:37/22 | 21:10 | | 20:03 | | 18:54 | | 16:54 | 16:27 |
| 12 | 05:32 | 19:49-20:09/20 | 06:16 | | 07:06 | 18:04-18:40/36 | 07:55 | 17:53-18:04/11 | 07:50 | 08:34 |
| | 21:53 | 20:15-20:37/22 | 21:08 | | 20:01 | | 18:52 | | 16:53 | 16:27 |
| 13 | 05:33 | 19:50-20:08/18 | 06:17 | | 07:07 | 18:02-18:39/37 | 07:57 | 17:55-18:00/5 | 07:52 | 08:35 |
| | 21:52 | 20:15-20:37/22 | 21:06 | | 19:59 | | 18:50 | | 16:51 | 16:27 |
| 14 | 05:34 | 19:51-20:07/16 | 06:19 | | 07:09 | 18:00-18:36/36 | 07:59 | 17:37-17:41/4 | 07:53 | 08:36 |
| | 21:51 | 20:15-20:37/22 | 21:04 | | 19:56 | | 18:48 | | 16:50 | 16:27 |
| 15 | 05:35 | 19:53-20:05/12 | 06:21 | | 07:11 | 17:59-18:34/35 | 08:00 | 17:33-17:44/11 | 07:55 | 08:37 |
| | 21:51 | 20:15-20:37/22 | 21:02 | | 19:54 | | 18:46 | | 16:48 | 16:27 |
| 16 | 05:37 | 19:55-20:02/7 | 06:22 | | 07:12 | 17:57-18:32/35 | 08:02 | 17:32-17:46/14 | 07:57 | 08:38 |
| | 21:49 | 20:15-20:37/22 | 21:00 | | 19:52 | | 18:43 | | 16:47 | 16:27 |
| 17 | 05:38 | 20:16-20:38/22 | 06:24 | | 07:14 | 17:55-18:32/37 | 08:04 | 17:29-17:46/17 | 07:58 | 08:39 |
| | 21:48 | | 20:58 | | 19:49 | | 18:41 | | 16:46 | 16:27 |
| 18 | 05:39 | 20:16-20:38/22 | 06:25 | | 07:15 | 17:43-18:31/48 | 08:05 | 17:29-17:46/17 | 08:00 | 08:40 |
| | 21:47 | | 20:56 | | 19:47 | | 18:39 | | 16:44 | 16:28 |
| 19 | 05:40 | 20:16-20:38/22 | 06:27 | | 07:17 | 17:40-18:30/50 | 08:07 | 17:28-17:47/19 | 08:02 | 08:40 |
| | 21:46 | | 20:54 | | 19:45 | | 18:37 | | 16:43 | 16:28 |
| 20 | 05:42 | 20:16-20:37/21 | 06:29 | | 07:19 | 17:38-18:30/52 | 08:09 | 17:28-17:47/19 | 08:04 | 08:41 |
| | 21:45 | | 20:52 | | 19:42 | | 18:35 | | 16:42 | 16:28 |
| 21 | 05:43 | 20:17-20:37/20 | 06:30 | | 07:20 | 17:35-18:30/55 | 08:11 | 17:28-17:47/19 | 08:05 | 08:42 |
| | 21:44 | | 20:50 | | 19:40 | | 18:33 | | 16:41 | 16:29 |
| 22 | 05:44 | 20:18-20:37/19 | 06:32 | | 07:22 | 17:34-18:31/57 | 08:12 | 17:29-17:46/17 | 08:07 | 08:42 |
| | 21:43 | | 20:48 | | 19:38 | | 18:31 | | 16:39 | 16:29 |
| 23 | 05:46 | 20:18-20:37/19 | 06:34 | | 07:24 | 17:32-18:31/59 | 08:14 | 17:29-17:46/17 | 08:09 | 08:43 |
| | 21:41 | | 20:46 | | 19:36 | | 18:29 | | 16:38 | 16:30 |
| 24 | 05:47 | 20:18-20:36/18 | 06:35 | | 07:25 | 17:31-18:31/60 | 08:16 | 17:29-17:44/15 | 08:10 | 08:43 |
| | 21:40 | | 20:44 | | 19:33 | | 18:27 | | 16:37 | 16:30 |
| 25 | 05:48 | 20:20-20:36/16 | 06:37 | | 07:27 | 17:31-18:31/60 | 07:18 | 16:30-16:43/13 | 08:12 | 08:44 |
| | 21:39 | | 20:42 | | 19:31 | | 17:25 | | 16:36 | 16:31 |
| 26 | 05:50 | 20:21-20:34/13 | 06:38 | | 07:28 | 17:29-18:30/61 | 07:19 | 16:33-16:40/7 | 08:13 | 08:44 |
| | 21:37 | | 20:39 | | 19:29 | | 17:23 | | 16:35 | 16:32 |
| 27 | 05:51 | 20:22-20:32/10 | 06:40 | 18:27-18:38/11 | 07:30 | 17:29-18:29/60 | 07:21 | | 08:15 | 08:44 |
| | 21:36 | | 20:37 | | 19:26 | | 17:21 | | 16:34 | 16:32 |
| 28 | 05:53 | 20:25-20:31/6 | 06:42 | 18:24-18:41/17 | 07:32 | 17:29-18:28/59 | 07:23 | | 08:16 | 08:44 |
| | 21:34 | | 20:35 | | 19:24 | | 17:19 | | 16:33 | 16:33 |
| 29 | 05:54 | | 06:43 | 18:21-18:42/21 | 07:33 | 17:28-18:26/58 | 07:25 | | 08:18 | 08:44 |
| | 21:33 | | 20:33 | | 19:22 | | 17:17 | | 16:33 | 16:34 |
| 30 | 05:56 | | 06:45 | 18:20-18:43/23 | 07:35 | 17:28-18:24/56 | 07:27 | | 08:19 | 08:45 |
| | 21:31 | | 20:31 | | 19:19 | | 17:15 | | 16:32 | 16:35 |
| 31 | 05:57 | | 06:46 | 18:17-18:43/26 | | | 07:28 | | | 08:45 |
| | 21:30 | | 20:28 | | | | 17:13 | | | 16:36 |
| Potential sun hours | 501 | | 453 | | 381 | | 332 | | 267 | 244 |
| Sum of minutes with flicker | 905 | | 98 | | 1298 | | 601 | | 0 | 0 |

**Table layout: For each day in each month the following matrix apply**

| | | |
|---|---|---|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |
| | Sun set (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |

Licensed user:
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+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar per WTG

**Calculation:** 6460 Gortloughra WF cumulative WC **WTG:** 9 - Shehy More WF

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:15 | 06:10 | 05:25 06:13-06:25/12 | 05:22 06:15-06:35/20 | 05:59 06:50-07:04/14 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | 21:00 | 21:46 06:44-06:53/9 | 22:00 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:45 | 08:17 | 07:23 | 07:12 | 06:08 | 05:24 06:12-06:26/14 | 05:23 06:16-06:35/19 | 06:00 06:52-07:03/11 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 21:02 | 21:47 06:45-06:51/6 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:31 |
| 3 | 08:45 | 08:15 | 07:21 | 07:10 | 06:06 | 05:24 06:11-06:26/15 | 05:24 06:15-06:34/19 | 06:02 06:54-07:00/6 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:20 | 20:13 | 21:04 | 21:48 | 21:59 | 21:25 | 20:22 | 19:12 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:05 | 05:23 06:11-06:28/17 | 05:24 06:16-06:35/19 | 06:03 | 06:53 | 07:42 | 07:36 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:59 | 21:23 | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:06 | 06:03 | 05:22 06:11-06:28/17 | 05:25 06:17-06:35/18 | 06:05 | 06:55 | 07:43 | 07:37 | 08:26 |
| | 16:42 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:22 06:11-06:29/18 | 05:26 06:17-06:35/18 | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:09 | 21:51 | 21:58 | 21:19 | 20:15 | 19:06 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 06:10-06:29/19 | 05:27 06:17-06:34/17 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 21:10 | 21:52 | 21:57 | 21:18 | 20:13 | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:07 | 07:10 | 06:59 | 05:57 | 05:20 06:11-06:29/18 | 05:28 06:18-06:34/16 | 06:09 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:38 | 18:28 | 20:22 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | 05:56 | 05:20 06:10-06:29/19 | 05:29 06:18-06:34/16 | 06:11 | 07:01 | 07:50 | 07:45 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 21:13 | 21:54 | 21:56 | 21:14 | 20:08 | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 06:43-06:51/8 | 05:20 06:11-06:30/19 | 05:30 06:19-06:34/15 | 06:13 | 07:03 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 06:53-06:58/5 | 21:12 | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 06:41-06:53/12 | 05:19 06:11-06:30/19 | 05:31 06:20-06:33/13 | 06:14 | 07:04 | 07:54 | 07:48 | 08:34 |
| | 16:49 | 17:43 | 18:34 | 20:27 | 21:17 | 21:55 | 21:54 06:52-07:00/8 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:01 | 06:50 | 05:51 06:39-06:54/15 | 05:19 06:11-06:31/20 | 05:32 06:21-06:33/12 | 06:16 | 07:06 | 07:55 | 07:50 | 08:35 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 06:51-07:01/10 | 21:08 | 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:58 | 06:58 | 06:48 | 05:49 06:39-06:55/16 | 05:19 06:11-06:30/19 | 05:33 06:22-06:32/10 | 06:17 | 07:07 | 07:57 | 07:52 | 08:36 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:53 06:50-07:02/12 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:56 | 06:56 | 06:45 | 05:47 06:38-06:55/17 | 05:18 06:11-06:31/20 | 05:34 06:23-06:31/8 | 06:19 | 07:09 | 07:59 | 07:53 | 08:37 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 21:21 | 21:57 | 21:52 06:49-07:03/14 | 21:04 | 19:57 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 06:37-06:56/19 | 05:18 06:11-06:31/20 | 05:35 06:26-06:28/2 | 06:21 | 07:11 | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:51 | 18:41 | 20:33 | 21:23 | 21:58 | 21:51 06:49-07:04/15 | 21:02 | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 08:38 | 07:52 | 06:51 | 06:41 | 05:44 06:37-06:57/20 | 05:18 06:11-06:31/20 | 05:37 06:49-07:05/16 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:50 | 21:00 | 19:52 | 18:44 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 06:36-06:57/21 | 05:18 06:12-06:32/20 | 05:38 06:48-07:06/18 | 06:24 | 07:14 | 08:04 | 07:59 | 08:39 |
| | 16:59 | 17:54 | 18:44 | 20:37 | 21:26 | 21:59 | 21:49 | 20:58 | 19:50 | 18:41 | 16:46 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 06:37-06:57/20 | 05:18 06:12-06:32/20 | 05:39 06:48-07:06/18 | 06:25 | 07:16 | 08:06 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:28 |
| 19 | 08:35 | 07:46 | 06:45 | 06:35 | 05:40 06:37-06:58/21 | 05:18 06:12-06:32/20 | 05:40 06:47-07:06/19 | 06:27 | 07:17 | 08:07 | 08:02 | 08:41 |
| | 17:02 | 17:58 | 18:48 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 05:39 06:36-06:57/21 | 05:18 06:12-06:32/20 | 05:42 06:47-07:07/20 | 06:29 | 07:19 | 08:09 | 08:04 | 08:41 |
| | 17:04 | 18:00 | 18:49 | 20:42 | 21:30 | 22:00 | 21:45 | 20:52 | 19:43 | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | 05:37 06:36-06:57/21 | 05:18 06:13-06:33/20 | 05:43 06:48-07:08/20 | 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:02 | 18:51 | 20:44 | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:41 | 16:29 |
| 22 | 08:32 | 07:40 | 06:38 | 06:28 | 05:36 06:37-06:57/20 | 05:18 06:13-06:33/20 | 05:44 06:47-07:08/21 | 06:32 | 07:22 | 08:13 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | 21:33 | 22:00 | 21:43 | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 05:35 06:37-06:57/20 | 05:19 06:13-06:33/20 | 05:46 06:47-07:08/21 | 06:34 | 07:24 | 08:14 | 08:09 | 08:43 |
| | 17:09 | 18:05 | 18:54 | 20:47 | 21:35 | 22:00 | 21:41 | 20:46 | 19:36 | 18:29 | 16:38 | 16:30 |
| 24 | 08:29 | 07:36 | 06:33 | 06:24 | 05:33 06:38-06:57/19 | 05:19 06:13-06:33/20 | 05:47 06:47-07:07/20 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:49 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:34 | 06:31 | 06:22 | 05:32 06:38-06:57/19 | 05:19 06:14-06:34/20 | 05:48 06:47-07:08/21 | 06:37 | 07:27 | 07:18 | 08:12 | 08:44 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:39 | 20:42 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:27 | 07:31 | 06:28 | 06:20 | 05:31 06:39-06:56/17 | 05:20 06:13-06:34/21 | 05:50 06:47-07:08/21 | 06:38 | 07:29 | 07:20 | 08:13 | 08:44 |
| | 17:14 | 18:11 | 18:59 | 20:52 | 21:39 | 22:00 | 21:37 | 20:39 | 19:29 | 17:23 | 16:35 | 16:32 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 06:39-06:56/17 | 05:20 06:14-06:34/20 | 05:51 06:47-07:07/20 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:12 | 19:01 | 20:54 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 06:40-06:55/15 | 05:21 06:14-06:34/20 | 05:53 06:48-07:07/19 | 06:42 | 07:32 | 07:23 | 08:17 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:33 | 16:33 |
| 29 | 08:23 | | 07:22 | 06:14 | 05:28 06:15-06:21/6 | 05:21 06:15-06:35/20 | 05:54 06:48-07:07/19 | 06:43 | 07:33 | 07:25 | 08:18 | 08:45 |
| | 17:19 | | 20:05 | 20:57 | 21:42 06:40-06:55/15 | 22:00 | 21:33 | 20:33 | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 06:14-06:23/9 | 05:22 06:14-06:34/20 | 05:56 06:48-07:06/18 | 06:45 | 07:35 | 07:27 | 08:20 | 08:45 |
| | 17:21 | | 20:06 | 20:59 | 21:44 06:41-06:54/13 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:20 | | 07:17 | | 05:26 06:14-06:25/11 | | 05:57 06:50-07:05/15 | 06:46 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:45 06:43-06:54/11 | | 21:30 | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 244 |
| Sum of minutes with flicker | 0 | 0 | 0 | 0 | 403 | 582 | 592 | 31 | 0 | 0 | 0 | 0 |

**Table layout: For each day in each month the following matrix apply**

| | | |
|---|---|---|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |
| | Sun set (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |

Licensed user:
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kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar per WTG

**Calculation:** 6460 Gortloughra WF cumulative WC **WTG:** 10 - Shehy More WF

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:15 | 06:10 | 05:25 | 05:22 | 05:59 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | 21:00 | 21:46 | 22:00 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:45 | 08:17 | 07:23 | 07:12 | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:31 |
| 3 | 08:45 | 08:15 | 07:21 | 07:10 | 06:06 | 05:24 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:20 | 20:13 | 21:04 | 21:48 | 21:59 | 21:25 | 20:22 | 19:12 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:04 | 05:23 | 05:24 | 06:03 | 06:53 | 07:42 | 07:36 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:59 | 21:23 | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:06 | 06:03 | 05:22 | 05:25 | 06:05 | 06:55 | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:22 | 05:26 | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:09 | 21:51 | 21:58 | 21:19 | 20:15 | 19:06 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 21:10 | 21:52 | 21:57 | 21:18 | 20:13 | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:07 | 07:10 | 06:59 | 05:57 | 05:20 | 05:28 | 06:09 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:38 | 18:28 | 20:22 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | 05:56 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:45 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 21:13 | 21:54 | 21:56 | 21:14 | 20:08 | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:20 | 05:30 | 06:13 | 07:03 | 07:52 | 07:46 | 08:33 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:54 | 07:48 | 08:34 |
| | 16:49 | 17:43 | 18:34 | 20:27 | 21:17 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:01 | 06:50 | 05:51 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:35 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:58 | 06:58 | 06:48 | 05:49 | 05:19 | 05:33 | 06:17 | 07:07 | 07:57 | 07:52 | 08:36 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:53 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:56 | 06:56 | 06:45 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:59 | 07:53 | 08:37 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 21:21 | 21:57 | 21:52 | 21:04 | 19:57 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:35 | 06:21 | 07:11 | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:41 | 20:33 | 21:23 | 21:58 | 21:51 | 21:02 | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 08:38 | 07:52 | 06:51 | 06:41 | 05:44 | 05:18 | 05:37 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:50 | 21:00 | 19:52 | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:59 | 08:39 |
| | 16:59 | 17:54 | 18:44 | 20:37 | 21:26 | 21:59 | 21:49 | 20:58 | 19:50 | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 | 05:18 | 05:39 | 06:25 | 07:16 | 08:06 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:28 |
| 19 | 08:35 | 07:46 | 06:45 | 06:35 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:41 |
| | 17:02 | 17:58 | 18:48 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 05:39 | 05:18 | 05:42 | 06:29 | 07:19 | 08:09 | 08:04 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | 21:30 | 22:00 | 21:45 | 20:52 | 19:43 | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:02 | 18:51 | 20:44 | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:40 | 16:29 |
| 22 | 08:32 | 07:40 | 06:38 | 06:28 | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 | 08:13 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | 21:33 | 22:00 | 21:43 | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 05:35 | 05:19 | 05:46 | 06:34 | 07:24 | 08:14 | 08:09 | 08:43 |
| | 17:09 | 18:05 | 18:54 | 20:47 | 21:35 | 22:00 | 21:41 | 20:46 | 19:36 | 18:29 | 16:38 | 16:30 |
| 24 | 08:29 | 07:36 | 06:33 | 06:24 | 05:33 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:49 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | 07:18 | 08:12 | 08:44 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:39 | 20:42 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:27 | 07:31 | 06:28 | 06:20 | 05:31 | 05:20 | 05:50 | 06:38 | 07:29 | 07:20 | 08:13 | 08:44 |
| | 17:14 | 18:11 | 18:59 | 20:52 | 21:39 | 22:00 | 21:37 | 20:39 | 19:29 | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:12 | 19:01 | 20:54 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:21 | 05:53 | 06:42 | 07:32 | 07:23 | 08:17 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:33 | 16:33 |
| 29 | 08:23 | | 07:22 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | 07:25 | 08:18 | 08:45 |
| | 17:19 | | 20:05 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:56 | 06:45 | 07:35 | 07:27 | 08:20 | 08:45 |
| | 17:21 | | 20:06 | 20:59 | 21:44 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:20 | | 07:17 | | 05:26 | | 05:57 | 06:46 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:45 | | 21:30 | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 244 |
| Sum of minutes with flicker | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**Table layout: For each day in each month the following matrix apply**

| | | |
|---|---|---|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |
| | Sun set (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |

Licensed user:
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+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar per WTG

**Calculation:** 6460 Gortloughra WF cumulative WC **WTG:** 11 - Shehy More WF

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | | February | March | April | May | June | July | August | September | October | November | | December | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 10:21-10:44/23 | 08:18 | 07:25 | 07:15 | 06:10 | 05:25 | 05:22 | 05:59 | 06:48 | 07:37 | 07:30 | | 08:21 | 10:04-10:33/29 |
| | 16:37 | | 17:25 | 18:16 | 20:10 | 21:00 | 21:46 | 22:00 | 21:28 | 20:26 | 19:17 | 17:11 | | 16:31 | |
| 2 | 08:45 | 10:21-10:45/24 | 08:17 | 07:23 | 07:12 | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | 07:38 | 07:32 | | 08:22 | 10:04-10:33/29 |
| | 16:38 | | 17:26 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | | 16:30 | |
| 3 | 08:45 | 10:21-10:45/24 | 08:15 | 07:21 | 07:10 | 06:06 | 05:24 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | | 08:24 | 10:05-10:33/28 |
| | 16:39 | | 17:28 | 18:20 | 20:13 | 21:04 | 21:48 | 21:59 | 21:25 | 20:22 | 19:12 | 17:08 | | 16:30 | |
| 4 | 08:44 | 10:21-10:46/25 | 08:13 | 07:18 | 07:08 | 06:04 | 05:23 | 05:24 | 06:03 | 06:53 | 07:42 | 07:36 | | 08:25 | 10:06-10:33/27 |
| | 16:40 | | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:59 | 21:23 | 20:19 | 19:10 | 17:06 | | 16:29 | |
| 5 | 08:44 | 10:22-10:47/25 | 08:12 | 07:16 | 07:05 | 06:03 | 05:22 | 05:25 | 06:05 | 06:55 | 07:43 | 07:37 | | 08:26 | 10:07-10:34/27 |
| | 16:41 | | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | | 16:29 | |
| 6 | 08:44 | 10:21-10:47/26 | 08:10 | 07:14 | 07:03 | 06:01 | 05:22 | 05:26 | 06:06 | 06:56 | 07:45 | 07:39 | | 08:28 | 10:07-10:34/27 |
| | 16:43 | | 17:34 | 18:25 | 20:18 | 21:09 | 21:51 | 21:58 | 21:19 | 20:15 | 19:06 | 17:02 | | 16:28 | |
| 7 | 08:43 | 10:22-10:49/27 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | | 08:29 | 10:08-10:33/25 |
| | 16:44 | | 17:36 | 18:27 | 20:20 | 21:10 | 21:52 | 21:57 | 21:18 | 20:13 | 19:03 | 17:01 | | 16:28 | |
| 8 | 08:43 | 10:22-10:49/27 | 08:07 | 07:10 | 06:59 | 05:57 | 05:20 | 05:28 | 06:09 | 06:59 | 07:48 | 07:43 | | 08:30 | 10:09-10:34/25 |
| | 16:45 | | 17:38 | 18:28 | 20:22 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | | 16:28 | |
| 9 | 08:42 | 10:21-10:49/28 | 08:05 | 07:07 | 06:56 | 05:56 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:45 | | 08:31 | 10:10-10:34/24 |
| | 16:47 | | 17:39 | 18:30 | 20:23 | 21:13 | 21:54 | 21:56 | 21:14 | 20:08 | 18:59 | 16:57 | | 16:27 | |
| 10 | 08:42 | 10:22-10:51/29 | 08:03 | 07:05 | 06:54 | 05:54 | 05:19 | 05:30 | 06:13 | 07:03 | 07:52 | 07:46 | | 08:32 | 10:10-10:34/24 |
| | 16:48 | | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:57 | 16:56 | | 16:27 | |
| 11 | 08:41 | 10:22-10:51/29 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:54 | 07:48 | 10:09-10:17/8 | 08:34 | 10:11-10:34/23 |
| | 16:49 | | 17:43 | 18:34 | 20:27 | 21:17 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | | 16:27 | |
| 12 | 08:41 | 10:22-10:51/29 | 07:59 | 07:01 | 06:50 | 05:51 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 10:06-10:20/14 | 08:35 | 10:12-10:34/22 |
| | 16:51 | | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:53 | | 16:27 | |
| 13 | 08:40 | 10:22-10:52/30 | 07:57 | 06:58 | 06:48 | 05:49 | 05:18 | 05:33 | 06:17 | 07:07 | 07:57 | 07:52 | 10:04-10:22/18 | 08:36 | 10:12-10:34/22 |
| | 16:52 | | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18:50 | 16:51 | | 16:27 | |
| 14 | 08:39 | 10:22-10:52/30 | 07:56 | 06:56 | 06:45 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:59 | 07:53 | 10:03-10:24/21 | 08:37 | 10:13-10:35/22 |
| | 16:54 | | 17:49 | 18:39 | 20:32 | 21:21 | 21:57 | 21:52 | 21:04 | 19:56 | 18:48 | 16:50 | | 16:27 | |
| 15 | 08:38 | 10:23-10:53/30 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:35 | 06:21 | 07:11 | 08:00 | 07:55 | 10:03-10:26/23 | 08:37 | 10:14-10:35/21 |
| | 16:55 | | 17:50 | 18:41 | 20:33 | 21:23 | 21:58 | 21:51 | 21:02 | 19:54 | 18:46 | 16:48 | | 16:27 | |
| 16 | 08:38 | 10:23-10:53/30 | 07:52 | 06:51 | 06:41 | 05:44 | 05:18 | 05:36 | 06:22 | 07:12 | 08:02 | 07:57 | 10:02-10:27/25 | 08:38 | 10:15-10:35/20 |
| | 16:57 | | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:50 | 21:00 | 19:52 | 18:43 | 16:47 | | 16:27 | |
| 17 | 08:37 | 10:23-10:54/31 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:59 | 10:02-10:28/26 | 08:39 | 10:16-10:36/20 |
| | 16:59 | | 17:54 | 18:44 | 20:37 | 21:26 | 21:59 | 21:49 | 20:58 | 19:50 | 18:41 | 16:45 | | 16:27 | |
| 18 | 08:36 | 10:24-10:54/30 | 07:48 | 06:47 | 06:37 | 05:41 | 05:18 | 05:39 | 06:25 | 07:15 | 08:06 | 08:00 | 10:02-10:29/27 | 08:40 | 10:15-10:35/20 |
| | 17:00 | | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | | 16:27 | |
| 19 | 08:35 | 10:24-10:54/30 | 07:46 | 06:45 | 06:35 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 10:01-10:29/28 | 08:41 | 10:16-10:36/20 |
| | 17:02 | | 17:58 | 18:47 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | | 16:28 | |
| 20 | 08:34 | 10:25-10:55/30 | 07:44 | 06:42 | 06:32 | 05:39 | 05:18 | 05:42 | 06:29 | 07:19 | 08:09 | 08:04 | 10:01-10:29/28 | 08:41 | 10:17-10:37/20 |
| | 17:03 | | 18:00 | 18:49 | 20:42 | 21:30 | 22:00 | 21:45 | 20:52 | 19:43 | 18:35 | 16:42 | | 16:28 | |
| 21 | 08:33 | 10:26-10:55/29 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:11 | 08:05 | 10:01-10:30/29 | 08:42 | 10:17-10:37/20 |
| | 17:05 | | 18:01 | 18:51 | 20:44 | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:40 | | 16:29 | |
| 22 | 08:32 | 10:26-10:54/28 | 07:40 | 06:38 | 06:28 | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 | 08:12 | 08:07 | 10:01-10:31/30 | 08:42 | 10:18-10:38/20 |
| | 17:07 | | 18:03 | 18:53 | 20:45 | 21:33 | 22:00 | 21:43 | 20:48 | 19:38 | 18:31 | 16:39 | | 16:29 | |
| 23 | 08:30 | 10:27-10:55/28 | 07:38 | 06:35 | 06:26 | 05:35 | 05:19 | 05:46 | 06:33 | 07:24 | 08:14 | 08:09 | 10:01-10:31/30 | 08:43 | 10:18-10:38/20 |
| | 17:09 | | 18:05 | 18:54 | 20:47 | 21:34 | 22:00 | 21:41 | 20:46 | 19:36 | 18:29 | 16:38 | | 16:30 | |
| 24 | 08:29 | 10:28-10:55/27 | 07:36 | 06:33 | 06:24 | 05:33 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 10:01-10:31/30 | 08:43 | 10:19-10:39/20 |
| | 17:10 | | 18:07 | 18:56 | 20:49 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | | 16:30 | |
| 25 | 08:28 | 10:28-10:54/26 | 07:33 | 06:31 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | 07:18 | 08:12 | 10:01-10:32/31 | 08:44 | 10:19-10:39/20 |
| | 17:12 | | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:39 | 20:42 | 19:31 | 17:25 | 16:36 | | 16:31 | |
| 26 | 08:27 | 10:29-10:54/25 | 07:31 | 06:28 | 06:20 | 05:31 | 05:20 | 05:50 | 06:38 | 07:29 | 07:20 | 08:13 | 10:02-10:32/30 | 08:44 | 10:20-10:40/20 |
| | 17:14 | | 18:11 | 18:59 | 20:52 | 21:39 | 22:00 | 21:37 | 20:39 | 19:29 | 17:23 | 16:35 | | 16:31 | |
| 27 | 08:25 | 10:30-10:53/23 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 10:03-10:33/30 | 08:44 | 10:20-10:40/20 |
| | 17:16 | | 18:12 | 19:01 | 20:54 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | | 16:32 | |
| 28 | 08:24 | 10:32-10:52/20 | 07:27 | 06:24 | 06:16 | 05:29 | 05:21 | 05:53 | 06:42 | 07:32 | 07:23 | 08:17 | 10:02-10:32/30 | 08:44 | 10:20-10:41/21 |
| | 17:17 | | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:33 | | 16:33 | |
| 29 | 08:23 | 10:33-10:50/17 | | 07:21 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | 07:25 | 08:18 | 10:03-10:33/30 | 08:45 | 10:20-10:41/21 |
| | 17:19 | | | 20:05 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:22 | 17:17 | 16:33 | | 16:34 | |
| 30 | 08:21 | 10:35-10:49/14 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:56 | 06:45 | 07:35 | 07:27 | 08:19 | 10:03-10:33/30 | 08:45 | 10:20-10:42/22 |
| | 17:21 | | | 20:06 | 20:59 | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | | 16:35 | |
| 31 | 08:20 | 10:38-10:46/8 | | 07:17 | | 05:26 | | 05:57 | 06:46 | | 07:28 | | | 08:45 | 10:20-10:43/23 |
| | 17:23 | | | 20:08 | | 21:45 | | 21:30 | 20:28 | | 17:13 | | | 16:36 | |
| Potential sun hours | 260 | | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | | 244 | |
| Sum of minutes with flicker | 802 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 518 | | 702 | |

**Table layout: For each day in each month the following matrix apply**

| | | |
|---|---|---|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |
| | Sun set (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar per WTG

**Calculation:** 6460 Gortloughra WF cumulative WC **WTG:** 12 - Shehy More WF

## Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45<br>16:37 | 08:18 15:00-16:17/77<br>17:24 | 07:25<br>18:16 | 07:14<br>20:10 | 06:10<br>21:00 | 05:25<br>21:46 | 05:22<br>22:00 | 05:58<br>21:28 | 06:48<br>20:26 | 07:37<br>19:17 | 07:30 14:33-15:52/79<br>17:11 | 08:21 14:55-15:02/7<br>16:31 |
| 2 | 08:45<br>16:38 | 08:16 15:00-16:17/77<br>17:26 | 07:23<br>18:18 | 07:12<br>20:11 | 06:08<br>21:02 | 05:24<br>21:47 | 05:23<br>21:59 | 06:00<br>21:26 | 06:50<br>20:24 | 07:38<br>19:15 | 07:32 14:33-15:52/79<br>17:09 | 08:22<br>16:30 |
| 3 | 08:44<br>16:39 | 08:15 15:01-16:19/78<br>17:28 | 07:20<br>18:19 | 07:10<br>20:13 | 06:06<br>21:03 | 05:23<br>21:48 | 05:24<br>21:59 | 06:02<br>21:25 | 06:51<br>20:22 | 07:40<br>19:12 | 07:34 14:32-15:52/80<br>17:07 | 08:24<br>16:30 |
| 4 | 08:44<br>16:40 | 08:13 15:01-16:20/79<br>17:30 | 07:18<br>18:21 | 07:08<br>20:15 | 06:04<br>21:05 | 05:23<br>21:49 | 05:24<br>21:58 | 06:03<br>21:23 | 06:53<br>20:19 | 07:42<br>19:10 | 07:35 14:32-15:52/80<br>17:06 | 08:25<br>16:29 |
| 5 | 08:44<br>16:41 | 08:12 15:01-16:20/79<br>17:32 | 07:16<br>18:23 | 07:05<br>20:16 | 06:02<br>21:07 | 05:22<br>21:50 | 05:25<br>21:58 | 06:05<br>21:21 | 06:54<br>20:17 | 07:43<br>19:08 | 07:37 14:31-15:50/79<br>17:04 | 08:26<br>16:29 |
| 6 | 08:44<br>16:43 | 08:10 15:01-16:21/80<br>17:34 | 07:14<br>18:25 | 07:03<br>20:18 | 06:01<br>21:08 | 05:21<br>21:51 | 05:26<br>21:57 | 06:06<br>21:19 | 06:56<br>20:15 | 07:45<br>19:05 | 07:39 14:31-15:50/79<br>17:02 | 08:28<br>16:28 |
| 7 | 08:43<br>16:44 | 08:08 15:02-16:22/80<br>17:36 | 07:12<br>18:27 | 07:01<br>20:20 | 05:59<br>21:10 | 05:21<br>21:52 | 05:27<br>21:57 | 06:08<br>21:18 | 06:58<br>20:13 | 07:47<br>19:03 | 07:41 14:31-15:49/78<br>17:00 | 08:29<br>16:28 |
| 8 | 08:43<br>16:45 | 08:06 15:03-16:22/79<br>17:37 | 07:09<br>18:28 | 06:59<br>20:21 | 05:57<br>21:12 | 05:20<br>21:53 | 05:28<br>21:56 | 06:09<br>21:16 | 06:59<br>20:10 | 07:48<br>19:01 | 07:43 14:31-15:49/78<br>16:59 | 08:30<br>16:28 |
| 9 | 08:42<br>16:46 | 08:05 15:03-16:22/79<br>17:39 | 07:07<br>18:30 | 06:56<br>20:23 | 05:55<br>21:13 | 05:20<br>21:53 | 05:29<br>21:56 | 06:11<br>21:14 | 07:01<br>20:08 | 07:50<br>18:59 | 07:44 14:31-15:48/77<br>16:57 | 08:31<br>16:27 |
| 10 | 08:42<br>16:48 | 08:03 15:04-16:23/79<br>17:41 | 07:05<br>18:32 | 06:54<br>20:25 | 05:54<br>21:15 | 05:19<br>21:54 | 05:30<br>21:55 | 06:12<br>21:12 | 07:02<br>20:06 | 07:52<br>18:56 | 07:46 14:31-15:47/76<br>16:56 | 08:32<br>16:27 |
| 11 | 08:41 15:14-15:19/5<br>16:49 | 08:01 15:04-16:23/79<br>17:43 | 07:03<br>18:34 | 06:52<br>20:26 | 05:52<br>21:16 | 05:19<br>21:55 | 05:31<br>21:54 | 06:14<br>21:10 | 07:04<br>20:03 | 07:53<br>18:54 | 07:48 14:31-15:47/76<br>16:54 | 08:33<br>16:27 |
| 12 | 08:41 15:11-15:23/12<br>16:51 | 07:59 15:05-16:23/78<br>17:45 | 07:00<br>18:35 | 06:50<br>20:28 | 05:50<br>21:18 | 05:19<br>21:56 | 05:32<br>21:53 | 06:16<br>21:08 | 07:06<br>20:01 | 07:55<br>18:52 | 07:50 14:32-15:46/74<br>16:52 | 08:34<br>16:27 |
| 13 | 08:40 15:09-15:25/16<br>16:52 | 07:57 15:06-16:22/76<br>17:47 | 06:58<br>18:37 | 06:47<br>20:30 | 05:49<br>21:20 | 05:18<br>21:56 | 05:33<br>21:52 | 06:17<br>21:06 | 07:07<br>19:59 | 07:57<br>18:50 | 07:51 15:17-15:44/27<br>16:51 14:32-15:16/44 | 08:35<br>16:27 |
| 14 | 08:39 15:07-15:27/20<br>16:54 | 07:55 15:08-16:22/74<br>17:48 | 06:56<br>18:39 | 06:45<br>20:32 | 05:47<br>21:21 | 05:18<br>21:57 | 05:34<br>21:51 | 06:19<br>21:04 | 07:09<br>19:56 | 07:58<br>18:48 | 07:53 15:19-15:43/24<br>16:50 14:33-15:16/43 | 08:36<br>16:27 |
| 15 | 08:38 15:06-15:29/23<br>16:55 | 07:54 15:09-16:22/73<br>17:50 | 06:54<br>18:40 | 06:43<br>20:33 | 05:46<br>21:23 | 05:18<br>21:58 | 05:35<br>21:50 | 06:20<br>21:02 | 07:11<br>19:54 | 08:00<br>18:45 | 07:55 15:21-15:42/21<br>16:48 14:34-15:15/41 | 08:37<br>16:27 |
| 16 | 08:38 15:05-15:31/26<br>16:57 | 07:52 15:40-16:22/42<br>17:52 15:11-15:38/27 | 06:51<br>18:42 | 06:41<br>20:35 | 05:44<br>21:24 | 05:18<br>21:58 | 05:36<br>21:49 | 06:22<br>21:00 | 07:12<br>19:52 | 08:02 16:27-16:40/13<br>18:43 | 07:57 15:23-15:40/17<br>16:47 14:34-15:15/41 | 08:38<br>16:27 |
| 17 | 08:37 15:05-15:32/27<br>16:58 | 07:50 15:40-16:21/41<br>17:54 15:14-15:35/21 | 06:49<br>18:44 | 06:39<br>20:37 | 05:43<br>21:26 | 05:18<br>21:58 | 05:38<br>21:48 | 06:24<br>20:58 | 07:14<br>19:49 | 08:04 16:23-16:43/20<br>18:41 | 07:58 15:27-15:37/10<br>16:45 14:35-15:15/40 | 08:39<br>16:27 |
| 18 | 08:36 15:04-15:34/30<br>17:00 | 07:48 15:41-16:21/40<br>17:56 15:17-15:32/15 | 06:47<br>18:46 | 06:37<br>20:38 | 05:41<br>21:27 | 05:18<br>21:59 | 05:39<br>21:47 | 06:25<br>20:56 | 07:15<br>19:47 | 08:05 16:19-16:45/26<br>18:39 | 08:00 14:35-15:14/39<br>16:44 | 08:40<br>16:27 |
| 19 | 08:35 15:04-15:35/31<br>17:02 | 07:46 15:42-16:20/38<br>17:58 | 06:44<br>18:47 | 06:34<br>20:40 | 05:40<br>21:29 | 05:18<br>21:59 | 05:40<br>21:46 | 06:27<br>20:54 | 07:17<br>19:45 | 08:07 16:17-16:46/29<br>18:37 | 08:02 14:36-15:14/38<br>16:43 | 08:40<br>16:28 |
| 20 | 08:34 15:03-15:37/34<br>17:03 | 07:44 15:43-16:19/36<br>18:00 | 06:42<br>18:49 | 06:32<br>20:42 | 05:38<br>21:30 | 05:18<br>22:00 | 05:41<br>21:45 | 06:29<br>20:52 | 07:19<br>19:42 | 08:09 16:16-16:48/32<br>18:35 | 08:04 14:37-15:13/36<br>16:42 | 08:41<br>16:28 |
| 21 | 08:33 15:02-15:37/35<br>17:05 | 07:42 15:44-16:18/34<br>18:01 | 06:40<br>18:51 | 06:30<br>20:43 | 05:37<br>21:32 | 05:18<br>22:00 | 05:43<br>21:44 | 06:30<br>20:50 | 07:20<br>19:40 | 08:11 16:14-16:49/35<br>18:33 | 08:05 14:38-15:13/35<br>16:40 | 08:42<br>16:28 |
| 22 | 08:31 15:02-15:38/36<br>17:07 | 07:40 15:46-16:17/31<br>18:03 | 06:37<br>18:53 | 06:28<br>20:45 | 05:36<br>21:33 | 05:18<br>22:00 | 05:44<br>21:43 | 06:32<br>20:48 | 07:22<br>19:38 | 08:12 16:13-16:50/37<br>18:31 | 08:07 14:39-15:13/34<br>16:39 | 08:42<br>16:29 |
| 23 | 08:30 15:02-15:40/38<br>17:08 | 07:38 15:47-16:14/27<br>18:05 | 06:35<br>18:54 | 06:26<br>20:47 | 05:34<br>21:34 | 05:18<br>22:00 | 05:45<br>21:41 | 06:33<br>20:46 | 07:23<br>19:35 | 08:14 16:12-16:51/39<br>18:29 15:52-15:59/7 | 08:09 14:40-15:11/31<br>16:38 | 08:43<br>16:29 |
| 24 | 08:29 15:01-15:40/39<br>17:10 | 07:35 15:49-16:13/24<br>18:07 | 06:33<br>18:56 | 06:24<br>20:48 | 05:33<br>21:36 | 05:19<br>22:00 | 05:47<br>21:40 | 06:35<br>20:44 | 07:25<br>19:33 | 08:16 16:10-16:50/40<br>18:27 15:46-16:03/17 | 08:10 14:41-15:11/30<br>16:37 | 08:43<br>16:30 |
| 25 | 08:28 15:53-16:03/10<br>17:12 15:01-15:41/40 | 07:33 15:52-16:10/18<br>18:09 | 06:31<br>18:58 | 06:22<br>20:50 | 05:32<br>21:37 | 05:19<br>22:00 | 05:48<br>21:39 | 06:37<br>20:42 | 07:27<br>19:31 | 07:18 15:10-15:51/41<br>17:25 14:43-15:06/23 | 08:12 14:43-15:10/27<br>16:36 | 08:44<br>16:31 |
| 26 | 08:27 15:50-16:07/17<br>17:14 15:01-15:42/41 | 07:31 15:56-16:06/10<br>18:10 | 06:28<br>18:59 | 06:20<br>20:52 | 05:31<br>21:38 | 05:19<br>22:00 | 05:50<br>21:37 | 06:38<br>20:39 | 07:28<br>19:28 | 07:19 15:09-15:51/42<br>17:23 14:40-15:08/28 | 08:13 14:44-15:10/26<br>16:35 | 08:44<br>16:31 |
| 27 | 08:25 15:48-16:09/21<br>17:15 15:01-15:43/42 | 07:29<br>18:12 | 06:26<br>19:01 | 06:18<br>20:53 | 05:30<br>21:40 | 05:20<br>22:00 | 05:51<br>21:36 | 06:40<br>20:37 | 07:30<br>19:26 | 07:21 14:38-15:52/74<br>17:21 | 08:15 14:45-15:08/23<br>16:34 | 08:44<br>16:32 |
| 28 | 08:24 15:47-16:11/24<br>17:17 15:01-15:44/43 | 07:27<br>18:14 | 06:24<br>19:03 | 06:16<br>20:55 | 05:29<br>21:41 | 05:20<br>22:00 | 05:53<br>21:34 | 06:41<br>20:35 | 07:32<br>19:24 | 07:23 14:37-15:52/75<br>17:19 | 08:16 14:47-15:07/20<br>16:33 | 08:44<br>16:33 |
| 29 | 08:22 15:45-16:13/28<br>17:19 15:00-15:44/44 | | 07:21<br>20:04 | 06:14<br>20:57 | 05:28<br>21:42 | 05:21<br>22:00 | 05:54<br>21:33 | 06:43<br>20:33 | 07:33<br>19:22 | 07:25 14:36-15:52/76<br>17:17 | 08:18 14:50-15:06/16<br>16:32 | 08:44<br>16:34 |
| 30 | 08:21 15:00-16:14/74<br>17:21 | | 07:19<br>20:06 | 06:12<br>20:59 | 05:27<br>21:43 | 05:22<br>22:00 | 05:55<br>21:31 | 06:45<br>20:31 | 07:35<br>19:19 | 07:27 14:35-15:52/77<br>17:15 | 08:19 14:51-15:04/13<br>16:32 | 08:45<br>16:35 |
| 31 | 08:19 15:00-16:16/76<br>17:23 | | 07:17<br>20:08 | | 05:26<br>21:45 | | 05:57<br>21:29 | 06:46<br>20:28 | | 07:28 14:34-15:52/78<br>17:13 | | 08:45<br>16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 244 |
| Sum of minutes with flicker | 832 | 1571 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 809 | 1611 | 7 |

**Table layout: For each day in each month the following matrix apply**

| | | |
|---|---|---|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |
| | Sun set (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |

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Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar per WTG

**Calculation:** 6460 Gortloughra WF cumulative WC **WTG:** 13 - Shehy More WF

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:15 | 06:10 | 05:25 | 05:22 | 05:58 | 06:48 | 07:37 18:07-18:26/19 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | 21:00 | 21:46 | 22:00 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:45 | 08:16 | 07:23 | 07:12 | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | 07:38 18:08-18:23/15 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | 06:06 | 05:23 | 05:24 | 06:02 | 06:51 | 07:40 18:10-18:21/11 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 | 21:04 | 21:48 | 21:59 | 21:25 | 20:22 | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:04 | 05:23 | 05:24 | 06:03 | 06:53 | 07:42 18:14-18:17/3 | 07:36 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | 06:03 | 05:22 | 05:25 | 06:05 | 06:54 | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:21 | 05:26 | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 19:06 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 21:10 | 21:52 | 21:57 | 21:18 | 20:13 | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 05:57 | 05:20 | 05:28 | 06:09 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | 20:21 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | 05:55 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 21:13 | 21:54 | 21:56 | 21:14 | 20:08 | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 17:33-17:42/9 | 06:54 | 05:54 | 05:19 | 05:30 | 06:13 | 07:02 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 17:31-17:45/14 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | 20:27 | 21:17 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 17:28-17:45/17 | 06:50 | 05:50 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:35 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 17:27-17:46/19 | 06:47 | 05:49 | 05:18 | 05:33 | 06:17 | 07:07 | 07:57 | 07:52 | 08:36 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:56 | 06:56 17:26-17:56/30 | 06:45 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:59 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 21:21 | 21:57 | 21:52 | 21:04 | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 17:25-17:57/32 | 06:43 | 05:46 | 05:18 | 05:35 | 06:20 | 07:11 | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:41 | 20:33 | 21:23 | 21:58 | 21:51 | 21:02 | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 08:38 | 07:52 | 06:51 17:25-17:59/34 | 06:41 | 05:44 | 05:18 | 05:36 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:50 | 21:00 | 19:52 | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 17:25-18:00/35 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 18:33-18:38/5 | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | 20:37 | 21:26 | 21:59 | 21:48 | 20:58 | 19:49 | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 17:24-17:59/35 | 06:37 | 05:41 | 05:18 | 05:39 | 06:25 | 07:15 18:29-18:41/12 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 17:25-18:00/35 | 06:34 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 18:27-18:42/15 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 17:26-18:00/34 | 06:32 | 05:38 | 05:18 | 05:41 | 06:29 | 07:19 18:26-18:44/18 | 08:09 | 08:04 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | 21:30 | 22:00 | 21:45 | 20:52 | 19:42 18:18-18:23/5 | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 17:26-17:59/33 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 18:14-18:43/29 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:38 17:28-17:58/30 | 06:28 | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 18:12-18:44/32 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | 21:33 | 22:00 | 21:43 | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 17:39-17:57/18 | 06:26 | 05:35 | 05:18 | 05:45 | 06:33 | 07:24 18:09-18:43/34 | 08:14 | 08:09 | 08:43 |
| | 17:08 | 18:05 | 18:54 17:31-17:38/7 | 20:47 | 21:34 | 22:00 | 21:41 | 20:46 | 19:35 | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 17:39-17:55/16 | 06:24 | 05:33 | 05:19 | 05:47 | 06:35 | 07:25 18:09-18:43/34 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 17:41-17:54/13 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 18:08-18:43/35 | 07:18 | 08:12 | 08:44 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:39 | 20:42 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:27 | 07:31 | 06:28 17:44-17:51/7 | 06:20 | 05:31 | 05:19 | 05:50 | 06:38 | 07:28 18:07-18:42/35 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | 20:52 | 21:38 | 22:00 | 21:37 | 20:39 | 19:28 | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 18:06-18:41/35 | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 | 20:54 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:20 | 05:53 | 06:41 | 07:32 18:07-18:40/33 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 18:06-18:37/31 | 07:25 | 08:18 | 08:45 |
| | 17:19 | | 20:04 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:55 | 06:45 | 07:35 18:07-18:34/27 | 07:27 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:59 | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:20 | | 07:17 | | 05:26 | | 05:57 | 06:46 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:45 | | 21:30 | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 244 |
| Sum of minutes with flicker | 0 | 0 | 418 | 0 | 0 | 0 | 0 | 0 | 380 | 48 | 0 | 0 |

**Table layout: For each day in each month the following matrix apply**

| | | |
|---|---|---|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |
| | Sun set (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |

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Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar per WTG

**Calculation:** 6460 Gortloughra WF cumulative WC **WTG:** 14 - Shehy More WF

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | | April | | May | | June |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | | 07:15 | | 06:10 | 19:45-20:15/30 | 05:25 |
| | 16:37 | 17:24 | 18:16 | | 20:10 | | 21:00 | | 21:46 |
| 2 | 08:45 | 08:16 | 07:23 | | 07:12 | | 06:08 | 19:45-20:16/31 | 05:24 |
| | 16:38 | 17:26 | 18:18 | | 20:11 | | 21:02 | | 21:47 |
| 3 | 08:44 | 08:15 | 07:21 | | 07:10 | | 06:06 | 19:45-20:16/31 | 05:23 |
| | 16:39 | 17:28 | 18:19 | | 20:13 | | 21:04 | | 21:48 |
| 4 | 08:44 | 08:13 | 07:18 | | 07:08 | | 06:04 | 19:45-20:16/31 | 05:23 |
| | 16:40 | 17:30 | 18:21 | | 20:15 | | 21:05 | | 21:49 |
| 5 | 08:44 | 08:12 | 07:16 | | 07:05 | | 06:03 | 19:45-20:15/30 | 05:22 |
| | 16:41 | 17:32 | 18:23 | | 20:16 | | 21:07 | | 21:50 |
| 6 | 08:44 | 08:10 | 07:14 | | 07:03 | | 06:01 | 19:46-20:15/29 | 05:21 |
| | 16:43 | 17:34 | 18:25 | | 20:18 | | 21:08 | | 21:51 |
| 7 | 08:43 | 08:08 | 07:12 | | 07:01 | | 05:59 | 19:46-20:15/29 | 05:21 |
| | 16:44 | 17:36 | 18:27 | | 20:20 | | 21:10 | | 21:52 |
| 8 | 08:43 | 08:07 | 07:09 | | 06:59 | | 05:57 | 19:46-20:14/28 | 05:20 |
| | 16:45 | 17:37 | 18:28 | | 20:21 | | 21:12 | | 21:53 |
| 9 | 08:42 | 08:05 | 07:07 | | 06:56 | | 05:55 | 19:47-20:13/26 | 05:20 |
| | 16:46 | 17:39 | 18:30 | | 20:23 | | 21:13 | | 21:54 |
| 10 | 08:42 | 08:03 | 07:05 | | 06:54 | | 05:54 | 19:48-20:12/24 | 05:19 |
| | 16:48 | 17:41 | 18:32 | | 20:25 | | 21:15 | | 21:54 |
| 11 | 08:41 | 08:01 | 07:03 | | 06:52 | | 05:52 | 19:50-20:11/21 | 05:19 |
| | 16:49 | 17:43 | 18:34 | | 20:27 | | 21:17 | | 21:55 |
| 12 | 08:41 | 07:59 | 07:00 | | 06:50 | | 05:50 | 19:51-20:09/18 | 05:19 |
| | 16:51 | 17:45 | 18:35 | | 20:28 | | 21:18 | | 21:56 |
| 13 | 08:40 | 07:57 | 06:58 | | 06:47 | | 05:49 | 19:55-19:58/3 | 05:18 |
| | 16:52 | 17:47 | 18:37 | | 20:30 | | 21:20 | | 21:56 |
| 14 | 08:39 | 07:56 | 06:56 | 07:33-07:38/5 | 06:45 | | 05:47 | | 05:18 |
| | 16:54 | 17:49 | 18:39 | | 20:32 | | 21:21 | | 21:57 |
| 15 | 08:38 | 07:54 | 06:54 | 07:30-07:41/11 | 06:43 | | 05:46 | | 05:18 |
| | 16:55 | 17:50 | 18:41 | | 20:33 | | 21:23 | | 21:58 |
| 16 | 08:38 | 07:52 | 06:51 | 07:27-07:41/14 | 06:41 | | 05:44 | | 05:18 |
| | 16:57 | 17:52 | 18:42 | | 20:35 | | 21:24 | | 21:58 |
| 17 | 08:37 | 07:50 | 06:49 | 07:27-07:42/15 | 06:39 | | 05:43 | | 05:18 |
| | 16:58 | 17:54 | 18:44 | | 20:37 | | 21:26 | | 21:59 |
| 18 | 08:36 | 07:48 | 06:47 | 07:26-07:43/17 | 06:37 | | 05:41 | | 05:18 |
| | 17:00 | 17:56 | 18:46 | | 20:38 | | 21:27 | | 21:59 |
| 19 | 08:35 | 07:46 | 06:44 | 07:25-07:42/17 | 06:34 | | 05:40 | | 05:18 |
| | 17:02 | 17:58 | 18:47 | | 20:40 | | 21:29 | | 21:59 |
| 20 | 08:34 | 07:44 | 06:42 | 07:25-07:42/17 | 06:32 | | 05:38 | | 05:18 |
| | 17:03 | 18:00 | 18:49 | | 20:42 | | 21:30 | | 22:00 |
| 21 | 08:33 | 07:42 | 06:40 | 07:26-07:41/15 | 06:30 | | 05:37 | | 05:18 |
| | 17:05 | 18:01 | 18:51 | | 20:43 | | 21:32 | | 22:00 |
| 22 | 08:32 | 07:40 | 06:38 | 07:25-07:40/15 | 06:28 | | 05:36 | | 05:18 |
| | 17:07 | 18:03 | 18:53 | | 20:45 | | 21:33 | | 22:00 |
| 23 | 08:30 | 07:38 | 06:35 | 07:27-07:38/11 | 06:26 | | 05:34 | | 05:18 |
| | 17:08 | 18:05 | 18:54 | | 20:47 | | 21:34 | | 22:00 |
| 24 | 08:29 | 07:36 | 06:33 | 07:29-07:36/7 | 06:24 | | 05:33 | | 05:19 |
| | 17:10 | 18:07 | 18:56 | | 20:48 | | 21:36 | | 22:00 |
| 25 | 08:28 | 07:33 | 06:31 | | 06:22 | 19:53-20:03/10 | 05:32 | | 05:19 |
| | 17:12 | 18:09 | 18:58 | | 20:50 | | 21:37 | | 22:00 |
| 26 | 08:27 | 07:31 | 06:28 | | 06:20 | 19:50-20:11/21 | 05:31 | | 05:19 |
| | 17:14 | 18:10 | 18:59 | | 20:52 | | 21:38 | | 22:00 |
| 27 | 08:25 | 07:29 | 06:26 | | 06:18 | 19:49-20:13/24 | 05:30 | | 05:20 |
| | 17:15 | 18:12 | 19:01 | | 20:54 | | 21:40 | | 22:00 |
| 28 | 08:24 | 07:27 | 06:24 | | 06:16 | 19:48-20:14/26 | 05:29 | | 05:20 |
| | 17:17 | 18:14 | 19:03 | | 20:55 | | 21:41 | | 22:00 |
| 29 | 08:22 | | 07:21 | | 06:14 | 19:47-20:15/28 | 05:28 | | 05:21 |
| | 17:19 | | 20:04 | | 20:57 | | 21:42 | | 22:00 |
| 30 | 08:21 | | 07:19 | | 06:12 | 19:46-20:15/29 | 05:27 | | 05:22 |
| | 17:21 | | 20:06 | | 20:59 | | 21:43 | | 22:00 |
| 31 | 08:20 | | 07:17 | | | | 05:26 | | |
| | 17:23 | | 20:08 | | | | 21:45 | | |
| Potential sun hours | 259 | 278 | 367 | | 416 | | 485 | | 498 |
| Sum of minutes with flicker | 0 | 0 | 144 | | 138 | | 331 | | 0 |

**Table layout: For each day in each month the following matrix apply**

| | | |
|---|---|---|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |
| | Sun set (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |

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Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar per WTG

**Calculation:** 6460 Gortloughra WF cumulative WC **WTG:** 14 - Shehy More WF

## Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | July | | August | | September | | October | November | December |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 05:22 | | 05:58 | 20:00-20:20/20 | 06:48 | | 07:37 | 07:30 | 08:21 |
| | 22:00 | | 21:28 | | 20:26 | | 19:17 | 17:11 | 16:31 |
| 2 | 05:23 | | 06:00 | 19:59-20:21/22 | 06:50 | | 07:38 | 07:32 | 08:22 |
| | 21:59 | | 21:26 | | 20:24 | | 19:15 | 17:09 | 16:30 |
| 3 | 05:24 | | 06:02 | 19:58-20:23/25 | 06:51 | | 07:40 | 07:34 | 08:24 |
| | 21:59 | | 21:25 | | 20:22 | | 19:12 | 17:07 | 16:30 |
| 4 | 05:24 | | 06:03 | 19:56-20:23/27 | 06:53 | | 07:42 | 07:36 | 08:25 |
| | 21:59 | | 21:23 | | 20:19 | | 19:10 | 17:06 | 16:29 |
| 5 | 05:25 | | 06:05 | 19:56-20:24/28 | 06:54 | | 07:43 | 07:37 | 08:26 |
| | 21:58 | | 21:21 | | 20:17 | | 19:08 | 17:04 | 16:29 |
| 6 | 05:26 | | 06:06 | 19:55-20:24/29 | 06:56 | | 07:45 | 07:39 | 08:28 |
| | 21:58 | | 21:19 | | 20:15 | | 19:06 | 17:02 | 16:28 |
| 7 | 05:27 | | 06:08 | 19:55-20:25/30 | 06:58 | | 07:47 | 07:41 | 08:29 |
| | 21:57 | | 21:18 | | 20:13 | | 19:03 | 17:01 | 16:28 |
| 8 | 05:28 | | 06:09 | 19:54-20:25/31 | 06:59 | | 07:48 | 07:43 | 08:30 |
| | 21:56 | | 21:16 | | 20:10 | | 19:01 | 16:59 | 16:28 |
| 9 | 05:29 | | 06:11 | 19:54-20:25/31 | 07:01 | | 07:50 | 07:44 | 08:31 |
| | 21:56 | | 21:14 | | 20:08 | | 18:59 | 16:57 | 16:27 |
| 10 | 05:30 | | 06:12 | 19:54-20:25/31 | 07:02 | | 07:52 | 07:46 | 08:32 |
| | 21:55 | | 21:12 | | 20:06 | | 18:57 | 16:56 | 16:27 |
| 11 | 05:31 | | 06:14 | 19:54-20:25/31 | 07:04 | | 07:53 | 07:48 | 08:34 |
| | 21:54 | | 21:10 | | 20:03 | | 18:54 | 16:54 | 16:27 |
| 12 | 05:32 | | 06:16 | 19:54-20:24/30 | 07:06 | | 07:55 | 07:50 | 08:35 |
| | 21:53 | | 21:08 | | 20:01 | | 18:52 | 16:52 | 16:27 |
| 13 | 05:33 | | 06:17 | 19:54-20:24/30 | 07:07 | | 07:57 | 07:52 | 08:36 |
| | 21:52 | | 21:06 | | 19:59 | | 18:50 | 16:51 | 16:27 |
| 14 | 05:34 | | 06:19 | 19:54-20:22/28 | 07:09 | | 07:59 | 07:53 | 08:37 |
| | 21:52 | | 21:04 | | 19:56 | | 18:48 | 16:50 | 16:27 |
| 15 | 05:35 | | 06:20 | 19:55-20:21/26 | 07:11 | | 08:00 | 07:55 | 08:37 |
| | 21:51 | | 21:02 | | 19:54 | | 18:46 | 16:48 | 16:27 |
| 16 | 05:36 | | 06:22 | 19:56-20:19/23 | 07:12 | | 08:02 | 07:57 | 08:38 |
| | 21:50 | | 21:00 | | 19:52 | | 18:43 | 16:47 | 16:27 |
| 17 | 05:38 | | 06:24 | 19:57-20:17/20 | 07:14 | | 08:04 | 07:58 | 08:39 |
| | 21:48 | | 20:58 | | 19:49 | | 18:41 | 16:45 | 16:27 |
| 18 | 05:39 | | 06:25 | 19:59-20:08/9 | 07:15 | | 08:05 | 08:00 | 08:40 |
| | 21:47 | | 20:56 | | 19:47 | | 18:39 | 16:44 | 16:27 |
| 19 | 05:40 | | 06:27 | | 07:17 | 08:16-08:21/5 | 08:07 | 08:02 | 08:41 |
| | 21:46 | | 20:54 | | 19:45 | | 18:37 | 16:43 | 16:28 |
| 20 | 05:41 | | 06:29 | | 07:19 | 08:14-08:24/10 | 08:09 | 08:04 | 08:41 |
| | 21:45 | | 20:52 | | 19:42 | | 18:35 | 16:42 | 16:28 |
| 21 | 05:43 | | 06:30 | | 07:20 | 08:11-08:25/14 | 08:11 | 08:05 | 08:42 |
| | 21:44 | | 20:50 | | 19:40 | | 18:33 | 16:40 | 16:28 |
| 22 | 05:44 | | 06:32 | | 07:22 | 08:10-08:26/16 | 08:12 | 08:07 | 08:42 |
| | 21:43 | | 20:48 | | 19:38 | | 18:31 | 16:39 | 16:29 |
| 23 | 05:45 | | 06:33 | | 07:24 | 08:10-08:26/16 | 08:14 | 08:09 | 08:43 |
| | 21:41 | | 20:46 | | 19:35 | | 18:29 | 16:38 | 16:29 |
| 24 | 05:47 | | 06:35 | | 07:25 | 08:09-08:26/17 | 08:16 | 08:10 | 08:43 |
| | 21:40 | | 20:44 | | 19:33 | | 18:27 | 16:37 | 16:30 |
| 25 | 05:48 | | 06:37 | | 07:27 | 08:09-08:25/16 | 07:18 | 08:12 | 08:44 |
| | 21:39 | | 20:42 | | 19:31 | | 17:25 | 16:36 | 16:31 |
| 26 | 05:50 | | 06:38 | | 07:28 | 08:08-08:24/16 | 07:19 | 08:13 | 08:44 |
| | 21:37 | | 20:39 | | 19:28 | | 17:23 | 16:35 | 16:31 |
| 27 | 05:51 | | 06:40 | | 07:30 | 08:09-08:23/14 | 07:21 | 08:15 | 08:44 |
| | 21:36 | | 20:37 | | 19:26 | | 17:21 | 16:34 | 16:32 |
| 28 | 05:53 | | 06:41 | | 07:32 | 08:10-08:22/12 | 07:23 | 08:16 | 08:44 |
| | 21:34 | | 20:35 | | 19:24 | | 17:19 | 16:33 | 16:33 |
| 29 | 05:54 | | 06:43 | | 07:33 | 08:11-08:19/8 | 07:25 | 08:18 | 08:45 |
| | 21:33 | | 20:33 | | 19:22 | | 17:17 | 16:33 | 16:34 |
| 30 | 05:55 | | 06:45 | | 07:35 | | 07:27 | 08:19 | 08:45 |
| | 21:31 | | 20:31 | | 19:19 | | 17:15 | 16:32 | 16:35 |
| 31 | 05:57 | 20:13-20:18/5 | 06:46 | | | | 07:28 | | 08:45 |
| | 21:30 | 20:03-20:10/7 | 20:28 | | | | 17:13 | | 16:36 |
| Potential sun hours | 501 | | 453 | | 381 | | 332 | 267 | 244 |
| Sum of minutes with flicker | 12 | | 471 | | 144 | | 0 | 0 | 0 |

**Table layout: For each day in each month the following matrix apply**

| | | |
|---|---|---|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |
| | Sun set (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |

Licensed user:
**Jennings O'Donovan**
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Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar per WTG

**Calculation:** 6460 Gortloughra WF cumulative WC **WTG:** 15 - Shehy More WF

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:14 | 06:10 | 05:25 | 05:22 | 05:58 | 06:48 07:32-07:43/11 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:24 | 18:16 | 20:10 | 21:00 | 21:46 | 22:00 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:45 | 08:16 | 07:23 | 07:12 | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 07:30-07:43/13 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 07:38-07:44/6 | 06:06 | 05:23 | 05:24 | 06:02 | 06:51 07:29-07:44/15 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 | 21:04 | 21:48 | 21:59 | 21:25 | 20:22 | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 07:35-07:45/10 | 06:04 | 05:23 | 05:24 | 06:03 | 06:53 07:29-07:44/15 | 07:42 | 07:36 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:59 | 21:23 | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 07:33-07:46/13 | 06:02 | 05:22 | 05:25 | 06:05 | 06:54 07:28-07:43/15 | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 07:33-07:47/14 | 06:01 | 05:21 | 05:26 | 06:06 | 06:56 07:29-07:43/14 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:08 | 21:51 | 21:58 | 21:19 | 20:15 | 19:06 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 07:32-07:47/15 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 07:28-07:41/13 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 21:10 | 21:52 | 21:57 | 21:18 | 20:13 | 19:03 | 17:00 | 16:28 |
| 8 | 08:43 | 08:07 | 07:09 | 06:59 07:31-07:46/15 | 05:57 | 05:20 | 05:28 | 06:09 | 06:59 07:30-07:40/10 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | 20:21 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 07:31-07:46/15 | 05:55 | 05:20 | 05:29 | 06:11 | 07:01 07:31-07:37/6 | 07:50 | 07:44 | 08:31 |
| | 16:46 | 17:39 | 18:30 | 20:23 | 21:13 | 21:54 | 21:56 | 21:14 | 20:08 | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 07:32-07:45/13 | 05:54 | 05:19 | 05:30 | 06:12 | 07:02 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 07:33-07:44/11 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:53 | 07:48 | 08:34 |
| | 16:49 | 17:43 | 18:34 | 20:27 | 21:17 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | 06:50 07:35-07:41/6 | 05:50 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:35 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:52 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:47 | 05:49 | 05:18 | 05:33 | 06:17 | 07:07 | 07:57 | 07:52 | 08:36 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:56 | 06:56 | 06:45 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:59 | 07:53 | 08:37 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 21:21 | 21:57 | 21:52 | 21:04 | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:35 | 06:20 | 07:11 | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:41 | 20:33 | 21:23 | 21:58 | 21:51 | 21:02 | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 08:38 | 07:52 | 06:51 | 06:41 | 05:44 | 05:18 | 05:36 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:50 | 21:00 | 19:52 | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | 20:37 | 21:26 | 21:59 | 21:49 | 20:58 | 19:49 | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 | 05:18 | 05:39 | 06:25 | 07:15 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | 06:34 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:41 |
| | 17:02 | 17:58 | 18:47 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 05:38 | 05:18 | 05:41 | 06:29 | 07:19 | 08:09 | 08:04 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | 21:30 | 22:00 | 21:45 | 20:52 | 19:42 | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:40 | 16:28 |
| 22 | 08:32 | 07:40 | 06:38 | 06:28 | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | 21:33 | 22:00 | 21:43 | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 05:34 | 05:18 | 05:45 | 06:33 | 07:24 | 08:14 | 08:09 | 08:43 |
| | 17:08 | 18:05 | 18:54 | 20:47 | 21:34 | 22:00 | 21:41 | 20:46 | 19:35 | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | 05:33 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | 07:18 | 08:12 | 08:44 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:39 | 20:42 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:27 | 07:31 | 06:28 | 06:20 | 05:31 | 05:19 | 05:50 | 06:38 | 07:28 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | 20:52 | 21:38 | 22:00 | 21:37 | 20:39 | 19:28 | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 | 20:54 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:20 | 05:52 | 06:41 | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | 07:25 | 08:18 | 08:45 |
| | 17:19 | | 20:04 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:22 | 17:17 | 16:32 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:21 | 05:55 | 06:45 | 07:35 | 07:27 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:59 | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:20 | | 07:17 | | 05:26 | | 05:57 | 06:46 07:34-07:40/6 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:45 | | 21:30 | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 259 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 244 |
| Sum of minutes with flicker | 0 | 0 | 0 | 118 | 0 | 0 | 0 | 6 | 112 | 0 | 0 | 0 |

**Table layout: For each day in each month the following matrix apply**

| | | |
|---|---|---|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |
| | Sun set (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |

Licensed user:
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+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar per WTG

**Calculation:** 6460 Gortloughra WF cumulative WC **WTG:** 16 - Shehy More WF

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:14 | 06:10 | 05:25 | 05:22 | 05:58 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:24 | 18:16 | 20:10 | 21:00 | 21:46 | 22:00 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:45 | 08:16 | 07:23 | 07:12 | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | 06:06 | 05:23 | 05:23 | 06:01 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 | 21:04 | 21:48 | 21:59 | 21:25 | 20:22 | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:04 | 05:23 | 05:24 | 06:03 | 06:53 | 07:42 | 07:36 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | 06:02 | 05:22 | 05:25 | 06:05 | 06:54 | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:21 | 05:26 | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:08 | 21:51 | 21:58 | 21:19 | 20:15 | 19:05 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:35 | 18:26 | 20:20 | 21:10 | 21:52 | 21:57 | 21:18 | 20:13 | 19:03 | 17:00 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 05:57 | 05:20 | 05:28 | 06:09 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | 20:21 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:27 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | 05:55 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:46 | 17:39 | 18:30 | 20:23 | 21:13 | 21:54 | 21:56 | 21:14 | 20:08 | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:19 | 05:30 | 06:12 | 07:02 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:56 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:53 | 07:48 | 08:34 |
| | 16:49 | 17:43 | 18:34 | 20:26 | 21:17 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | 06:50 | 05:50 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:35 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:52 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:47 | 05:49 | 05:18 | 05:33 | 06:17 | 07:07 | 07:57 | 07:52 | 08:36 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:56 | 06:56 | 06:45 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:59 | 07:53 | 08:36 |
| | 16:54 | 17:48 | 18:39 | 20:32 | 21:21 | 21:57 | 21:52 | 21:04 | 19:56 | 18:48 | 16:49 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:35 | 06:20 | 07:11 | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | 20:33 | 21:23 | 21:58 | 21:51 | 21:02 | 19:54 | 18:45 | 16:48 | 16:27 |
| 16 | 08:38 | 07:52 | 06:51 | 06:41 | 05:44 | 05:18 | 05:36 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:50 | 21:00 | 19:52 | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | 20:37 | 21:26 | 21:59 | 21:48 | 20:58 | 19:49 | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 | 05:18 | 05:39 | 06:25 | 07:15 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | 06:34 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 05:38 | 05:18 | 05:41 | 06:28 | 07:19 | 08:09 | 08:04 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | 21:30 | 22:00 | 21:45 | 20:52 | 19:42 | 18:35 | 16:41 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | 06:28 | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | 21:33 | 22:00 | 21:43 | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 05:34 | 05:18 | 05:45 | 06:33 | 07:23 | 08:14 | 08:09 | 08:43 |
| | 17:08 | 18:05 | 18:54 | 20:47 | 21:34 | 22:00 | 21:41 | 20:46 | 19:35 | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | 05:33 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | 07:18 | 08:12 | 08:44 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:39 | 20:42 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:27 | 07:31 | 06:28 | 06:20 | 05:31 | 05:19 | 05:50 | 06:38 | 07:28 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | 20:52 | 21:38 | 22:00 | 21:37 | 20:39 | 19:28 | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 | 20:54 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:20 | 05:52 | 06:41 | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | 07:25 | 08:18 | 08:45 |
| | 17:19 | | 20:04 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:22 | 17:17 | 16:32 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:21 | 05:55 | 06:45 | 07:35 | 07:27 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:59 | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:20 | | 07:17 | | 05:26 | | 05:57 | 06:46 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:45 | | 21:30 | 20:28 | | 17:13 | | 16:35 |
| Potential sun hours | 259 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 244 |
| Sum of minutes with flicker | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**Table layout: For each day in each month the following matrix apply**

| | | |
|---|---|---|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |
| | Sun set (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar per WTG

**Calculation:** 6460 Gortloughra WF cumulative WC **WTG:** 17 - Shehy More WF

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:14 | 06:10 | 05:25 | 05:22 | 05:58 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:24 | 18:16 | 20:10 | 21:00 | 21:46 | 22:00 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:45 | 08:16 | 07:23 | 07:12 | 06:08 | 05:24 | 05:23 | 06:00 | 06:49 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | 06:06 | 05:23 | 05:23 | 06:01 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 | 21:03 | 21:48 | 21:59 | 21:25 | 20:22 | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:04 | 05:23 | 05:24 | 06:03 | 06:53 | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | 06:02 | 05:22 | 05:25 | 06:05 | 06:54 | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:21 | 05:26 | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:42 | 17:34 | 18:25 | 20:18 | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 19:05 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:35 | 18:26 | 20:20 | 21:10 | 21:52 | 21:57 | 21:18 | 20:12 | 19:03 | 17:00 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 05:57 | 05:20 | 05:28 | 06:09 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | 20:21 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:27 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | 05:55 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:46 | 17:39 | 18:30 | 20:23 | 21:13 | 21:53 | 21:56 | 21:14 | 20:08 | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:19 | 05:30 | 06:12 | 07:02 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:56 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:33 | 20:26 | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | 06:50 | 05:50 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:35 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:52 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:47 | 05:49 | 05:18 | 05:33 | 06:17 | 07:07 | 07:57 | 07:51 | 08:36 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 06:45 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:48 | 18:39 | 20:32 | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 18:48 | 16:49 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:35 | 06:20 | 07:10 | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | 20:33 | 21:23 | 21:58 | 21:51 | 21:02 | 19:54 | 18:45 | 16:48 | 16:27 |
| 16 | 08:38 | 07:52 | 06:51 | 06:41 | 05:44 | 05:18 | 05:36 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:50 | 21:00 | 19:52 | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:37 | 06:24 | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | 20:37 | 21:26 | 21:59 | 21:48 | 20:58 | 19:49 | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:36 | 05:41 | 05:18 | 05:39 | 06:25 | 07:15 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | 06:34 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 05:38 | 05:18 | 05:41 | 06:28 | 07:19 | 08:09 | 08:04 | 08:41 |
| | 17:03 | 17:59 | 18:49 | 20:42 | 21:30 | 22:00 | 21:45 | 20:52 | 19:42 | 18:35 | 16:41 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | 06:28 | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:52 | 20:45 | 21:33 | 22:00 | 21:43 | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 05:34 | 05:18 | 05:45 | 06:33 | 07:23 | 08:14 | 08:09 | 08:43 |
| | 17:08 | 18:05 | 18:54 | 20:47 | 21:34 | 22:00 | 21:41 | 20:46 | 19:35 | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | 05:33 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | 07:18 | 08:12 | 08:44 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:39 | 20:41 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:27 | 07:31 | 06:28 | 06:20 | 05:31 | 05:19 | 05:50 | 06:38 | 07:28 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | 20:52 | 21:38 | 22:00 | 21:37 | 20:39 | 19:28 | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 | 20:53 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:20 | 05:52 | 06:41 | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | 07:25 | 08:18 | 08:45 |
| | 17:19 | | 20:04 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:21 | 17:17 | 16:32 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:21 | 05:55 | 06:45 | 07:35 | 07:27 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:59 | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | 05:26 | | 05:57 | 06:46 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:45 | | 21:30 | 20:28 | | 17:13 | | 16:35 |
| Potential sun hours | 259 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 244 |
| Sum of minutes with flicker | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**Table layout: For each day in each month the following matrix apply**

| | | |
|---|---|---|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |
| | Sun set (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar per WTG

**Calculation:** 6460 Gortloughra WF cumulative WC **WTG:** 18 - Shehy More WF

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:14 | 06:10 | 05:25 | 05:22 | 05:58 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:24 | 18:16 | 20:09 | 21:00 | 21:46 | 22:00 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:45 | 08:16 | 07:23 | 07:12 | 06:08 | 05:24 | 05:23 | 06:00 | 06:49 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | 06:06 | 05:23 | 05:23 | 06:01 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 | 21:03 | 21:48 | 21:59 | 21:25 | 20:22 | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:04 | 05:23 | 05:24 | 06:03 | 06:53 | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | 06:02 | 05:22 | 05:25 | 06:05 | 06:54 | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:21 | 05:26 | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:42 | 17:34 | 18:25 | 20:18 | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 19:05 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:35 | 18:26 | 20:20 | 21:10 | 21:52 | 21:57 | 21:18 | 20:12 | 19:03 | 17:00 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 05:57 | 05:20 | 05:28 | 06:09 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | 20:21 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:27 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | 05:55 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:46 | 17:39 | 18:30 | 20:23 | 21:13 | 21:54 | 21:56 | 21:14 | 20:08 | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:19 | 05:30 | 06:12 | 07:02 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:56 | 16:55 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:33 | 20:26 | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | 06:50 | 05:50 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:35 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:52 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:47 | 05:49 | 05:18 | 05:33 | 06:17 | 07:07 | 07:57 | 07:51 | 08:36 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 06:45 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:48 | 18:39 | 20:32 | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 18:48 | 16:49 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:35 | 06:20 | 07:10 | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | 20:33 | 21:23 | 21:58 | 21:51 | 21:02 | 19:54 | 18:45 | 16:48 | 16:27 |
| 16 | 08:38 | 07:52 | 06:51 | 06:41 | 05:44 | 05:18 | 05:36 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:50 | 21:00 | 19:52 | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:37 | 06:24 | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | 20:37 | 21:26 | 21:59 | 21:48 | 20:58 | 19:49 | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:36 | 05:41 | 05:18 | 05:39 | 06:25 | 07:15 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | 06:34 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 05:38 | 05:18 | 05:41 | 06:28 | 07:19 | 08:09 | 08:04 | 08:41 |
| | 17:03 | 17:59 | 18:49 | 20:42 | 21:30 | 22:00 | 21:45 | 20:52 | 19:42 | 18:35 | 16:41 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | 06:28 | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:52 | 20:45 | 21:33 | 22:00 | 21:43 | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 05:34 | 05:18 | 05:45 | 06:33 | 07:23 | 08:14 | 08:09 | 08:43 |
| | 17:08 | 18:05 | 18:54 | 20:47 | 21:34 | 22:00 | 21:41 | 20:46 | 19:35 | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | 05:33 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | 07:18 | 08:12 | 08:44 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:39 | 20:41 | 19:31 | 17:24 | 16:36 | 16:31 |
| 26 | 08:27 | 07:31 | 06:28 | 06:20 | 05:31 | 05:19 | 05:49 | 06:38 | 07:28 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | 20:52 | 21:38 | 22:00 | 21:37 | 20:39 | 19:28 | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 | 20:53 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:20 | 05:52 | 06:41 | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | 07:25 | 08:18 | 08:45 |
| | 17:19 | | 20:04 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:21 | 17:17 | 16:32 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:21 | 05:55 | 06:45 | 07:35 | 07:27 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:59 | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:34 |
| 31 | 08:19 | | 07:17 | | 05:26 | | 05:57 | 06:46 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:45 | | 21:30 | 20:28 | | 17:13 | | 16:35 |
| Potential sun hours | 259 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 244 |
| Sum of minutes with flicker | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**Table layout: For each day in each month the following matrix apply**

| | | |
|---|---|---|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |
| | Sun set (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |

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Calculated:
10/09/2024 10:49/4.0.552

# SHADOW - Calendar per WTG

**Calculation:** 6460 Gortloughra WF cumulative WC **WTG:** 19 - Shehy More WF

## Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | | April | | May | June |
|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | | 07:15 | | 06:10 | 05:25 |
| | 16:37 | 17:25 | 18:16 | | 20:10 | | 21:00 | 21:46 |
| 2 | 08:45 | 08:16 | 07:23 | | 07:12 | | 06:08 | 05:24 |
| | 16:38 | 17:26 | 18:18 | | 20:11 | | 21:02 | 21:47 |
| 3 | 08:44 | 08:15 | 07:21 | | 07:10 | | 06:06 | 05:23 |
| | 16:39 | 17:28 | 18:19 | | 20:13 | | 21:04 | 21:48 |
| 4 | 08:44 | 08:13 | 07:18 | | 07:08 | | 06:04 | 05:23 |
| | 16:40 | 17:30 | 18:21 | | 20:15 | | 21:05 | 21:49 |
| 5 | 08:44 | 08:12 | 07:16 | | 07:05 | | 06:03 | 05:22 |
| | 16:41 | 17:32 | 18:23 | | 20:16 | | 21:07 | 21:50 |
| 6 | 08:44 | 08:10 | 07:14 | | 07:03 | | 06:01 | 05:21 |
| | 16:43 | 17:34 | 18:25 | | 20:18 | | 21:09 | 21:51 |
| 7 | 08:43 | 08:08 | 07:12 | 08:06-08:15/9 | 07:01 | | 05:59 | 05:21 |
| | 16:44 | 17:36 | 18:27 | | 20:20 | | 21:10 | 21:52 |
| 8 | 08:43 | 08:07 | 07:09 | 08:03-08:18/15 | 06:59 | | 05:57 | 05:20 |
| | 16:45 | 17:37 | 18:28 | | 20:21 | | 21:12 | 21:53 |
| 9 | 08:42 | 08:05 | 07:07 | 08:00-08:19/19 | 06:56 | | 05:55 | 05:20 |
| | 16:47 | 17:39 | 18:30 | | 20:23 | | 21:13 | 21:54 |
| 10 | 08:42 | 08:03 | 07:05 | 07:59-08:20/21 | 06:54 | 07:24-07:30/6 | 05:54 | 05:19 |
| | 16:48 | 17:41 | 18:32 | | 20:25 | | 21:15 | 21:54 |
| 11 | 08:41 | 08:01 | 07:03 | 07:58-08:21/23 | 06:52 | 19:44-19:53/9 | 05:52 | 05:19 |
| | 16:49 | 17:43 | 18:34 | | 20:27 | 07:21-07:32/11 | 21:17 | 21:55 |
| 12 | 08:41 | 07:59 | 07:00 | 07:56-08:20/24 | 06:50 | 19:42-19:59/17 | 05:50 | 05:19 |
| | 16:51 | 17:45 | 18:35 | | 20:28 | 07:20-07:34/14 | 21:18 | 21:56 |
| 13 | 08:40 | 07:57 | 06:58 | 07:56-08:21/25 | 06:47 | 19:40-20:00/20 | 05:49 | 05:18 |
| | 16:52 | 17:47 | 18:37 | | 20:30 | 07:19-07:34/15 | 21:20 | 21:56 |
| 14 | 08:39 | 07:56 | 06:56 | 07:56-08:21/25 | 06:45 | 19:40-20:01/21 | 05:47 | 05:18 |
| | 16:54 | 17:49 | 18:39 | | 20:32 | 07:17-07:34/17 | 21:21 | 21:57 |
| 15 | 08:38 | 07:54 | 06:54 | 07:56-08:21/25 | 06:43 | 19:39-20:01/22 | 05:46 | 05:18 |
| | 16:55 | 17:50 | 18:41 | | 20:33 | 07:17-07:34/17 | 21:23 | 21:58 |
| 16 | 08:38 | 07:52 | 06:51 | 07:55-08:20/25 | 06:41 | 19:39-20:01/22 | 05:44 | 05:18 |
| | 16:57 | 17:52 | 18:42 | | 20:35 | 07:16-07:34/18 | 21:24 | 21:58 |
| 17 | 08:37 | 07:50 | 06:49 | 07:56-08:19/23 | 06:39 | 19:39-20:01/22 | 05:43 | 05:18 |
| | 16:58 | 17:54 | 18:44 | | 20:37 | 07:16-07:34/18 | 21:26 | 21:59 |
| 18 | 08:36 | 07:48 | 06:47 | 07:56-08:19/23 | 06:37 | 19:40-20:01/21 | 05:41 | 05:18 |
| | 17:00 | 17:56 | 18:46 | | 20:38 | 07:17-07:33/16 | 21:27 | 21:59 |
| 19 | 08:35 | 07:46 | 06:44 | 07:56-08:17/21 | 06:34 | 19:41-20:00/19 | 05:40 | 05:18 |
| | 17:02 | 17:58 | 18:47 | | 20:40 | 07:17-07:32/15 | 21:29 | 21:59 |
| 20 | 08:34 | 07:44 | 06:42 | 07:58-08:15/17 | 06:32 | 19:42-19:59/17 | 05:38 | 05:18 |
| | 17:03 | 18:00 | 18:49 | | 20:42 | 07:18-07:31/13 | 21:30 | 22:00 |
| 21 | 08:33 | 07:42 | 06:40 | 07:59-08:13/14 | 06:30 | 19:49-19:57/8 | 05:37 | 05:18 |
| | 17:05 | 18:01 | 18:51 | | 20:43 | 07:20-07:29/9 | 21:32 | 22:00 |
| 22 | 08:32 | 07:40 | 06:38 | 08:02-08:09/7 | 06:28 | | 05:36 | 05:18 |
| | 17:07 | 18:03 | 18:53 | | 20:45 | | 21:33 | 22:00 |
| 23 | 08:30 | 07:38 | 06:35 | | 06:26 | | 05:35 | 05:18 |
| | 17:08 | 18:05 | 18:54 | | 20:47 | | 21:34 | 22:00 |
| 24 | 08:29 | 07:36 | 06:33 | | 06:24 | | 05:33 | 05:19 |
| | 17:10 | 18:07 | 18:56 | | 20:49 | | 21:36 | 22:00 |
| 25 | 08:28 | 07:33 | 06:31 | | 06:22 | | 05:32 | 05:19 |
| | 17:12 | 18:09 | 18:58 | | 20:50 | | 21:37 | 22:00 |
| 26 | 08:27 | 07:31 | 06:28 | | 06:20 | | 05:31 | 05:20 |
| | 17:14 | 18:10 | 18:59 | | 20:52 | | 21:38 | 22:00 |
| 27 | 08:25 | 07:29 | 06:26 | | 06:18 | | 05:30 | 05:20 |
| | 17:15 | 18:12 | 19:01 | | 20:54 | | 21:40 | 22:00 |
| 28 | 08:24 | 07:27 | 06:24 | | 06:16 | | 05:29 | 05:20 |
| | 17:17 | 18:14 | 19:03 | | 20:55 | | 21:41 | 22:00 |
| 29 | 08:22 | | 07:21 | | 06:14 | | 05:28 | 05:21 |
| | 17:19 | | 20:05 | | 20:57 | | 21:42 | 22:00 |
| 30 | 08:21 | | 07:19 | | 06:12 | | 05:27 | 05:22 |
| | 17:21 | | 20:06 | | 20:59 | | 21:43 | 22:00 |
| 31 | 08:20 | | 07:17 | | | | 05:26 | |
| | 17:23 | | 20:08 | | | | 21:45 | |
| Potential sun hours | 259 | 278 | 367 | | 416 | | 485 | 498 |
| Sum of minutes with flicker | 0 | 0 | 316 | | 367 | | 0 | 0 |

**Table layout: For each day in each month the following matrix apply**

| | | |
|---|---|---|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |
| | Sun set (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |

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10/09/2024 10:49/4.0.552

# SHADOW - Calendar per WTG

**Calculation:** 6460 Gortloughra WF cumulative WC **WTG:** 19 - Shehy More WF

## Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | July | August | September | October | November | December |
|---|---|---|---|---|---|---|
| 1 | 05:22 | 05:59 | 06:48 19:43-19:52/9 | 07:37 08:36-09:00/24 | 07:30 | 08:21 |
| | 22:00 | 21:28 | 20:26 07:20-07:31/11 | 19:17 | 17:11 | 16:31 |
| 2 | 05:23 | 06:00 | 06:50 07:23-07:29/6 | 07:38 08:36-08:59/23 | 07:32 | 08:22 |
| | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:30 |
| 3 | 05:24 | 06:02 | 06:51 | 07:40 08:36-08:58/22 | 07:34 | 08:24 |
| | 21:59 | 21:25 | 20:22 | 19:12 | 17:07 | 16:30 |
| 4 | 05:24 | 06:03 | 06:53 | 07:42 08:37-08:57/20 | 07:36 | 08:25 |
| | 21:59 | 21:23 | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 05:25 | 06:05 | 06:54 | 07:43 08:38-08:55/17 | 07:37 | 08:26 |
| | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 05:26 | 06:06 | 06:56 | 07:45 08:40-08:52/12 | 07:39 | 08:28 |
| | 21:58 | 21:19 | 20:15 | 19:06 | 17:02 | 16:28 |
| 7 | 05:27 | 06:08 | 06:58 | 07:47 08:45-08:48/3 | 07:41 | 08:29 |
| | 21:57 | 21:18 | 20:13 | 19:03 | 17:01 | 16:28 |
| 8 | 05:28 | 06:09 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 05:29 | 06:11 | 07:01 | 07:50 | 07:44 | 08:31 |
| | 21:56 | 21:14 | 20:08 | 18:59 | 16:57 | 16:27 |
| 10 | 05:30 | 06:13 | 07:03 | 07:52 | 07:46 | 08:32 |
| | 21:55 | 21:12 | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 05:31 | 06:14 | 07:04 | 07:53 | 07:48 | 08:34 |
| | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:35 |
| | 21:53 | 21:08 | 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 05:33 | 06:17 | 07:07 | 07:57 | 07:52 | 08:36 |
| | 21:52 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 05:34 | 06:19 | 07:09 | 07:59 | 07:53 | 08:37 |
| | 21:52 | 21:04 | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 05:35 | 06:21 | 07:11 | 08:00 | 07:55 | 08:37 |
| | 21:51 | 21:02 | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 05:36 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 21:50 | 21:00 | 19:52 | 18:43 | 16:47 | 16:27 |
| 17 | 05:38 | 06:24 | 07:14 | 08:04 | 07:59 | 08:39 |
| | 21:49 | 20:58 | 19:49 | 18:41 | 16:45 | 16:27 |
| 18 | 05:39 | 06:25 | 07:15 | 08:05 | 08:00 | 08:40 |
| | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:27 |
| 19 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:41 |
| | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 05:41 | 06:29 | 07:19 | 08:09 | 08:04 | 08:41 |
| | 21:45 | 20:52 | 19:42 | 18:35 | 16:42 | 16:28 |
| 21 | 05:43 | 06:30 07:28-07:30/2 | 07:20 08:49-08:52/3 | 08:11 | 08:05 | 08:42 |
| | 21:44 | 20:50 | 19:40 | 18:33 | 16:40 | 16:28 |
| 22 | 05:44 | 06:32 19:53-20:01/8 07:24-07:34/10 | 07:22 08:45-08:57/12 | 08:12 | 08:07 | 08:42 |
| | 21:43 | 20:48 19:49-19:51/2 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 05:45 | 06:33 19:46-20:03/17 | 07:24 08:43-08:59/16 | 08:14 | 08:09 | 08:43 |
| | 21:41 | 20:46 07:22-07:35/13 | 19:35 | 18:29 | 16:38 | 16:29 |
| 24 | 05:47 | 06:35 19:43-20:03/20 | 07:25 08:40-09:00/20 | 08:16 | 08:10 | 08:43 |
| | 21:40 | 20:44 07:21-07:36/15 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 05:48 | 06:37 19:43-20:03/20 | 07:27 08:39-09:01/22 | 07:18 | 08:12 | 08:44 |
| | 21:39 | 20:42 07:19-07:36/17 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 05:50 | 06:38 19:42-20:04/22 | 07:28 08:37-09:01/24 | 07:20 | 08:13 | 08:44 |
| | 21:37 | 20:39 07:19-07:36/17 | 19:29 | 17:23 | 16:35 | 16:31 |
| 27 | 05:51 | 06:40 19:41-20:03/22 | 07:30 08:37-09:01/24 | 07:21 | 08:15 | 08:44 |
| | 21:36 | 20:37 07:18-07:36/18 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 05:53 | 06:41 19:41-20:03/22 | 07:32 08:37-09:02/25 | 07:23 | 08:16 | 08:44 |
| | 21:34 | 20:35 07:18-07:36/18 | 19:24 | 17:19 | 16:33 | 16:33 |
| 29 | 05:54 | 06:43 19:41-20:01/20 | 07:33 08:36-09:01/25 | 07:25 | 08:18 | 08:45 |
| | 21:33 | 20:33 07:18-07:35/17 | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 05:55 | 06:45 19:41-20:01/20 | 07:35 08:36-09:01/25 | 07:27 | 08:19 | 08:45 |
| | 21:31 | 20:31 07:19-07:34/15 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 05:57 | 06:46 19:41-19:58/17 | | 07:28 | | 08:45 |
| | 21:30 | 20:28 07:19-07:32/13 | | 17:13 | | 16:36 |
| Potential sun hours | 501 | 453 | 381 | 332 | 267 | 244 |
| Sum of minutes with flicker | 0 | 345 | 222 | 121 | 0 | 0 |

**Table layout: For each day in each month the following matrix apply**

| | | |
|---|---|---|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |
| | Sun set (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |

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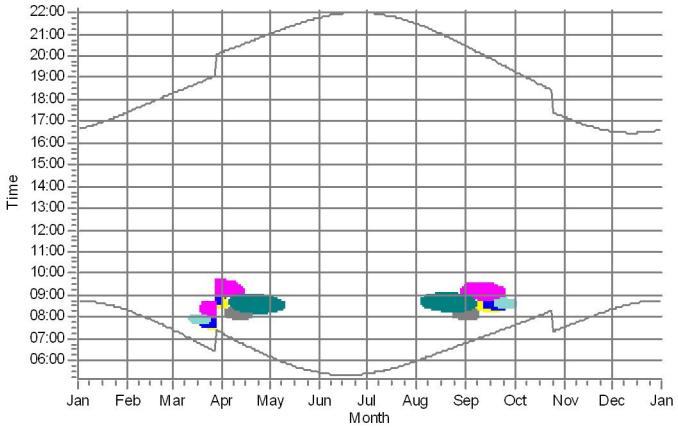
Calculated:
10/09/2024 10:49/4.0.552

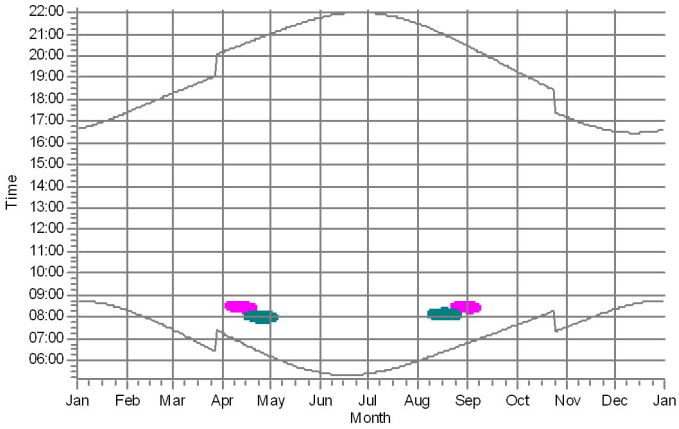
# SHADOW - Calendar per WTG, graphical

**Calculation:** 6460 Gortloughra WF cumulative WC

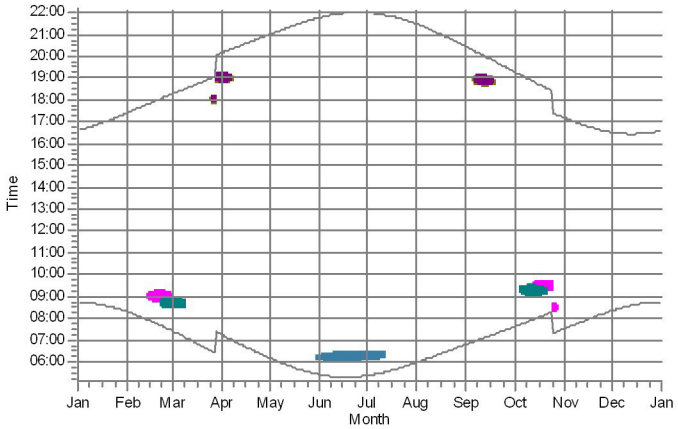
1: T01



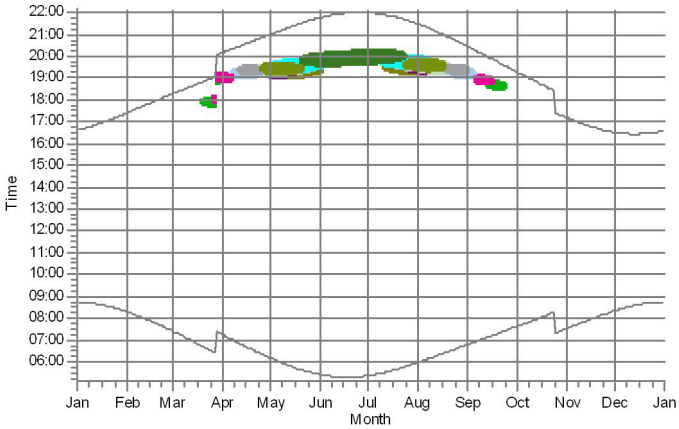

2: T02



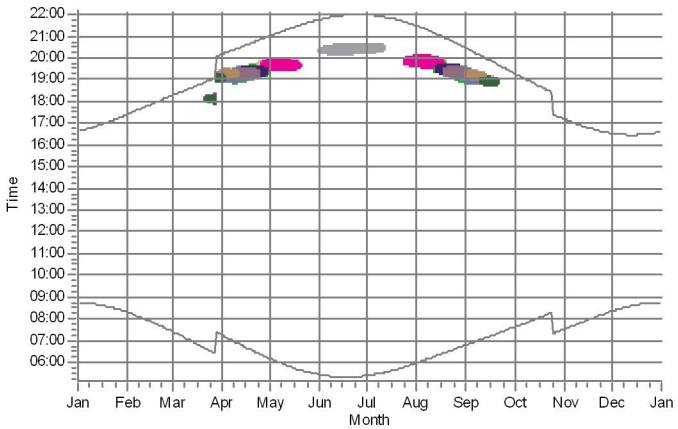

3: T03



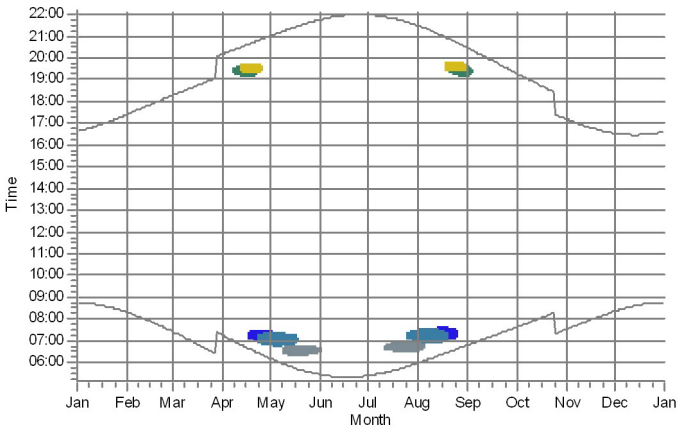

4: T04




5: T06




6: T07




Shadow receptors

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| A: H1 | J: H10 | P: H17 | V: H23 | AJ: H38 | BD: H70 | BO: H81 | |
| B: H2 | K: H11 | Q: H18 | W: H24 | AK: H39 | BE: H71 | BP: H82 | |
| C: H3 | L: H12 | R: H19 | X: H25 | AL: H40 | BF: H72 | BQ: H83 | |
| D: H4 | M: H13 | S: H20 | Y: H26 | AV: H60 | BG: H73 | BR: H84 | |
| E: H5 | N: H14 | T: H21 | AC: H30 | BB: H68 | BM: H79 | BS: H85 | |
| F: H6 | O: H15 | U: H22 | AD: H31 | BC: H69 | BN: H80 | BU: H87 | |

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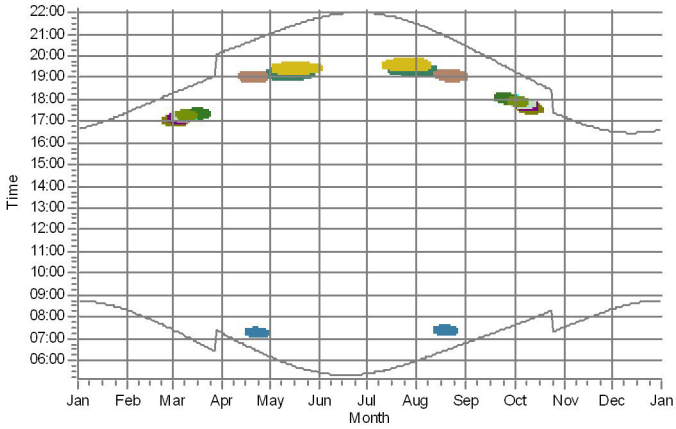
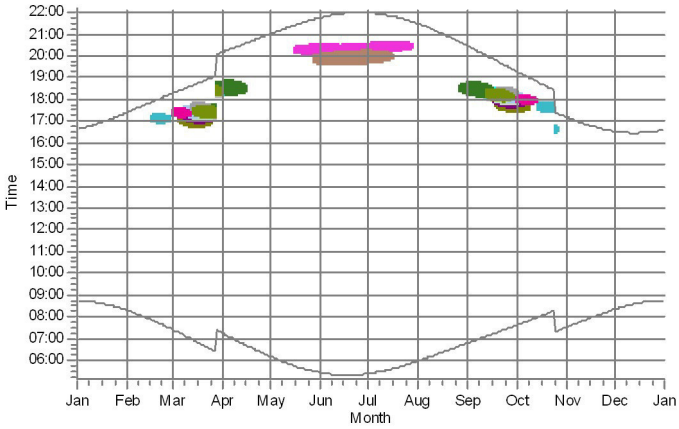
# SHADOW - Calendar per WTG, graphical

**Calculation:** 6460 Gortloughra WF cumulative WC

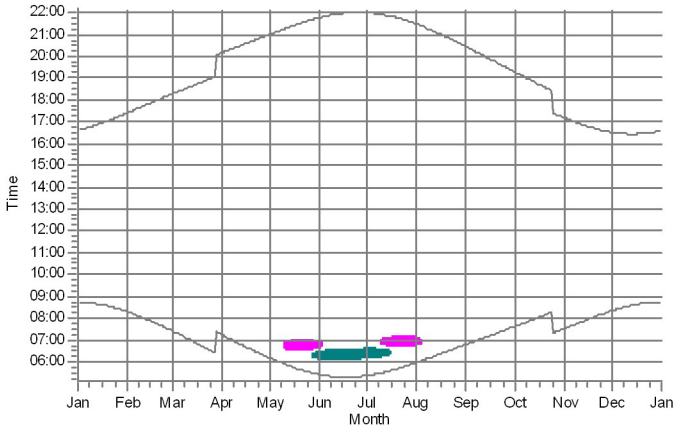
7: T08



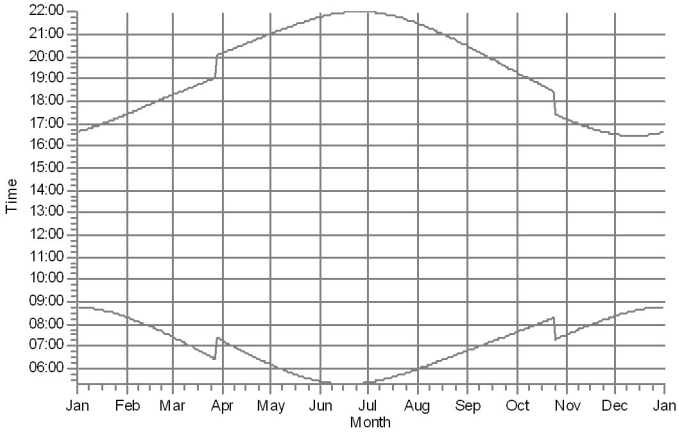

8: T09



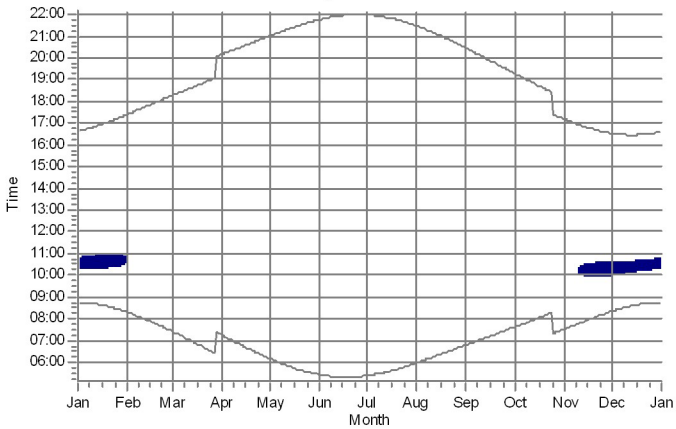

9: Shehy More WF



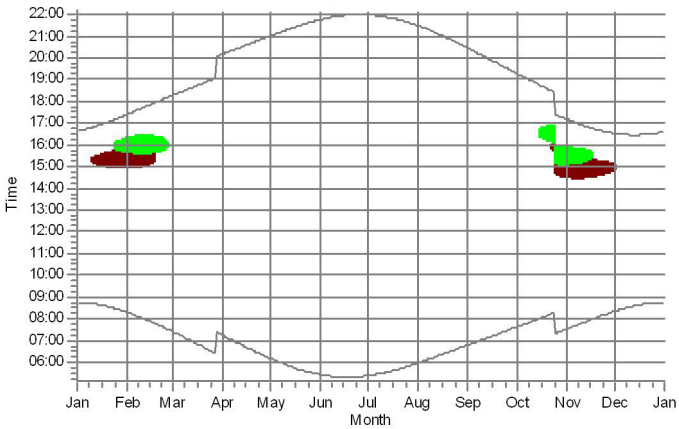

10: Shehy More WF



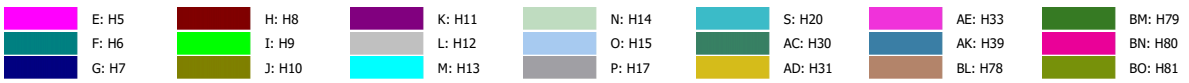

11: Shehy More WF




12: Shehy More WF




Shadow receptors



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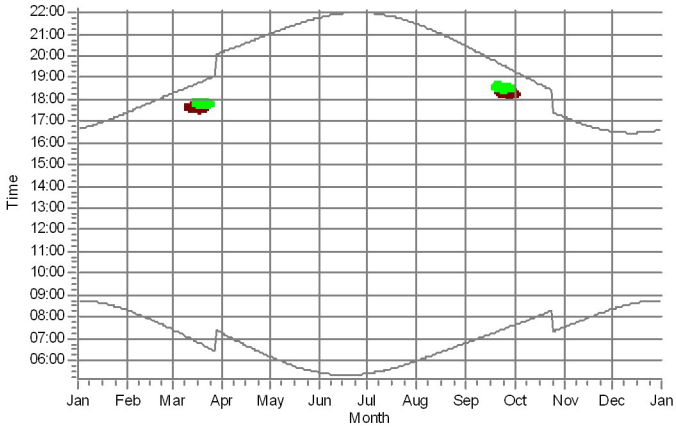
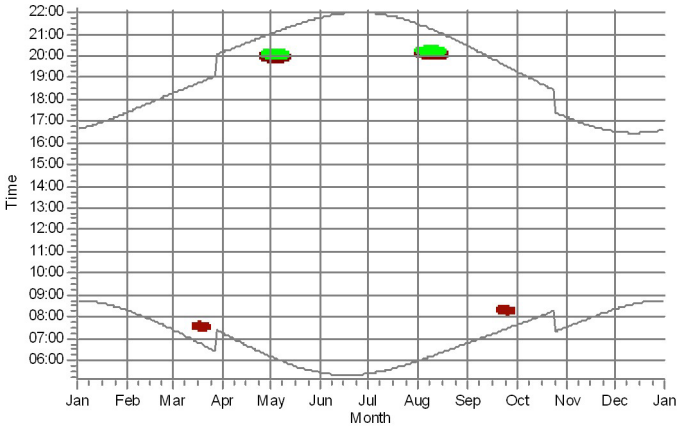
# SHADOW - Calendar per WTG, graphical

**Calculation:** 6460 Gortloughra WF cumulative WC

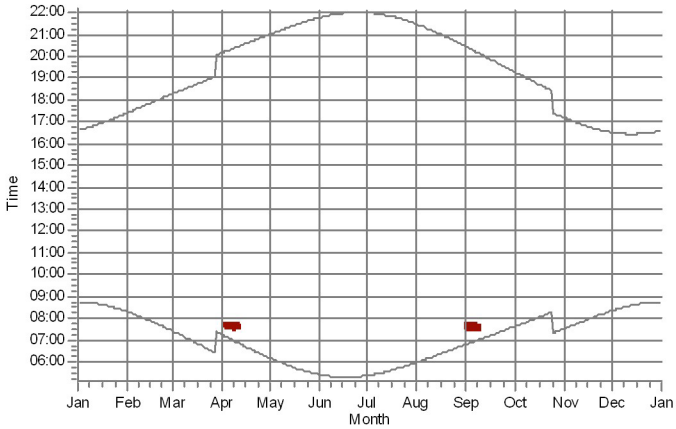
13: Shehy More WF



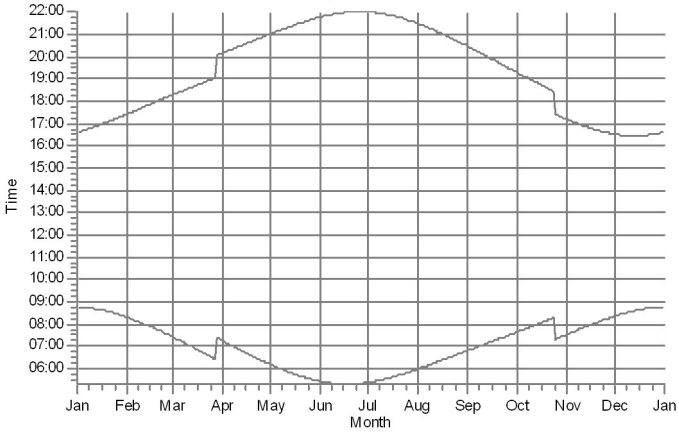

14: Shehy More WF



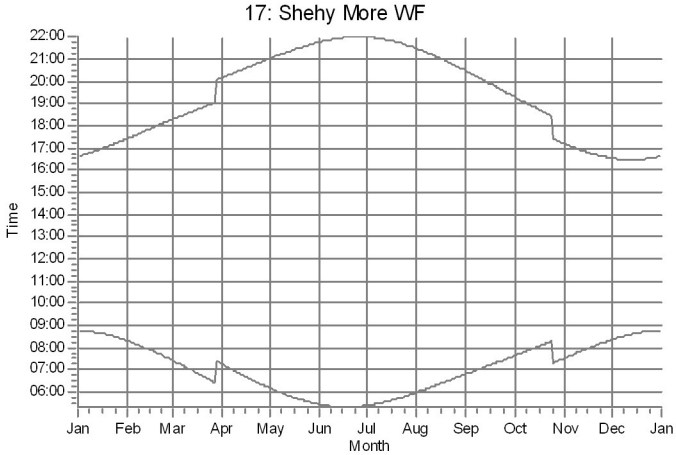

15: Shehy More WF



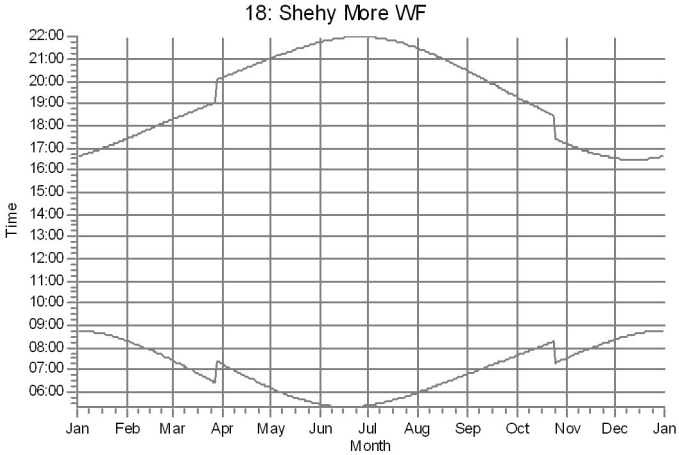

16: Shehy More WF




17: Shehy More WF




18: Shehy More WF




Shadow receptors

H: H8 I: H9 AY: H63

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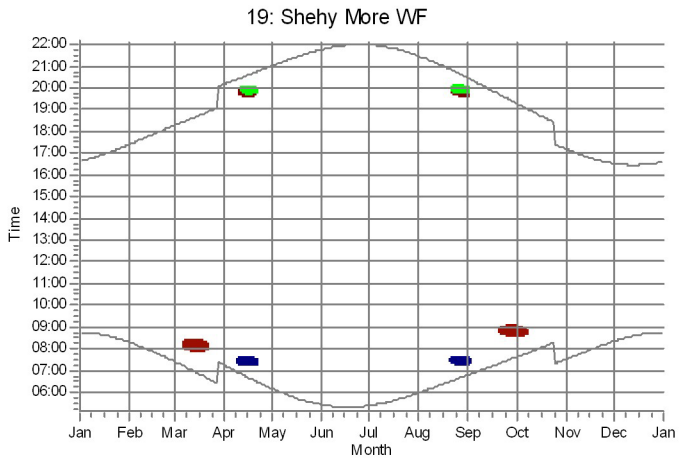
# SHADOW - Calendar per WTG, graphical

**Calculation:** 6460 Gortloughra WF cumulative WC




Shadow receptors

G: H7 H: H8 I: H9 AY: H63

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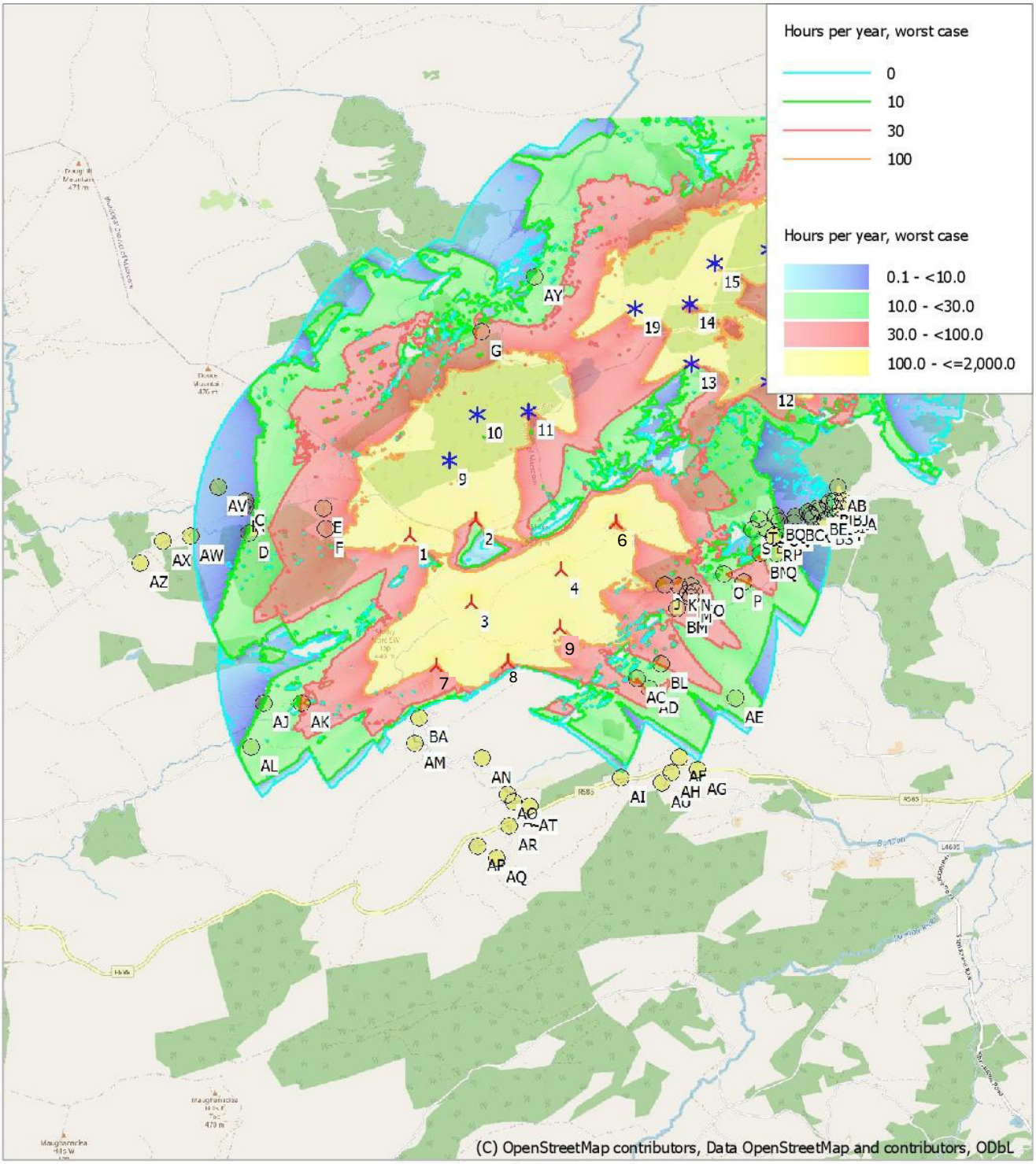
## SHADOW - Map

**Calculation:** 6460 Gortloughra WF cumulative WC




0 500 1000 1500 2000 m

Map: EMD OpenStreetMap , Print scale 1:50,000, Map center Irish ITM-IRENET95 (IE), geocentric, GRS80 East: 514,950 North: 559,570

New WTG Existing WTG Shadow receptor

Flicker map level: Height Contours: CONTOURLINE_6460 Gortloughra WF_1.wpo (1)

Time step: 2 minutes, Day step: 3 days, Map resolution: 10 m, Visibility resolution: 5 m, Eye height: 1.5 m

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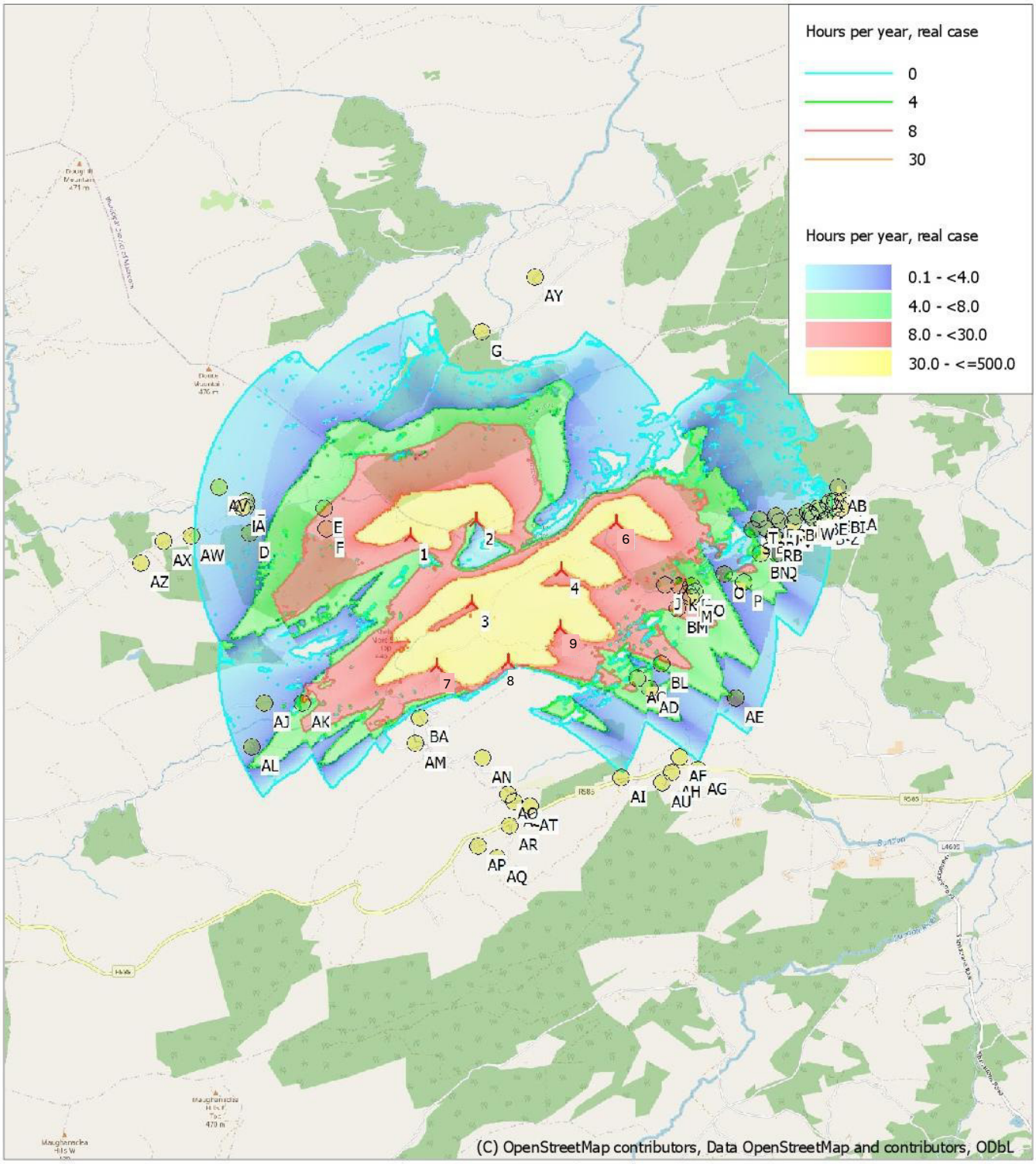
## SHADOW - Map

**Calculation:** 6460 Gortloughra WF only RC




0 500 1000 1500 2000 m

Map: EMD OpenStreetMap , Print scale 1:50,000, Map center Irish ITM-IRENET95 (IE), geocentric, GRS80 East: 514,950 North: 559,570

New WTG Shadow receptor

Flicker map level: Height Contours: CONTOURLINE_6460 Gortloughra WF_1.wpo (1)

Time step: 2 minutes, Day step: 3 days, Map resolution: 10 m, Visibility resolution: 5 m, Eye height: 1.5 m

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10/09/2024 11:52/4.0.552

# SHADOW - Main Result

**Calculation:** 6460 Gortloughra WF only WC

## Assumptions for shadow calculations

Maximum distance for influence
Calculate only when more than 20 % of sun is covered by the blade
Please look in WTG table

| | |
|---|---|
| Minimum sun height over horizon for influence | 3 ° |
| Day step for calculation | 1 days |
| Time step for calculation | 1 minutes |

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

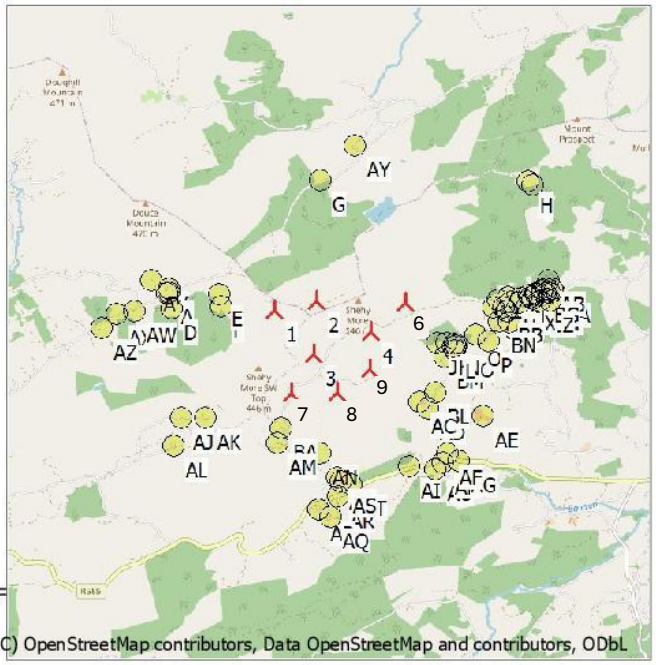
Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 |

| W | WNW | NW | NNW | Sum |
|---|---|---|---|---|
| 456 | 331 | 428 | 630 | 8,760 |

Monthly aggregation of real case reduction
A ZVI (Zones of Visual Influence) calculation is performed before flicker calculation so non visible WTG do not contribute to calculated flicker values. A WTG will be visible if it is visible from any part of the receiver window. The ZVI calculation is based on the following assumptions:
Height contours used: Height Contours: CONTOURLINE_6460 Gortloughra WF
Receptor grid resolution: 1.0 m

All coordinates are in
Irish ITM-IRENET95 (IE), geocentric, GRS80




Scale 1:100,000
New WTG
Shadow receptor

## WTGs

| | Easting | Northing | Z | Row data/Description | WTG type Valid | Manufact. | Type-generator | Power, rated | Rotor diameter | Hub height | Shadow data Calculation distance | RPM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | [m] | | | | | [kW] | [m] | [m] | [m] | [RPM] |
| 1 | 514,007 | 559,976 | 363.6 | T01 | Yes | VESTAS | V150-6.0-6,000 | 6,000 | 150.0 | 100.0 | 1,902 | - |
| 2 | 514,579 | 560,100 | 445.0 | T02 | Yes | VESTAS | V150-6.0-6,000 | 6,000 | 150.0 | 100.0 | 1,902 | - |
| 3 | 514,530 | 559,377 | 388.0 | T03 | Yes | VESTAS | V150-6.0-6,000 | 6,000 | 150.0 | 100.0 | 1,902 | - |
| 4 | 515,323 | 559,654 | 363.4 | T04 | Yes | VESTAS | V150-6.0-6,000 | 6,000 | 150.0 | 100.0 | 1,902 | - |
| 5 | 515,804 | 560,057 | 339.5 | T06 | Yes | VESTAS | V150-6.0-6,000 | 6,000 | 150.0 | 100.0 | 1,902 | - |
| 6 | 514,219 | 558,839 | 339.8 | T07 | Yes | VESTAS | V150-6.0-6,000 | 6,000 | 150.0 | 100.0 | 1,902 | - |
| 7 | 514,846 | 558,858 | 391.8 | T08 | Yes | VESTAS | V150-6.0-6,000 | 6,000 | 150.0 | 100.0 | 1,902 | - |
| 8 | 515,300 | 559,151 | 345.2 | T09 | Yes | VESTAS | V150-6.0-6,000 | 6,000 | 150.0 | 100.0 | 1,902 | - |

## Shadow receptor-Input

| No. | Name | Easting | Northing | Z | Width | Height | Elevation a.g.l. | Slope of window | Direction mode | Eye height (ZVI) a.g.l. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | [m] | [m] | [m] | [m] | [°] | | [m] |
| A | H1 | 512,574 | 560,249 | 173.9 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| B | H2 | 512,548 | 560,240 | 173.0 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| C | H3 | 512,576 | 560,296 | 179.9 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| D | H4 | 512,607 | 560,021 | 179.3 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| E | H5 | 513,258 | 560,218 | 201.7 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| F | H6 | 513,280 | 560,045 | 213.9 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| G | H7 | 514,664 | 561,741 | 242.9 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| H | H8 | 517,491 | 561,675 | 226.3 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| I | H9 | 517,560 | 561,620 | 238.2 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| J | H10 | 516,223 | 559,500 | 202.6 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| K | H11 | 516,345 | 559,495 | 191.8 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| L | H12 | 516,426 | 559,436 | 166.4 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| M | H13 | 516,455 | 559,391 | 159.4 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| N | H14 | 516,453 | 559,491 | 179.7 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| O | H15 | 516,742 | 559,597 | 178.9 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| P | H17 | 516,913 | 559,519 | 155.9 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| Q | H18 | 517,205 | 559,763 | 150.4 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| R | H19 | 517,186 | 559,907 | 166.2 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| S | H20 | 516,995 | 559,974 | 207.7 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |

*To be continued on next page...*

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Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Main Result

**Calculation:** 6460 Gortloughra WF only WC

*...continued from previous page*

| No. | Name | Easting | Northing | Z | Width | Height | Elevation a.g.l. | Slope of window | Direction mode | Eye height (ZVI) a.g.l. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | [m] | [m] | [m] | [m] | [°] | | [m] |
| T | H21 | 517,058 | 560,064 | 206.0 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| U | H22 | 517,237 | 560,043 | 189.4 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| V | H23 | 517,355 | 560,026 | 175.4 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| W | H24 | 517,505 | 560,096 | 175.0 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| X | H25 | 517,525 | 560,068 | 166.8 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| Y | H26 | 517,602 | 560,034 | 162.8 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| Z | H27 | 517,766 | 560,044 | 154.3 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| AA | H28 | 517,833 | 560,174 | 162.3 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| AB | H29 | 517,746 | 560,332 | 180.3 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| AC | H30 | 515,967 | 558,698 | 134.2 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| AD | H31 | 516,071 | 558,608 | 133.0 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| AE | H33 | 516,831 | 558,505 | 146.0 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| AF | H34 | 516,331 | 558,002 | 116.0 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| AG | H35 | 516,489 | 557,893 | 121.9 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| AH | H36 | 516,258 | 557,871 | 124.7 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| AI | H37 | 515,815 | 557,831 | 123.5 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| AJ | H38 | 512,706 | 558,535 | 242.6 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| AK | H39 | 513,035 | 558,529 | 262.6 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| AL | H40 | 512,590 | 558,155 | 239.6 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| AM | H41 | 514,019 | 558,165 | 211.4 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| AN | H42 | 514,606 | 558,023 | 147.1 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| AO | H44 | 514,826 | 557,698 | 125.3 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| AP | H45 | 514,556 | 557,258 | 157.5 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| AQ | H46 | 514,715 | 557,154 | 169.4 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| AR | H47 | 514,833 | 557,430 | 137.3 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| AS | H48 | 514,870 | 557,636 | 126.8 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| AT | H49 | 515,012 | 557,597 | 127.6 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| AU | H50 | 516,168 | 557,781 | 135.8 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| AV | H60 | 512,339 | 560,424 | 168.9 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| AW | H61 | 512,089 | 560,001 | 161.6 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| AX | H62 | 511,856 | 559,964 | 174.1 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| AY | H63 | 515,138 | 562,209 | 216.9 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| AZ | H64 | 511,651 | 559,779 | 202.9 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| BA | H67 | 514,062 | 558,379 | 240.8 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| BB | H68 | 517,177 | 559,907 | 167.5 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| BC | H69 | 517,375 | 560,081 | 186.4 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| BD | H70 | 517,485 | 560,120 | 183.0 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| BE | H71 | 517,582 | 560,131 | 176.2 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| BF | H72 | 517,565 | 560,150 | 179.8 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| BG | H73 | 517,665 | 560,186 | 178.5 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| BH | H74 | 517,712 | 560,152 | 174.7 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| BI | H75 | 517,770 | 560,146 | 168.0 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| BJ | H76 | 517,793 | 560,211 | 170.9 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| BK | H77 | 517,724 | 560,209 | 177.4 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| BL | H78 | 516,185 | 558,817 | 149.3 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| BM | H79 | 516,326 | 559,301 | 160.4 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| BN | H80 | 517,061 | 559,769 | 165.6 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| BO | H81 | 516,482 | 559,447 | 165.7 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| BP | H82 | 517,190 | 559,916 | 168.1 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| BQ | H83 | 517,202 | 560,097 | 199.9 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| BR | H84 | 517,121 | 559,978 | 187.1 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| BS | H85 | 517,638 | 560,049 | 163.4 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| BT | H86 | 517,727 | 560,072 | 162.1 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |
| BU | H87 | 517,677 | 560,204 | 178.5 | 2.0 | 2.0 | 0.5 | 90.0 | "Green house mode" | 2.5 |

## Calculation Results

Shadow receptor

| | | **Shadow, worst case** | | | **Shadow, expected values** |
|---|---|---|---|---|---|
| No. | Name | Shadow hours per year [h/year] | Shadow days per year [days/year] | Max shadow hours per day [h/day] | Shadow hours per year [h/year] |
| A | H1 | 9:08 | 30 | 0:24 | 1:30 |
| B | H2 | 8:52 | 30 | 0:23 | 1:29 |

*To be continued on next page...*

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Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Main Result

**Calculation:** 6460 Gortloughra WF only WC

*...continued from previous page*

| | | Shadow, worst case | | | Shadow, expected values |
|---|---|---|---|---|---|
| No. | Name | Shadow hours per year [h/year] | Shadow days per year [days/year] | Max shadow hours per day [h/day] | Shadow hours per year [h/year] |
| C | H3 | 9:02 | 30 | 0:24 | 1:25 |
| D | H4 | 10:36 | 32 | 0:24 | 2:12 |
| E | H5 | 49:51 | 99 | 0:56 | 8:22 |
| F | H6 | 63:10 | 100 | 1:11 | 12:20 |
| G | H7 | 0:00 | 0 | 0:00 | 0:00 |
| H | H8 | 0:00 | 0 | 0:00 | 0:00 |
| I | H9 | 0:00 | 0 | 0:00 | 0:00 |
| J | H10 | 70:02 | 164 | 0:39 | 13:11 |
| K | H11 | 54:00 | 138 | 0:34 | 10:14 |
| L | H12 | 45:31 | 121 | 0:32 | 8:33 |
| M | H13 | 46:32 | 129 | 0:31 | 8:45 |
| N | H14 | 39:28 | 105 | 0:31 | 7:29 |
| O | H15 | 19:26 | 63 | 0:25 | 3:44 |
| P | H17 | 29:27 | 100 | 0:24 | 5:17 |
| Q | H18 | 13:11 | 41 | 0:25 | 2:36 |
| R | H19 | 17:29 | 60 | 0:25 | 3:25 |
| S | H20 | 21:42 | 65 | 0:29 | 4:09 |
| T | H21 | 13:15 | 37 | 0:28 | 2:45 |
| U | H22 | 10:09 | 33 | 0:24 | 2:06 |
| V | H23 | 8:42 | 30 | 0:22 | 1:48 |
| W | H24 | 7:08 | 28 | 0:21 | 1:26 |
| X | H25 | 6:58 | 28 | 0:20 | 1:25 |
| Y | H26 | 6:30 | 26 | 0:20 | 1:20 |
| Z | H27 | 0:00 | 0 | 0:00 | 0:00 |
| AA | H28 | 0:00 | 0 | 0:00 | 0:00 |
| AB | H29 | 0:00 | 0 | 0:00 | 0:00 |
| AC | H30 | 30:42 | 88 | 0:31 | 6:12 |
| AD | H31 | 28:21 | 87 | 0:28 | 5:33 |
| AE | H33 | 22:16 | 74 | 0:22 | 3:50 |
| AF | H34 | 0:00 | 0 | 0:00 | 0:00 |
| AG | H35 | 0:00 | 0 | 0:00 | 0:00 |
| AH | H36 | 0:00 | 0 | 0:00 | 0:00 |
| AI | H37 | 0:00 | 0 | 0:00 | 0:00 |
| AJ | H38 | 10:26 | 34 | 0:24 | 2:18 |
| AK | H39 | 36:46 | 107 | 0:31 | 7:58 |
| AL | H40 | 12:54 | 48 | 0:21 | 2:52 |
| AM | H41 | 0:00 | 0 | 0:00 | 0:00 |
| AN | H42 | 0:00 | 0 | 0:00 | 0:00 |
| AO | H44 | 0:00 | 0 | 0:00 | 0:00 |
| AP | H45 | 0:00 | 0 | 0:00 | 0:00 |
| AQ | H46 | 0:00 | 0 | 0:00 | 0:00 |
| AR | H47 | 0:00 | 0 | 0:00 | 0:00 |
| AS | H48 | 0:00 | 0 | 0:00 | 0:00 |
| AT | H49 | 0:00 | 0 | 0:00 | 0:00 |
| AU | H50 | 0:00 | 0 | 0:00 | 0:00 |
| AV | H60 | 6:32 | 26 | 0:20 | 1:01 |
| AW | H61 | 0:00 | 0 | 0:00 | 0:00 |
| AX | H62 | 0:00 | 0 | 0:00 | 0:00 |
| AY | H63 | 0:00 | 0 | 0:00 | 0:00 |
| AZ | H64 | 0:00 | 0 | 0:00 | 0:00 |
| BA | H67 | 0:00 | 0 | 0:00 | 0:00 |
| BB | H68 | 17:52 | 61 | 0:26 | 3:29 |
| BC | H69 | 8:26 | 30 | 0:22 | 1:43 |
| BD | H70 | 7:08 | 26 | 0:21 | 1:24 |
| BE | H71 | 6:29 | 26 | 0:19 | 1:15 |
| BF | H72 | 6:35 | 26 | 0:20 | 1:15 |
| BG | H73 | 5:49 | 24 | 0:19 | 1:03 |
| BH | H74 | 0:00 | 0 | 0:00 | 0:00 |
| BI | H75 | 0:00 | 0 | 0:00 | 0:00 |
| BJ | H76 | 0:00 | 0 | 0:00 | 0:00 |
| BK | H77 | 0:00 | 0 | 0:00 | 0:00 |
| BL | H78 | 34:49 | 87 | 0:33 | 6:24 |
| BM | H79 | 58:00 | 136 | 0:34 | 10:43 |

*To be continued on next page...*

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10/09/2024 11:52/4.0.552

# SHADOW - Main Result

**Calculation:** 6460 Gortloughra WF only WC

*...continued from previous page*

| | | Shadow, worst case | | | Shadow, expected values |
|---|---|---|---|---|---|
| No. | Name | Shadow hours per year [h/year] | Shadow days per year [days/year] | Max shadow hours per day [h/day] | Shadow hours per year [h/year] |
| BN | H80 | 29:49 | 99 | 0:28 | 5:40 |
| BO | H81 | 39:39 | 109 | 0:30 | 7:28 |
| BP | H82 | 11:50 | 36 | 0:25 | 2:25 |
| BQ | H83 | 10:28 | 33 | 0:25 | 2:07 |
| BR | H84 | 12:36 | 37 | 0:26 | 2:36 |
| BS | H85 | 6:07 | 24 | 0:19 | 1:15 |
| BT | H86 | 0:00 | 0 | 0:00 | 0:00 |
| BU | H87 | 5:44 | 24 | 0:19 | 1:01 |

Total amount of flickering on the shadow receptors caused by each WTG

| No. | Name | Worst case [h/year] | Expected [h/year] |
|---|---|---|---|
| 1 | T01 | 95:54 | 17:57 |
| 2 | T02 | 25:16 | 5:18 |
| 3 | T03 | 38:12 | 6:09 |
| 4 | T04 | 106:10 | 20:05 |
| 5 | T06 | 68:53 | 13:18 |
| 6 | T07 | 49:06 | 10:44 |
| 7 | T08 | 80:14 | 15:25 |
| 8 | T09 | 110:38 | 19:40 |

*Total times in Receptor wise and WTG wise tables can differ, as a WTG can lead to flicker at 2 or more receptors simultaneously and/or receptors may receive flicker from 2 or more WTGs simultaneously.*

*The calculation of the total expected values for a given receptor assumes a weighted average directional reduction for all WTGs contributing to shadow flicker within the same day. In the case where shadow flicker from different WTGs is not concurrent within the day, the total expected time at a given receptor may deviate marginally from the individual flicker time caused by each turbine separately.*

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# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** A - H1

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | | | April | | | May | June | July | August | September | | | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | | | 07:15 | | 08:29 (1) | 06:10 | 05:25 | 05:22 | 05:59 | 06:48 | | | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | | | 20:10 | 19 | 08:48 (1) | 21:00 | 21:46 | 22:00 | 21:28 | 20:26 | | | 19:17 | 17:11 | 16:31 |
| 2 | 08:45 | 08:17 | 07:23 | | | 07:12 | | 08:31 (1) | 06:08 | 05:25 | 05:23 | 06:00 | 06:50 | | | 07:39 | 07:32 | 08:22 |
| | 16:38 | 17:27 | 18:18 | | | 20:11 | 15 | 08:46 (1) | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | | | 19:15 | 17:10 | 16:31 |
| 3 | 08:45 | 08:15 | 07:21 | | | 07:10 | | 08:33 (1) | 06:06 | 05:24 | 05:24 | 06:02 | 06:51 | | | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:20 | | | 20:13 | 11 | 08:44 (1) | 21:04 | 21:48 | 21:59 | 21:25 | 20:22 | | | 19:13 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:19 | | | 07:08 | | 08:37 (1) | 06:05 | 05:23 | 05:25 | 06:03 | 06:53 | | | 07:42 | 07:36 | 08:25 |
| | 16:40 | 17:30 | 18:21 | | | 20:15 | 3 | 08:40 (1) | 21:05 | 21:49 | 21:59 | 21:23 | 20:20 | | | 19:10 | 17:06 | 16:30 |
| 5 | 08:44 | 08:12 | 07:16 | | | 07:06 | | | 06:03 | 05:22 | 05:25 | 06:05 | 06:55 | | | 07:44 | 07:38 | 08:27 |
| | 16:42 | 17:32 | 18:23 | | | 20:17 | | | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | | | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | | | 07:03 | | | 06:01 | 05:22 | 05:26 | 06:06 | 06:56 | | | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | | | 20:18 | | | 21:09 | 21:51 | 21:58 | 21:20 | 20:15 | | | 19:06 | 17:02 | 16:29 |
| 7 | 08:43 | 08:08 | 07:12 | | | 07:01 | | | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | | | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | | | 20:20 | | | 21:10 | 21:52 | 21:57 | 21:18 | 20:13 | | | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:07 | 07:10 | | | 06:59 | | | 05:57 | 05:21 | 05:28 | 06:10 | 07:00 | | | 07:49 | 07:43 | 08:30 |
| | 16:45 | 17:38 | 18:29 | | | 20:22 | | | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | | | 19:01 | 16:59 | 16:28 |
| 9 | 08:43 | 08:05 | 07:07 | | | 06:57 | | | 05:56 | 05:20 | 05:29 | 06:11 | 07:01 | | 08:27 (1) | 07:50 | 07:45 | 08:31 |
| | 16:47 | 17:40 | 18:30 | | | 20:23 | | | 21:14 | 21:54 | 21:56 | 21:14 | 20:08 | 11 | 08:38 (1) | 18:59 | 16:57 | 16:28 |
| 10 | 08:42 | 08:03 | 07:05 | | | 06:54 | | | 05:54 | 05:20 | 05:30 | 06:13 | 07:03 | | 08:24 (1) | 07:52 | 07:46 | 08:33 |
| | 16:48 | 17:41 | 18:32 | | | 20:25 | | | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 16 | 08:40 (1) | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | | | 06:52 | | | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | | 08:23 (1) | 07:54 | 07:48 | 08:34 |
| | 16:50 | 17:43 | 18:34 | | | 20:27 | | | 21:17 | 21:55 | 21:54 | 21:10 | 20:04 | 18 | 08:41 (1) | 18:55 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:01 | | | 06:50 | | | 05:51 | 05:19 | 05:32 | 06:16 | 07:06 | | 08:21 (1) | 07:55 | 07:50 | 08:35 |
| | 16:51 | 17:45 | 18:36 | | | 20:28 | | | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 20 | 08:41 (1) | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:58 | 06:58 | | | 06:48 | | | 05:49 | 05:19 | 05:33 | 06:18 | 07:08 | | 08:20 (1) | 07:57 | 07:52 | 08:36 |
| | 16:53 | 17:47 | 18:37 | | | 20:30 | | | 21:20 | 21:57 | 21:53 | 21:06 | 19:59 | 22 | 08:42 (1) | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:56 | 06:56 | | | 06:46 | | | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | | 08:19 (1) | 07:59 | 07:53 | 08:37 |
| | 16:54 | 17:49 | 18:39 | | | 20:32 | | | 21:21 | 21:57 | 21:52 | 21:05 | 19:57 | 23 | 08:42 (1) | 18:48 | 16:50 | 16:27 |
| 15 | 08:39 | 07:54 | 06:54 | | | 06:43 | | | 05:46 | 05:18 | 05:35 | 06:21 | 07:11 | | 08:19 (1) | 08:00 | 07:55 | 08:38 |
| | 16:56 | 17:51 | 18:41 | | | 20:33 | | | 21:23 | 21:58 | 21:51 | 21:03 | 19:54 | 23 | 08:42 (1) | 18:46 | 16:48 | 16:27 |
| 16 | 08:38 | 07:52 | 06:52 | | | 06:41 | | | 05:44 | 05:18 | 05:37 | 06:22 | 07:12 | | 08:19 (1) | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | | | 20:35 | | | 21:24 | 21:58 | 21:50 | 21:01 | 19:52 | 23 | 08:42 (1) | 18:44 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | | | 06:39 | | | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | | 08:18 (1) | 08:04 | 07:59 | 08:39 |
| | 16:59 | 17:54 | 18:44 | | | 20:37 | | | 21:26 | 21:59 | 21:49 | 20:59 | 19:50 | 23 | 08:41 (1) | 18:41 | 16:46 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | | | 06:37 | | | 05:41 | 05:18 | 05:39 | 06:26 | 07:16 | | 08:18 (1) | 08:06 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | | | 20:39 | | | 21:27 | 21:59 | 21:48 | 20:56 | 19:47 | 23 | 08:41 (1) | 18:39 | 16:44 | 16:28 |
| 19 | 08:35 | 07:46 | 06:45 | | | 06:35 | | | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | | 08:18 (1) | 08:07 | 08:02 | 08:41 |
| | 17:02 | 17:58 | 18:48 | | | 20:40 | | | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 21 | 08:39 (1) | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | | | 06:33 | | | 05:39 | 05:18 | 05:42 | 06:29 | 07:19 | | 08:19 (1) | 08:09 | 08:04 | 08:41 |
| | 17:04 | 18:00 | 18:49 | | | 20:42 | | | 21:30 | 22:00 | 21:45 | 20:52 | 19:43 | 19 | 08:38 (1) | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | | 07:38 (1) | 06:30 | | | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | | 08:19 (1) | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:02 | 18:51 | 11 | 07:49 (1) | 20:44 | | | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | 17 | 08:36 (1) | 18:33 | 16:41 | 16:29 |
| 22 | 08:32 | 07:40 | 06:38 | | 07:34 (1) | 06:28 | | | 05:36 | 05:19 | 05:44 | 06:32 | 07:22 | | 08:21 (1) | 08:13 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 16 | 07:50 (1) | 20:45 | | | 21:33 | 22:00 | 21:43 | 20:48 | 19:38 | 13 | 08:34 (1) | 18:31 | 16:40 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | | 07:33 (1) | 06:26 | | | 05:35 | 05:19 | 05:46 | 06:34 | 07:24 | | 08:25 (1) | 08:14 | 08:09 | 08:43 |
| | 17:09 | 18:05 | 18:54 | 18 | 07:51 (1) | 20:47 | | | 21:35 | 22:00 | 21:41 | 20:46 | 19:36 | 5 | 08:30 (1) | 18:29 | 16:38 | 16:30 |
| 24 | 08:29 | 07:36 | 06:33 | | 07:32 (1) | 06:24 | | | 05:34 | 05:19 | 05:47 | 06:35 | 07:25 | | | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20 | 07:52 (1) | 20:49 | | | 21:36 | 22:01 | 21:40 | 20:44 | 19:33 | | | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:34 | 06:31 | | 07:30 (1) | 06:22 | | | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | | | 07:18 | 08:12 | 08:44 |
| | 17:12 | 18:09 | 18:58 | 22 | 07:52 (1) | 20:50 | | | 21:37 | 22:01 | 21:39 | 20:42 | 19:31 | | | 17:25 | 16:36 | 16:31 |
| 26 | 08:27 | 07:31 | 06:29 | | 07:30 (1) | 06:20 | | | 05:31 | 05:20 | 05:50 | 06:38 | 07:29 | | | 07:20 | 08:14 | 08:44 |
| | 17:14 | 18:11 | 19:00 | 22 | 07:52 (1) | 20:52 | | | 21:39 | 22:01 | 21:37 | 20:40 | 19:29 | | | 17:23 | 16:35 | 16:32 |
| 27 | 08:25 | 07:29 | 06:26 | | 07:29 (1) | 06:18 | | | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | | | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:13 | 19:01 | 24 | 07:53 (1) | 20:54 | | | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | | | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | | 07:29 (1) | 06:16 | | | 05:29 | 05:21 | 05:53 | 06:42 | 07:32 | | | 07:23 | 08:17 | 08:45 |
| | 17:18 | 18:14 | 19:03 | 24 | 07:53 (1) | 20:55 | | | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | | | 17:19 | 16:34 | 16:33 |
| 29 | 08:23 | | 07:22 | | 08:28 (1) | 06:14 | | | 05:28 | 05:21 | 05:54 | 06:43 | 07:34 | | | 07:25 | 08:18 | 08:45 |
| | 17:19 | | 20:05 | 23 | 08:51 (1) | 20:57 | | | 21:42 | 22:00 | 21:33 | 20:33 | 19:22 | | | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | | 08:29 (1) | 06:12 | | | 05:27 | 05:22 | 05:56 | 06:45 | 07:35 | | | 07:27 | 08:20 | 08:45 |
| | 17:21 | | 20:06 | 22 | 08:51 (1) | 20:59 | | | 21:44 | 22:00 | 21:31 | 20:31 | 19:19 | | | 17:15 | 16:32 | 16:35 |
| 31 | 08:20 | | 07:17 | | 08:29 (1) | | | | 05:26 | | 05:57 | 06:47 | | | | 07:29 | | 08:45 |
| | 17:23 | | 20:08 | 21 | 08:50 (1) | | | | 21:45 | | 21:30 | 20:29 | | | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | | | 416 | | | 485 | 498 | 501 | 453 | 381 | | | 332 | 267 | 244 |
| Total, worst case | | | | 223 | | | 48 | | | | | | | 277 | | | | |
| Sun reduction | | | | 0.24 | | | 0.35 | | | | | | | 0.28 | | | | |
| Oper. time red. | | | | 1.00 | | | 1.00 | | | | | | | 1.00 | | | | |
| Wind dir. red. | | | | 0.60 | | | 0.60 | | | | | | | 0.60 | | | | |
| Total reduction | | | | 0.15 | | | 0.21 | | | | | | | 0.17 | | | | |
| Total, real | | | | 33 | | | 10 | | | | | | | 48 | | | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

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10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** B - H2

## Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | | April | | May | June | July | August | September | | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | | 07:15 | 08:27 (1) | 06:10 | 05:25 | 05:22 | 05:59 | 06:48 | | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | | 20:10 | 19 08:46 (1) | 21:00 | 21:46 | 22:00 | 21:28 | 20:26 | | 19:17 | 17:11 | 16:31 |
| 2 | 08:45 | 08:17 | 07:23 | | 07:12 | 08:28 (1) | 06:08 | 05:25 | 05:23 | 06:00 | 06:50 | | 07:39 | 07:32 | 08:22 |
| | 16:38 | 17:27 | 18:18 | | 20:11 | 17 08:45 (1) | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | | 19:15 | 17:10 | 16:31 |
| 3 | 08:45 | 08:15 | 07:21 | | 07:10 | 08:30 (1) | 06:06 | 05:24 | 05:24 | 06:02 | 06:51 | | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:20 | | 20:13 | 13 08:43 (1) | 21:04 | 21:48 | 21:59 | 21:25 | 20:22 | | 19:13 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:19 | | 07:08 | 08:32 (1) | 06:05 | 05:23 | 05:25 | 06:03 | 06:53 | | 07:42 | 07:36 | 08:25 |
| | 16:40 | 17:30 | 18:21 | | 20:15 | 8 08:40 (1) | 21:05 | 21:49 | 21:59 | 21:23 | 20:20 | | 19:10 | 17:06 | 16:30 |
| 5 | 08:44 | 08:12 | 07:16 | | 07:06 | | 06:03 | 05:22 | 05:25 | 06:05 | 06:55 | | 07:44 | 07:38 | 08:27 |
| | 16:42 | 17:32 | 18:23 | | 20:17 | | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | | 07:03 | | 06:01 | 05:22 | 05:26 | 06:06 | 06:56 | | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | | 20:18 | | 21:09 | 21:51 | 21:58 | 21:20 | 20:15 | | 19:06 | 17:02 | 16:29 |
| 7 | 08:43 | 08:08 | 07:12 | | 07:01 | | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | | 20:20 | | 21:10 | 21:52 | 21:57 | 21:18 | 20:13 | | 19:04 | 17:01 | 16:28 |
| 8 | 08:43 | 08:07 | 07:10 | | 06:59 | | 05:57 | 05:21 | 05:28 | 06:10 | 07:00 | 08:27 (1) | 07:49 | 07:43 | 08:30 |
| | 16:45 | 17:38 | 18:29 | | 20:22 | | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 7 08:34 (1) | 19:01 | 16:59 | 16:28 |
| 9 | 08:43 | 08:05 | 07:07 | | 06:57 | | 05:56 | 05:20 | 05:29 | 06:11 | 07:01 | 08:24 (1) | 07:50 | 07:45 | 08:31 |
| | 16:47 | 17:40 | 18:30 | | 20:23 | | 21:14 | 21:54 | 21:56 | 21:14 | 20:08 | 13 08:37 (1) | 18:59 | 16:57 | 16:28 |
| 10 | 08:42 | 08:03 | 07:05 | | 06:54 | | 05:54 | 05:20 | 05:30 | 06:13 | 07:03 | 08:21 (1) | 07:52 | 07:46 | 08:33 |
| | 16:48 | 17:41 | 18:32 | | 20:25 | | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 17 08:38 (1) | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | | 06:52 | | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 08:20 (1) | 07:54 | 07:48 | 08:34 |
| | 16:50 | 17:43 | 18:34 | | 20:27 | | 21:17 | 21:55 | 21:54 | 21:10 | 20:04 | 19 08:39 (1) | 18:55 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:01 | | 06:50 | | 05:51 | 05:19 | 05:32 | 06:16 | 07:06 | 08:19 (1) | 07:55 | 07:50 | 08:35 |
| | 16:51 | 17:45 | 18:36 | | 20:28 | | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 20 08:39 (1) | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:58 | 06:58 | | 06:48 | | 05:49 | 05:19 | 05:33 | 06:18 | 07:08 | 08:18 (1) | 07:57 | 07:52 | 08:36 |
| | 16:53 | 17:47 | 18:37 | | 20:30 | | 21:20 | 21:57 | 21:53 | 21:06 | 19:59 | 22 08:40 (1) | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:56 | 06:56 | | 06:46 | | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 08:17 (1) | 07:59 | 07:53 | 08:37 |
| | 16:54 | 17:49 | 18:39 | | 20:32 | | 21:21 | 21:57 | 21:52 | 21:05 | 19:57 | 23 08:40 (1) | 18:48 | 16:50 | 16:27 |
| 15 | 08:39 | 07:54 | 06:54 | | 06:43 | | 05:46 | 05:18 | 05:35 | 06:21 | 07:11 | 08:17 (1) | 08:00 | 07:55 | 08:38 |
| | 16:56 | 17:51 | 18:41 | | 20:33 | | 21:23 | 21:58 | 21:51 | 21:03 | 19:54 | 23 08:40 (1) | 18:46 | 16:48 | 16:27 |
| 16 | 08:38 | 07:52 | 06:52 | | 06:41 | | 05:44 | 05:18 | 05:37 | 06:22 | 07:12 | 08:17 (1) | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | | 20:35 | | 21:24 | 21:58 | 21:50 | 21:01 | 19:52 | 23 08:40 (1) | 18:44 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | | 06:39 | | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:16 (1) | 08:04 | 07:59 | 08:39 |
| | 16:59 | 17:54 | 18:44 | | 20:37 | | 21:26 | 21:59 | 21:49 | 20:59 | 19:50 | 23 08:39 (1) | 18:41 | 16:46 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | | 06:37 | | 05:41 | 05:18 | 05:39 | 06:26 | 07:16 | 08:17 (1) | 08:06 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | | 20:39 | | 21:27 | 21:59 | 21:48 | 20:56 | 19:47 | 21 08:38 (1) | 18:39 | 16:44 | 16:28 |
| 19 | 08:35 | 07:46 | 06:45 | | 06:35 | | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:17 (1) | 08:07 | 08:02 | 08:41 |
| | 17:02 | 17:58 | 18:48 | | 20:40 | | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 19 08:36 (1) | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | | 06:33 | | 05:39 | 05:18 | 05:42 | 06:29 | 07:19 | 08:18 (1) | 08:09 | 08:04 | 08:41 |
| | 17:04 | 18:00 | 18:49 | | 20:42 | | 21:30 | 22:00 | 21:45 | 20:52 | 19:43 | 17 08:35 (1) | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 07:38 (1) | 06:30 | | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:19 (1) | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:02 | 18:51 | 6 07:44 (1) | 20:44 | | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | 13 08:32 (1) | 18:33 | 16:41 | 16:29 |
| 22 | 08:32 | 07:40 | 06:38 | 07:34 (1) | 06:28 | | 05:36 | 05:19 | 05:44 | 06:32 | 07:22 | 08:22 (1) | 08:13 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 12 07:46 (1) | 20:45 | | 21:33 | 22:00 | 21:43 | 20:48 | 19:38 | 8 08:30 (1) | 18:31 | 16:40 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 07:32 (1) | 06:26 | | 05:35 | 05:19 | 05:46 | 06:34 | 07:24 | | 08:14 | 08:09 | 08:43 |
| | 17:09 | 18:05 | 18:54 | 16 07:48 (1) | 20:47 | | 21:35 | 22:00 | 21:41 | 20:46 | 19:36 | | 18:29 | 16:38 | 16:30 |
| 24 | 08:29 | 07:36 | 06:33 | 07:30 (1) | 06:24 | | 05:34 | 05:19 | 05:47 | 06:35 | 07:25 | | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20 07:50 (1) | 20:49 | | 21:36 | 22:01 | 21:40 | 20:44 | 19:33 | | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:34 | 06:31 | 07:29 (1) | 06:22 | | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | | 07:18 | 08:12 | 08:44 |
| | 17:12 | 18:09 | 18:58 | 20 07:49 (1) | 20:50 | | 21:37 | 22:01 | 21:39 | 20:42 | 19:31 | | 17:25 | 16:36 | 16:31 |
| 26 | 08:27 | 07:31 | 06:29 | 07:28 (1) | 06:20 | | 05:31 | 05:20 | 05:50 | 06:38 | 07:29 | | 07:20 | 08:14 | 08:44 |
| | 17:14 | 18:11 | 19:00 | 22 07:50 (1) | 20:52 | | 21:39 | 22:01 | 21:37 | 20:40 | 19:29 | | 17:23 | 16:35 | 16:32 |
| 27 | 08:25 | 07:29 | 06:26 | 07:28 (1) | 06:18 | | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:13 | 19:01 | 22 07:50 (1) | 20:54 | | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 07:27 (1) | 06:16 | | 05:29 | 05:21 | 05:53 | 06:42 | 07:32 | | 07:23 | 08:17 | 08:45 |
| | 17:18 | 18:14 | 19:03 | 23 07:50 (1) | 20:55 | | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | | 17:19 | 16:34 | 16:33 |
| 29 | 08:23 | | 07:22 | 08:26 (1) | 06:14 | | 05:28 | 05:21 | 05:54 | 06:43 | 07:34 | | 07:25 | 08:18 | 08:45 |
| | 17:19 | | 20:05 | 23 08:49 (1) | 20:57 | | 21:42 | 22:00 | 21:33 | 20:33 | 19:22 | | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 08:27 (1) | 06:12 | | 05:27 | 05:22 | 05:56 | 06:45 | 07:35 | | 07:27 | 08:20 | 08:45 |
| | 17:21 | | 20:06 | 22 08:49 (1) | 20:59 | | 21:44 | 22:00 | 21:31 | 20:31 | 19:19 | | 17:15 | 16:32 | 16:35 |
| 31 | 08:20 | | 07:17 | 08:27 (1) | | | 05:26 | | 05:57 | 06:47 | | | 07:29 | | 08:45 |
| | 17:23 | | 20:08 | 21 08:48 (1) | | | 21:45 | | 21:30 | 20:29 | | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | | 416 | | 485 | 498 | 501 | 453 | 381 | | 332 | 267 | 244 |
| Total, worst case | | | | 207 | | 57 | | | | | | 268 | | | |
| Sun reduction | | | | 0.24 | | 0.35 | | | | | | 0.28 | | | |
| Oper. time red. | | | | 1.00 | | 1.00 | | | | | | 1.00 | | | |
| Wind dir. red. | | | | 0.61 | | 0.61 | | | | | | 0.61 | | | |
| Total reduction | | | | 0.15 | | 0.22 | | | | | | 0.17 | | | |
| Total, real | | | | 31 | | 12 | | | | | | 46 | | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** C - H3

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | | April | May | June | July | August | September | | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | | 07:15 | 06:10 | 05:25 | 05:22 | 05:59 | 06:48 | | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | | 20:10 | 21:00 | 21:46 | 22:00 | 21:28 | 20:26 | | 19:17 | 17:11 | 16:31 |
| 2 | 08:45 | 08:17 | 07:23 | | 07:12 | 06:08 | 05:25 | 05:23 | 06:00 | 06:50 | | 07:39 | 07:32 | 08:22 |
| | 16:38 | 17:27 | 18:18 | | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | | 19:15 | 17:10 | 16:31 |
| 3 | 08:45 | 08:15 | 07:21 | | 07:10 | 06:06 | 05:24 | 05:24 | 06:02 | 06:51 | | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:20 | | 20:13 | 21:04 | 21:48 | 21:59 | 21:25 | 20:22 | | 19:13 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:19 | | 07:08 | 06:05 | 05:23 | 05:25 | 06:03 | 06:53 | | 07:42 | 07:36 | 08:25 |
| | 16:40 | 17:30 | 18:21 | | 20:15 | 21:05 | 21:49 | 21:59 | 21:23 | 20:20 | | 19:10 | 17:06 | 16:30 |
| 5 | 08:44 | 08:12 | 07:16 | | 07:06 | 06:03 | 05:22 | 05:25 | 06:05 | 06:55 | | 07:44 | 07:38 | 08:27 |
| | 16:42 | 17:32 | 18:23 | | 20:17 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | | 07:03 | 06:01 | 05:22 | 05:26 | 06:06 | 06:56 | | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | | 20:18 | 21:09 | 21:51 | 21:58 | 21:20 | 20:15 | | 19:06 | 17:02 | 16:29 |
| 7 | 08:43 | 08:08 | 07:12 | | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | | 20:20 | 21:10 | 21:52 | 21:57 | 21:18 | 20:13 | | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:07 | 07:10 | | 06:59 | 05:57 | 05:21 | 05:28 | 06:10 | 07:00 | | 07:49 | 07:43 | 08:30 |
| | 16:45 | 17:38 | 18:29 | | 20:22 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | | 19:01 | 16:59 | 16:28 |
| 9 | 08:43 | 08:05 | 07:07 | | 06:57 | 05:56 | 05:20 | 05:29 | 06:11 | 07:01 | | 07:50 | 07:45 | 08:31 |
| | 16:47 | 17:40 | 18:30 | | 20:23 | 21:14 | 21:54 | 21:56 | 21:14 | 20:08 | | 18:59 | 16:57 | 16:28 |
| 10 | 08:42 | 08:03 | 07:05 | | 06:54 | 05:54 | 05:20 | 05:30 | 06:13 | 07:03 | | 07:52 | 07:46 | 08:33 |
| | 16:48 | 17:41 | 18:32 | | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | | 07:54 | 07:48 | 08:34 |
| | 16:50 | 17:43 | 18:34 | | 20:27 | 21:17 | 21:55 | 21:54 | 21:10 | 20:04 | | 18:55 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:01 | | 06:50 | 05:51 | 05:19 | 05:32 | 06:16 | 07:06 | 08:32 (1) | 07:55 | 07:50 | 08:35 |
| | 16:51 | 17:45 | 18:36 | | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 8 08:40 (1) | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:58 | 06:58 | | 06:48 | 05:49 | 05:19 | 05:33 | 06:18 | 07:08 | 08:29 (1) | 07:57 | 07:52 | 08:36 |
| | 16:53 | 17:47 | 18:37 | | 20:30 | 21:20 | 21:57 | 21:53 | 21:06 | 19:59 | 14 08:43 (1) | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:56 | 06:56 | | 06:46 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 08:26 (1) | 07:59 | 07:53 | 08:37 |
| | 16:54 | 17:49 | 18:39 | | 20:32 | 21:21 | 21:57 | 21:52 | 21:05 | 19:57 | 18 08:44 (1) | 18:48 | 16:50 | 16:27 |
| 15 | 08:39 | 07:54 | 06:54 | | 06:43 | 05:46 | 05:18 | 05:35 | 06:21 | 07:11 | 08:25 (1) | 08:00 | 07:55 | 08:38 |
| | 16:56 | 17:51 | 18:41 | | 20:33 | 21:23 | 21:58 | 21:51 | 21:03 | 19:54 | 20 08:45 (1) | 18:46 | 16:48 | 16:27 |
| 16 | 08:38 | 07:52 | 06:52 | | 06:41 | 05:44 | 05:18 | 05:37 | 06:22 | 07:12 | 08:25 (1) | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | | 20:35 | 21:24 | 21:58 | 21:50 | 21:01 | 19:52 | 21 08:46 (1) | 18:44 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 07:47 (1) | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:23 (1) | 08:04 | 07:59 | 08:39 |
| | 16:59 | 17:54 | 18:44 | 4 07:51 (1) | 20:37 | 21:26 | 21:59 | 21:49 | 20:59 | 19:50 | 22 08:45 (1) | 18:41 | 16:46 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 07:43 (1) | 06:37 | 05:41 | 05:18 | 05:39 | 06:26 | 07:16 | 08:23 (1) | 08:06 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 12 07:55 (1) | 20:39 | 21:27 | 21:59 | 21:48 | 20:56 | 19:47 | 23 08:46 (1) | 18:39 | 16:44 | 16:28 |
| 19 | 08:35 | 07:46 | 06:45 | 07:40 (1) | 06:35 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:22 (1) | 08:07 | 08:02 | 08:41 |
| | 17:02 | 17:58 | 18:48 | 16 07:56 (1) | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 23 08:45 (1) | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 07:38 (1) | 06:33 | 05:39 | 05:18 | 05:42 | 06:29 | 07:19 | 08:22 (1) | 08:09 | 08:04 | 08:41 |
| | 17:04 | 18:00 | 18:49 | 19 07:57 (1) | 20:42 | 21:30 | 22:00 | 21:45 | 20:52 | 19:43 | 23 08:45 (1) | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 07:37 (1) | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:21 (1) | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:02 | 18:51 | 21 07:58 (1) | 20:44 | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | 23 08:44 (1) | 18:33 | 16:41 | 16:29 |
| 22 | 08:32 | 07:40 | 06:38 | 07:36 (1) | 06:28 | 05:36 | 05:19 | 05:44 | 06:32 | 07:22 | 08:22 (1) | 08:13 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 22 07:58 (1) | 20:45 | 21:33 | 22:00 | 21:43 | 20:48 | 19:38 | 21 08:43 (1) | 18:31 | 16:40 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 07:35 (1) | 06:26 | 05:35 | 05:19 | 05:46 | 06:34 | 07:24 | 08:23 (1) | 08:14 | 08:09 | 08:43 |
| | 17:09 | 18:05 | 18:54 | 23 07:58 (1) | 20:47 | 21:35 | 22:00 | 21:41 | 20:46 | 19:36 | 19 08:42 (1) | 18:29 | 16:38 | 16:30 |
| 24 | 08:29 | 07:36 | 06:33 | 07:35 (1) | 06:24 | 05:34 | 05:19 | 05:47 | 06:35 | 07:25 | 08:23 (1) | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 24 07:59 (1) | 20:49 | 21:36 | 22:01 | 21:40 | 20:44 | 19:33 | 17 08:40 (1) | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:34 | 06:31 | 07:34 (1) | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | 08:25 (1) | 07:18 | 08:12 | 08:44 |
| | 17:12 | 18:09 | 18:58 | 23 07:57 (1) | 20:50 | 21:37 | 22:01 | 21:39 | 20:42 | 19:31 | 13 08:38 (1) | 17:25 | 16:36 | 16:31 |
| 26 | 08:27 | 07:31 | 06:29 | 07:35 (1) | 06:20 | 05:31 | 05:20 | 05:50 | 06:38 | 07:29 | 08:28 (1) | 07:20 | 08:14 | 08:44 |
| | 17:14 | 18:11 | 19:00 | 22 07:57 (1) | 20:52 | 21:39 | 22:01 | 21:37 | 20:40 | 19:29 | 8 08:36 (1) | 17:23 | 16:35 | 16:32 |
| 27 | 08:25 | 07:29 | 06:26 | 07:35 (1) | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:13 | 19:01 | 22 07:57 (1) | 20:54 | 21:40 | 22:01 | 21:36 | 20:37 | 19:26 | | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 07:36 (1) | 06:16 | 05:29 | 05:21 | 05:53 | 06:42 | 07:32 | | 07:23 | 08:17 | 08:45 |
| | 17:18 | 18:14 | 19:03 | 20 07:56 (1) | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | | 17:19 | 16:34 | 16:33 |
| 29 | 08:23 | | 07:22 | 08:36 (1) | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:34 | | 07:25 | 08:18 | 08:45 |
| | 17:19 | | 20:05 | 17 08:53 (1) | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:22 | | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 08:37 (1) | 06:12 | 05:27 | 05:22 | 05:56 | 06:45 | 07:35 | | 07:27 | 08:20 | 08:45 |
| | 17:21 | | 20:06 | 15 08:52 (1) | 20:59 | 21:44 | 22:00 | 21:31 | 20:31 | 19:19 | | 17:15 | 16:32 | 16:35 |
| 31 | 08:20 | | 07:17 | 08:40 (1) | | 05:26 | | 05:57 | 06:47 | | | 07:29 | | 08:45 |
| | 17:23 | | 20:08 | 9 08:49 (1) | | 21:45 | | 21:30 | 20:29 | | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | | 416 | 485 | 498 | 501 | 453 | 381 | | 332 | 267 | 244 |
| Total, worst case | | | | 269 | | | | | | | 273 | | | |
| Sun reduction | | | | 0.24 | | | | | | | 0.28 | | | |
| Oper. time red. | | | | 1.00 | | | | | | | 1.00 | | | |
| Wind dir. red. | | | | 0.60 | | | | | | | 0.60 | | | |
| Total reduction | | | | 0.15 | | | | | | | 0.17 | | | |
| Total, real | | | | 39 | | | | | | | 46 | | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

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**Jennings O'Donovan**
Finisklin Business Park
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Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** D - H4

## Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | | May | June | July | August | | September | | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:15 | | 06:10 | 05:25 | 05:22 | 05:59 | | 06:48 | | 07:56 (1) | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | | 21:00 | 21:46 | 22:00 | 21:28 | | 20:26 | 24 | 08:20 (1) | 19:17 | 17:11 | 16:31 |
| 2 | 08:45 | 08:17 | 07:23 | 07:12 | | 06:08 | 05:25 | 05:23 | 06:00 | | 06:50 | | 07:56 (1) | 07:39 | 07:32 | 08:22 |
| | 16:38 | 17:27 | 18:18 | 20:11 | | 21:02 | 21:47 | 21:59 | 21:26 | | 20:24 | 24 | 08:20 (1) | 19:15 | 17:10 | 16:31 |
| 3 | 08:45 | 08:15 | 07:21 | 07:10 | | 06:06 | 05:24 | 05:24 | 06:02 | | 06:51 | | 07:55 (1) | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:20 | 20:13 | | 21:04 | 21:48 | 21:59 | 21:25 | | 20:22 | 24 | 08:19 (1) | 19:13 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:19 | 07:08 | 08:06 (1) | 06:05 | 05:23 | 05:25 | 06:03 | | 06:53 | | 07:56 (1) | 07:42 | 07:36 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 11 08:17 (1) | 21:05 | 21:49 | 21:59 | 21:23 | | 20:20 | 23 | 08:19 (1) | 19:10 | 17:06 | 16:30 |
| 5 | 08:44 | 08:12 | 07:16 | 07:06 | 08:03 (1) | 06:03 | 05:22 | 05:25 | 06:05 | | 06:55 | | 07:56 (1) | 07:44 | 07:38 | 08:27 |
| | 16:42 | 17:32 | 18:23 | 20:17 | 15 08:18 (1) | 21:07 | 21:50 | 21:58 | 21:21 | | 20:17 | 21 | 08:17 (1) | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 08:01 (1) | 06:01 | 05:22 | 05:26 | 06:06 | | 06:56 | | 07:57 (1) | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 19 08:20 (1) | 21:09 | 21:51 | 21:58 | 21:20 | | 20:15 | 19 | 08:16 (1) | 19:06 | 17:02 | 16:29 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 08:00 (1) | 05:59 | 05:21 | 05:27 | 06:08 | | 06:58 | | 07:58 (1) | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 21 08:21 (1) | 21:10 | 21:52 | 21:57 | 21:18 | | 20:13 | 16 | 08:14 (1) | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:07 | 07:10 | 06:59 | 07:59 (1) | 05:57 | 05:21 | 05:28 | 06:10 | | 07:00 | | 08:00 (1) | 07:49 | 07:43 | 08:30 |
| | 16:45 | 17:38 | 18:29 | 20:22 | 23 08:22 (1) | 21:12 | 21:53 | 21:56 | 21:16 | | 20:10 | 11 | 08:11 (1) | 19:01 | 16:59 | 16:28 |
| 9 | 08:43 | 08:05 | 07:07 | 06:57 | 07:57 (1) | 05:56 | 05:20 | 05:29 | 06:11 | | 07:01 | | | 07:50 | 07:45 | 08:31 |
| | 16:47 | 17:40 | 18:30 | 20:23 | 24 08:21 (1) | 21:13 | 21:54 | 21:56 | 21:14 | | 20:08 | | | 18:59 | 16:57 | 16:28 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 07:57 (1) | 05:54 | 05:20 | 05:30 | 06:13 | | 07:03 | | | 07:52 | 07:46 | 08:33 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 24 08:21 (1) | 21:15 | 21:54 | 21:55 | 21:12 | | 20:06 | | | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 07:57 (1) | 05:52 | 05:19 | 05:31 | 06:14 | | 07:04 | | | 07:54 | 07:48 | 08:34 |
| | 16:50 | 17:43 | 18:34 | 20:27 | 24 08:21 (1) | 21:17 | 21:55 | 21:54 | 21:10 | | 20:04 | | | 18:55 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:01 | 06:50 | 07:57 (1) | 05:51 | 05:19 | 05:32 | 06:16 | | 07:06 | | | 07:55 | 07:50 | 08:35 |
| | 16:51 | 17:45 | 18:36 | 20:28 | 24 08:21 (1) | 21:18 | 21:56 | 21:53 | 21:08 | | 20:01 | | | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:58 | 06:58 | 06:48 | 07:57 (1) | 05:49 | 05:19 | 05:33 | 06:18 | | 07:08 | | | 07:57 | 07:52 | 08:36 |
| | 16:53 | 17:47 | 18:37 | 20:30 | 24 08:21 (1) | 21:20 | 21:57 | 21:53 | 21:06 | | 19:59 | | | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:56 | 06:56 | 06:46 | 07:56 (1) | 05:47 | 05:18 | 05:34 | 06:19 | | 07:09 | | | 07:59 | 07:53 | 08:37 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 23 08:19 (1) | 21:21 | 21:57 | 21:52 | 21:05 | | 19:57 | | | 18:48 | 16:50 | 16:27 |
| 15 | 08:39 | 07:54 | 06:54 | 06:43 | 07:56 (1) | 05:46 | 05:18 | 05:35 | 06:21 | | 07:11 | | | 08:00 | 07:55 | 08:38 |
| | 16:56 | 17:51 | 18:41 | 20:33 | 22 08:18 (1) | 21:23 | 21:58 | 21:51 | 21:03 | | 19:54 | | | 18:46 | 16:48 | 16:27 |
| 16 | 08:38 | 07:52 | 06:52 | 06:41 | 07:57 (1) | 05:44 | 05:18 | 05:37 | 06:22 | | 07:12 | | | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 20 08:17 (1) | 21:24 | 21:58 | 21:50 | 21:01 | | 19:52 | | | 18:44 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 07:58 (1) | 05:43 | 05:18 | 05:38 | 06:24 | | 07:14 | | | 08:04 | 07:59 | 08:39 |
| | 16:59 | 17:54 | 18:44 | 20:37 | 18 08:16 (1) | 21:26 | 21:59 | 21:49 | 20:59 | | 19:50 | | | 18:41 | 16:46 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 07:59 (1) | 05:41 | 05:18 | 05:39 | 06:26 | | 07:16 | | | 08:06 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:39 | 15 08:14 (1) | 21:27 | 21:59 | 21:48 | 20:56 | | 19:47 | | | 18:39 | 16:44 | 16:28 |
| 19 | 08:35 | 07:46 | 06:45 | 06:35 | 08:02 (1) | 05:40 | 05:18 | 05:40 | 06:27 | | 07:17 | | | 08:07 | 08:02 | 08:41 |
| | 17:02 | 17:58 | 18:48 | 20:40 | 10 08:12 (1) | 21:29 | 21:59 | 21:46 | 20:54 | | 19:45 | | | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:33 | | 05:39 | 05:18 | 05:42 | 06:29 | | 07:19 | | | 08:09 | 08:04 | 08:41 |
| | 17:04 | 18:00 | 18:49 | 20:42 | | 21:30 | 22:00 | 21:45 | 20:52 | | 19:43 | | | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | | 05:37 | 05:18 | 05:43 | 06:30 | | 07:20 | | | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:02 | 18:51 | 20:44 | | 21:32 | 22:00 | 21:44 | 20:50 | | 19:40 | | | 18:33 | 16:41 | 16:29 |
| 22 | 08:32 | 07:40 | 06:38 | 06:28 | | 05:36 | 05:19 | 05:44 | 06:32 | | 07:22 | | | 08:13 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | | 21:33 | 22:00 | 21:43 | 20:48 | | 19:38 | | | 18:31 | 16:40 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | | 05:35 | 05:19 | 05:46 | 06:34 | | 07:24 | | | 08:14 | 08:09 | 08:43 |
| | 17:09 | 18:05 | 18:54 | 20:47 | | 21:35 | 22:00 | 21:41 | 20:46 | | 19:36 | | | 18:29 | 16:38 | 16:30 |
| 24 | 08:29 | 07:36 | 06:33 | 06:24 | | 05:34 | 05:19 | 05:47 | 06:35 | 08:05 (1) | 07:25 | | | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:49 | | 21:36 | 22:00 | 21:40 | 20:44 | 11 08:16 (1) | 19:33 | | | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:34 | 06:31 | 06:22 | | 05:32 | 05:19 | 05:49 | 06:37 | 08:02 (1) | 07:27 | | | 07:18 | 08:12 | 08:44 |
| | 17:12 | 18:09 | 18:58 | 20:50 | | 21:37 | 22:01 | 21:39 | 20:42 | 15 08:17 (1) | 19:31 | | | 17:25 | 16:36 | 16:31 |
| 26 | 08:27 | 07:31 | 06:29 | 06:20 | | 05:31 | 05:20 | 05:50 | 06:38 | 08:01 (1) | 07:29 | | | 07:20 | 08:14 | 08:44 |
| | 17:14 | 18:11 | 19:00 | 20:52 | | 21:39 | 22:01 | 21:37 | 20:40 | 18 08:19 (1) | 19:29 | | | 17:23 | 16:35 | 16:32 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | | 05:30 | 05:20 | 05:51 | 06:40 | 07:59 (1) | 07:30 | | | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:13 | 19:01 | 20:54 | | 21:40 | 22:00 | 21:36 | 20:37 | 20 08:19 (1) | 19:26 | | | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | | 05:29 | 05:21 | 05:53 | 06:42 | 07:58 (1) | 07:32 | | | 07:23 | 08:17 | 08:45 |
| | 17:18 | 18:14 | 19:03 | 20:55 | | 21:41 | 22:00 | 21:34 | 20:35 | 22 08:20 (1) | 19:24 | | | 17:19 | 16:34 | 16:33 |
| 29 | 08:23 | | 07:22 | 06:14 | | 05:28 | 05:21 | 05:54 | 06:43 | 07:57 (1) | 07:34 | | | 07:25 | 08:18 | 08:45 |
| | 17:19 | | 20:05 | 20:57 | | 21:42 | 22:00 | 21:33 | 20:33 | 23 08:20 (1) | 19:22 | | | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | | 05:27 | 05:22 | 05:56 | 06:45 | 07:57 (1) | 07:35 | | | 07:27 | 08:20 | 08:45 |
| | 17:21 | | 20:06 | 20:59 | | 21:44 | 22:00 | 21:31 | 20:31 | 24 08:21 (1) | 19:19 | | | 17:15 | 16:32 | 16:35 |
| 31 | 08:20 | | 07:17 | | | 05:26 | | 05:57 | 06:47 | 07:57 (1) | | | | 07:29 | | 08:45 |
| | 17:23 | | 20:08 | | | 21:45 | | 21:30 | 20:29 | 24 08:21 (1) | | | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | | 485 | 498 | 501 | 453 | | 381 | | 332 | 267 | 244 | |
| Total, worst case | | | | | 317 | | | | | 157 | | 162 | | | | |
| Sun reduction | | | | | 0.35 | | | | | 0.30 | | 0.28 | | | | |
| Oper. time red. | | | | | 1.00 | | | | | 1.00 | | 1.00 | | | | |
| Wind dir. red. | | | | | 0.64 | | | | | 0.64 | | 0.64 | | | | |
| Total reduction | | | | | 0.23 | | | | | 0.19 | | 0.18 | | | | |
| Total, real | | | | | 72 | | | | | 30 | | 30 | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
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+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** E - H5

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | | March | | April | | May | June |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | | 07:25 | | 07:15 | | 08:57 (1) | 06:10 | 05:25 |
| | 16:37 | 17:25 | | 18:16 | | 20:10 | 42 | 09:39 (1) | 21:00 | 21:46 |
| 2 | 08:45 | 08:17 | | 07:23 | | 07:12 | | 08:57 (1) | 06:08 | 05:24 |
| | 16:38 | 17:27 | | 18:18 | | 20:11 | 41 | 09:38 (1) | 21:02 | 21:47 |
| 3 | 08:45 | 08:15 | | 07:21 | | 07:10 | | 08:57 (1) | 06:06 | 05:24 |
| | 16:39 | 17:28 | | 18:20 | | 20:13 | 41 | 09:38 (1) | 21:04 | 21:48 |
| 4 | 08:44 | 08:13 | | 07:18 | | 07:08 | | 08:28 (2) | 06:05 | 05:23 |
| | 16:40 | 17:30 | | 18:21 | | 20:15 | 43 | 09:37 (1) | 21:05 | 21:49 |
| 5 | 08:44 | 08:12 | | 07:16 | | 07:06 | | 08:22 (2) | 06:03 | 05:22 |
| | 16:42 | 17:32 | | 18:23 | | 20:17 | 52 | 09:36 (1) | 21:07 | 21:50 |
| 6 | 08:44 | 08:10 | | 07:14 | | 07:03 | | 08:20 (2) | 06:01 | 05:22 |
| | 16:43 | 17:34 | | 18:25 | | 20:18 | 55 | 09:35 (1) | 21:09 | 21:51 |
| 7 | 08:43 | 08:08 | | 07:12 | | 07:01 | | 08:18 (2) | 05:59 | 05:21 |
| | 16:44 | 17:36 | | 18:27 | | 20:20 | 56 | 09:34 (1) | 21:10 | 21:52 |
| 8 | 08:43 | 08:07 | | 07:10 | | 06:59 | | 08:17 (2) | 05:57 | 05:21 |
| | 16:45 | 17:38 | | 18:29 | | 20:22 | 56 | 09:33 (1) | 21:12 | 21:53 |
| 9 | 08:43 | 08:05 | | 07:07 | | 06:57 | | 08:15 (2) | 05:56 | 05:20 |
| | 16:47 | 17:39 | | 18:30 | | 20:23 | 55 | 09:30 (1) | 21:13 | 21:54 |
| 10 | 08:42 | 08:03 | | 07:05 | | 06:54 | | 08:15 (2) | 05:54 | 05:20 |
| | 16:48 | 17:41 | | 18:32 | | 20:25 | 53 | 09:29 (1) | 21:15 | 21:54 |
| 11 | 08:41 | 08:01 | | 07:03 | | 06:52 | | 08:14 (2) | 05:52 | 05:19 |
| | 16:50 | 17:43 | | 18:34 | | 20:27 | 51 | 09:27 (1) | 21:17 | 21:55 |
| 12 | 08:41 | 07:59 | | 07:01 | | 06:50 | | 08:14 (2) | 05:51 | 05:19 |
| | 16:51 | 17:45 | | 18:36 | | 20:28 | 46 | 09:24 (1) | 21:18 | 21:56 |
| 13 | 08:40 | 07:58 | | 06:58 | | 06:48 | | 08:14 (2) | 05:49 | 05:19 |
| | 16:52 | 17:47 | | 18:37 | | 20:30 | 40 | 09:21 (1) | 21:20 | 21:57 |
| 14 | 08:39 | 07:56 | 08:56 (3) | 06:56 | | 06:45 | | 08:13 (2) | 05:47 | 05:18 |
| | 16:54 | 17:49 | 9 09:05 (3) | 18:39 | | 20:32 | 27 | 09:13 (1) | 21:21 | 21:57 |
| 15 | 08:39 | 07:54 | 08:53 (3) | 06:54 | | 06:43 | | 08:13 (2) | 05:46 | 05:18 |
| | 16:56 | 17:51 | 15 09:08 (3) | 18:41 | | 20:33 | 24 | 08:37 (2) | 21:23 | 21:58 |
| 16 | 08:38 | 07:52 | 08:52 (3) | 06:51 | | 06:41 | | 08:13 (2) | 05:44 | 05:18 |
| | 16:57 | 17:52 | 17 09:09 (3) | 18:42 | | 20:35 | 23 | 08:36 (2) | 21:24 | 21:58 |
| 17 | 08:37 | 07:50 | 08:51 (3) | 06:49 | | 06:39 | | 08:14 (2) | 05:43 | 05:18 |
| | 16:59 | 17:54 | 19 09:10 (3) | 18:44 | | 20:37 | 21 | 08:35 (2) | 21:26 | 21:59 |
| 18 | 08:36 | 07:48 | 08:50 (3) | 06:47 | | 06:37 | | 08:15 (2) | 05:41 | 05:18 |
| | 17:00 | 17:56 | 21 09:11 (3) | 18:46 | | 20:39 | 19 | 08:34 (2) | 21:27 | 21:59 |
| 19 | 08:35 | 07:46 | 08:50 (3) | 06:45 | 08:16 (1) | 06:35 | | 08:16 (2) | 05:40 | 05:18 |
| | 17:02 | 17:58 | 22 09:12 (3) | 18:48 | 13 08:29 (1) | 20:40 | 16 | 08:32 (2) | 21:29 | 21:59 |
| 20 | 08:34 | 07:44 | 08:49 (3) | 06:42 | 08:12 (1) | 06:33 | | 08:18 (2) | 05:39 | 05:18 |
| | 17:04 | 18:00 | 23 09:12 (3) | 18:49 | 21 08:33 (1) | 20:42 | 12 | 08:30 (2) | 21:30 | 22:00 |
| 21 | 08:33 | 07:42 | 08:49 (3) | 06:40 | 08:10 (1) | 06:30 | | 08:21 (2) | 05:37 | 05:18 |
| | 17:05 | 18:02 | 23 09:12 (3) | 18:51 | 25 08:35 (1) | 20:44 | 6 | 08:27 (2) | 21:32 | 22:00 |
| 22 | 08:32 | 07:40 | 08:49 (3) | 06:38 | 08:07 (1) | 06:28 | | | 05:36 | 05:18 |
| | 17:07 | 18:03 | 23 09:12 (3) | 18:53 | 29 08:36 (1) | 20:45 | | | 21:33 | 22:00 |
| 23 | 08:30 | 07:38 | 08:50 (3) | 06:35 | 08:06 (1) | 06:26 | | | 05:35 | 05:19 |
| | 17:09 | 18:05 | 22 09:12 (3) | 18:54 | 31 08:37 (1) | 20:47 | | | 21:35 | 22:00 |
| 24 | 08:29 | 07:36 | 08:49 (3) | 06:33 | 08:04 (1) | 06:24 | | | 05:34 | 05:19 |
| | 17:10 | 18:07 | 21 09:10 (3) | 18:56 | 35 08:39 (1) | 20:49 | | | 21:36 | 22:00 |
| 25 | 08:28 | 07:34 | 08:50 (3) | 06:31 | 08:02 (1) | 06:22 | | | 05:32 | 05:19 |
| | 17:12 | 18:09 | 19 09:09 (3) | 18:58 | 37 08:39 (1) | 20:50 | | | 21:37 | 22:01 |
| 26 | 08:27 | 07:31 | 08:51 (3) | 06:28 | 08:01 (1) | 06:20 | | | 05:31 | 05:20 |
| | 17:14 | 18:11 | 17 09:08 (3) | 19:00 | 38 08:39 (1) | 20:52 | | | 21:39 | 22:01 |
| 27 | 08:25 | 07:29 | 08:52 (3) | 06:26 | 08:01 (1) | 06:18 | | | 05:30 | 05:20 |
| | 17:16 | 18:12 | 15 09:07 (3) | 19:01 | 39 08:40 (1) | 20:54 | | | 21:40 | 22:00 |
| 28 | 08:24 | 07:27 | 08:55 (3) | 06:24 | 07:59 (1) | 06:16 | | | 05:29 | 05:21 |
| | 17:17 | 18:14 | 9 09:04 (3) | 19:03 | 40 08:39 (1) | 20:55 | | | 21:41 | 22:00 |
| 29 | 08:23 | | | 07:22 | 08:59 (1) | 06:14 | | | 05:28 | 05:21 |
| | 17:19 | | | 20:05 | 41 09:40 (1) | 20:57 | | | 21:42 | 22:00 |
| 30 | 08:21 | | | 07:19 | 08:58 (1) | 06:12 | | | 05:27 | 05:22 |
| | 17:21 | | | 20:06 | 42 09:40 (1) | 20:59 | | | 21:44 | 22:00 |
| 31 | 08:20 | | | 07:17 | 08:58 (1) | | | | 05:26 | |
| | 17:23 | | | 20:08 | 42 09:40 (1) | | | | 21:45 | |
| Potential sun hours | 260 | 278 | | 367 | | 416 | | | 485 | 498 |
| Total, worst case | | | 275 | | 433 | | 779 | | | |
| Sun reduction | | | 0.21 | | 0.24 | | 0.35 | | | |
| Oper. time red. | | | 1.00 | | 1.00 | | 1.00 | | | |
| Wind dir. red. | | | 0.52 | | 0.58 | | 0.61 | | | |
| Total reduction | | | 0.11 | | 0.14 | | 0.21 | | | |
| Total, real | | | 29 | | 62 | | 167 | | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
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Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** E - H5

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | July | August | | | September | | | October | | | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 05:22 | 05:59 | | | 06:48 | | 08:13 (2) | 07:37 | | | 07:30 | 08:21 |
| | 22:00 | 21:28 | | | 20:26 | 51 | 09:26 (1) | 19:17 | | | 17:11 | 16:31 |
| 2 | 05:23 | 06:00 | | | 06:50 | | 08:14 (2) | 07:39 | | | 07:32 | 08:22 |
| | 21:59 | 21:26 | | | 20:24 | 53 | 09:28 (1) | 19:15 | | | 17:09 | 16:31 |
| 3 | 05:24 | 06:02 | | | 06:51 | | 08:13 (2) | 07:40 | | | 07:34 | 08:24 |
| | 21:59 | 21:25 | | | 20:22 | 55 | 09:28 (1) | 19:13 | | | 17:08 | 16:30 |
| 4 | 05:25 | 06:03 | | | 06:53 | | 08:14 (2) | 07:42 | | | 07:36 | 08:25 |
| | 21:59 | 21:23 | | | 20:20 | 56 | 09:30 (1) | 19:10 | | | 17:06 | 16:29 |
| 5 | 05:25 | 06:05 | | | 06:55 | | 08:14 (2) | 07:43 | | | 07:37 | 08:27 |
| | 21:58 | 21:21 | | | 20:17 | 56 | 09:30 (1) | 19:08 | | | 17:04 | 16:29 |
| 6 | 05:26 | 06:06 | | | 06:56 | | 08:16 (2) | 07:45 | | | 07:39 | 08:28 |
| | 21:58 | 21:20 | | | 20:15 | 55 | 09:31 (1) | 19:06 | | | 17:02 | 16:29 |
| 7 | 05:27 | 06:08 | | | 06:58 | | 08:17 (2) | 07:47 | | | 07:41 | 08:29 |
| | 21:57 | 21:18 | | | 20:13 | 52 | 09:31 (1) | 19:03 | | | 17:01 | 16:28 |
| 8 | 05:28 | 06:10 | | | 06:59 | | 08:22 (2) | 07:49 | | | 07:43 | 08:30 |
| | 21:56 | 21:16 | | | 20:10 | 44 | 09:32 (1) | 19:01 | | | 16:59 | 16:28 |
| 9 | 05:29 | 06:11 | | | 07:01 | | 08:50 (1) | 07:50 | | | 07:45 | 08:31 |
| | 21:56 | 21:14 | | | 20:08 | 41 | 09:31 (1) | 18:59 | | | 16:57 | 16:28 |
| 10 | 05:30 | 06:13 | | | 07:03 | | 08:50 (1) | 07:52 | | | 07:46 | 08:33 |
| | 21:55 | 21:12 | | | 20:06 | 42 | 09:32 (1) | 18:57 | | | 16:56 | 16:27 |
| 11 | 05:31 | 06:14 | | | 07:04 | | 08:50 (1) | 07:54 | | | 07:48 | 08:34 |
| | 21:54 | 21:10 | | | 20:04 | 42 | 09:32 (1) | 18:55 | | | 16:54 | 16:27 |
| 12 | 05:32 | 06:16 | | | 07:06 | | 08:49 (1) | 07:55 | | | 07:50 | 08:35 |
| | 21:53 | 21:08 | | | 20:01 | 42 | 09:31 (1) | 18:52 | | | 16:53 | 16:27 |
| 13 | 05:33 | 06:18 | | | 07:08 | | 08:50 (1) | 07:57 | | 09:31 (3) | 07:52 | 08:36 |
| | 21:53 | 21:06 | | | 19:59 | 41 | 09:31 (1) | 18:50 | 3 | 09:34 (3) | 16:51 | 16:27 |
| 14 | 05:34 | 06:19 | | | 07:09 | | 08:49 (1) | 07:59 | | 09:26 (3) | 07:53 | 08:37 |
| | 21:52 | 21:04 | | | 19:57 | 41 | 09:30 (1) | 18:48 | 12 | 09:38 (3) | 16:50 | 16:27 |
| 15 | 05:35 | 06:21 | | | 07:11 | | 08:49 (1) | 08:00 | | 09:24 (3) | 07:55 | 08:38 |
| | 21:51 | 21:03 | | | 19:54 | 41 | 09:30 (1) | 18:46 | 16 | 09:40 (3) | 16:48 | 16:27 |
| 16 | 05:37 | 06:22 | | | 07:12 | | 08:49 (1) | 08:02 | | 09:23 (3) | 07:57 | 08:38 |
| | 21:50 | 21:01 | | | 19:52 | 39 | 09:28 (1) | 18:44 | 18 | 09:41 (3) | 16:47 | 16:27 |
| 17 | 05:38 | 06:24 | | | 07:14 | | 08:50 (1) | 08:04 | | 09:22 (3) | 07:59 | 08:39 |
| | 21:49 | 20:58 | | | 19:50 | 38 | 09:28 (1) | 18:41 | 20 | 09:42 (3) | 16:46 | 16:27 |
| 18 | 05:39 | 06:26 | | | 07:16 | | 08:50 (1) | 08:06 | | 09:21 (3) | 08:00 | 08:40 |
| | 21:48 | 20:56 | | | 19:47 | 37 | 09:27 (1) | 18:39 | 22 | 09:43 (3) | 16:44 | 16:28 |
| 19 | 05:40 | 06:27 | | | 07:17 | | 08:50 (1) | 08:07 | | 09:20 (3) | 08:02 | 08:41 |
| | 21:46 | 20:54 | | | 19:45 | 35 | 09:25 (1) | 18:37 | 22 | 09:42 (3) | 16:43 | 16:28 |
| 20 | 05:42 | 06:29 | | | 07:19 | | 08:52 (1) | 08:09 | | 09:20 (3) | 08:04 | 08:41 |
| | 21:45 | 20:52 | | | 19:43 | 32 | 09:24 (1) | 18:35 | 22 | 09:42 (3) | 16:42 | 16:28 |
| 21 | 05:43 | 06:30 | | | 07:20 | | 08:52 (1) | 08:11 | | 09:20 (3) | 08:05 | 08:42 |
| | 21:44 | 20:50 | | | 19:40 | 30 | 09:22 (1) | 18:33 | 22 | 09:42 (3) | 16:41 | 16:29 |
| 22 | 05:44 | 06:32 | | 08:25 (2) | 07:22 | | 08:54 (1) | 08:13 | | 09:20 (3) | 08:07 | 08:42 |
| | 21:43 | 20:48 | 7 | 08:32 (2) | 19:38 | 26 | 09:20 (1) | 18:31 | 22 | 09:42 (3) | 16:39 | 16:29 |
| 23 | 05:46 | 06:34 | | 08:21 (2) | 07:24 | | 08:56 (1) | 08:14 | | 09:20 (3) | 08:09 | 08:43 |
| | 21:41 | 20:46 | 13 | 08:34 (2) | 19:36 | 22 | 09:18 (1) | 18:29 | 22 | 09:42 (3) | 16:38 | 16:30 |
| 24 | 05:47 | 06:35 | | 08:19 (2) | 07:25 | | 08:58 (1) | 08:16 | | 09:21 (3) | 08:10 | 08:43 |
| | 21:40 | 20:44 | 17 | 08:36 (2) | 19:33 | 16 | 09:14 (1) | 18:27 | 20 | 09:41 (3) | 16:37 | 16:30 |
| 25 | 05:48 | 06:37 | | 08:17 (2) | 07:27 | | | 07:18 | | 08:22 (3) | 08:12 | 08:44 |
| | 21:39 | 20:42 | 20 | 08:37 (2) | 19:31 | | | 17:25 | 18 | 08:40 (3) | 16:36 | 16:31 |
| 26 | 05:50 | 06:38 | | 08:17 (2) | 07:29 | | | 07:20 | | 08:22 (3) | 08:13 | 08:44 |
| | 21:37 | 20:40 | 21 | 08:38 (2) | 19:29 | | | 17:23 | 16 | 08:38 (3) | 16:35 | 16:32 |
| 27 | 05:51 | 06:40 | | 08:15 (2) | 07:30 | | | 07:21 | | 08:23 (3) | 08:15 | 08:44 |
| | 21:36 | 20:37 | 23 | 08:38 (2) | 19:26 | | | 17:21 | 14 | 08:37 (3) | 16:34 | 16:32 |
| 28 | 05:53 | 06:42 | | 08:15 (2) | 07:32 | | | 07:23 | | 08:26 (3) | 08:17 | 08:45 |
| | 21:34 | 20:35 | 24 | 08:39 (2) | 19:24 | | | 17:19 | 8 | 08:34 (3) | 16:34 | 16:33 |
| 29 | 05:54 | 06:43 | | 08:14 (2) | 07:34 | | | 07:25 | | | 08:18 | 08:45 |
| | 21:33 | 20:33 | 29 | 09:15 (1) | 19:22 | | | 17:17 | | | 16:33 | 16:34 |
| 30 | 05:56 | 06:45 | | 08:14 (2) | 07:35 | | | 07:27 | | | 08:20 | 08:45 |
| | 21:31 | 20:31 | 40 | 09:21 (1) | 19:19 | | | 17:15 | | | 16:32 | 16:35 |
| 31 | 05:57 | 06:47 | | 08:14 (2) | | | | 07:29 | | | | 08:45 |
| | 21:30 | 20:29 | 46 | 09:24 (1) | | | | 17:13 | | | | 16:36 |
| Potential sun hours | 501 | 453 | | | 381 | | | 332 | | | 267 | 244 |
| Total, worst case | | | 240 | | | 987 | | | 277 | | | |
| Sun reduction | | | 0.30 | | | 0.28 | | | 0.24 | | | |
| Oper. time red. | | | 1.00 | | | 1.00 | | | 1.00 | | | |
| Wind dir. red. | | | 0.62 | | | 0.59 | | | 0.52 | | | |
| Total reduction | | | 0.19 | | | 0.17 | | | 0.12 | | | |
| Total, real | | | 45 | | | 166 | | | 34 | | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** F - H6

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | | March | | April | | May | | June | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | | 07:25 | | 08:30 (3) | 07:15 | | | 06:10 | | 07:48 (2) | 05:25 |
| | 16:37 | 17:25 | | 18:16 | 24 | 08:54 (3) | 20:10 | | | 21:00 | 58 | 08:52 (1) | 21:46 |
| 2 | 08:45 | 08:17 | | 07:23 | | 08:30 (3) | 07:12 | | | 06:08 | | 07:49 (2) | 05:24 |
| | 16:38 | 17:27 | | 18:18 | 24 | 08:54 (3) | 20:11 | | | 21:02 | 54 | 08:51 (1) | 21:47 |
| 3 | 08:45 | 08:15 | | 07:21 | | 08:30 (3) | 07:10 | | | 06:06 | | 07:49 (2) | 05:24 |
| | 16:39 | 17:28 | | 18:20 | 24 | 08:54 (3) | 20:13 | | | 21:04 | 50 | 08:49 (1) | 21:48 |
| 4 | 08:44 | 08:13 | | 07:18 | | 08:30 (3) | 07:08 | | | 06:05 | | 07:51 (2) | 05:23 |
| | 16:40 | 17:30 | | 18:21 | 23 | 08:53 (3) | 20:15 | | | 21:05 | 43 | 08:47 (1) | 21:49 |
| 5 | 08:44 | 08:12 | | 07:16 | | 08:31 (3) | 07:06 | | | 06:03 | | 07:54 (2) | 05:22 |
| | 16:42 | 17:32 | | 18:23 | 22 | 08:53 (3) | 20:17 | | | 21:07 | 35 | 08:46 (1) | 21:50 |
| 6 | 08:44 | 08:10 | | 07:14 | | 08:31 (3) | 07:03 | 08:38 (1) | | 06:01 | | 08:20 (1) | 05:22 |
| | 16:43 | 17:34 | | 18:25 | 20 | 08:51 (3) | 20:18 | 5 | 08:43 (1) | 21:09 | 24 | 08:44 (1) | 21:51 |
| 7 | 08:43 | 08:08 | | 07:12 | | 08:32 (3) | 07:01 | | 08:32 (1) | 05:59 | | 08:21 (1) | 05:21 |
| | 16:44 | 17:36 | | 18:27 | 17 | 08:49 (3) | 20:20 | 17 | 08:49 (1) | 21:10 | 21 | 08:42 (1) | 21:52 |
| 8 | 08:43 | 08:07 | | 07:10 | | 08:34 (3) | 06:59 | | 08:29 (1) | 05:57 | | 08:24 (1) | 05:21 |
| | 16:45 | 17:38 | | 18:29 | 13 | 08:47 (3) | 20:22 | 23 | 08:52 (1) | 21:12 | 16 | 08:40 (1) | 21:53 |
| 9 | 08:43 | 08:05 | | 07:07 | | 08:37 (3) | 06:57 | | 08:26 (1) | 05:56 | | 08:28 (1) | 05:20 |
| | 16:47 | 17:39 | | 18:30 | 6 | 08:43 (3) | 20:23 | 27 | 08:53 (1) | 21:13 | 7 | 08:35 (1) | 21:54 |
| 10 | 08:42 | 08:03 | | 07:05 | | | 06:54 | | 08:24 (1) | 05:54 | | | 05:20 |
| | 16:48 | 17:41 | | 18:32 | | | 20:25 | 31 | 08:55 (1) | 21:15 | | | 21:54 |
| 11 | 08:41 | 08:01 | | 07:03 | | | 06:52 | | 08:22 (1) | 05:52 | | | 05:19 |
| | 16:50 | 17:43 | | 18:34 | | | 20:27 | 34 | 08:56 (1) | 21:17 | | | 21:55 |
| 12 | 08:41 | 07:59 | | 07:01 | | | 06:50 | | 08:21 (1) | 05:51 | | | 05:19 |
| | 16:51 | 17:45 | | 18:36 | | | 20:28 | 36 | 08:57 (1) | 21:18 | | | 21:56 |
| 13 | 08:40 | 07:58 | | 06:58 | | | 06:48 | | 08:19 (1) | 05:49 | | | 05:19 |
| | 16:52 | 17:47 | | 18:37 | | | 20:30 | 39 | 08:58 (1) | 21:20 | | | 21:57 |
| 14 | 08:39 | 07:56 | | 06:56 | | | 06:45 | | 08:17 (1) | 05:47 | | | 05:18 |
| | 16:54 | 17:49 | | 18:39 | | | 20:32 | 41 | 08:58 (1) | 21:21 | | | 21:57 |
| 15 | 08:39 | 07:54 | | 06:54 | | | 06:43 | | 08:17 (1) | 05:46 | | | 05:18 |
| | 16:56 | 17:51 | | 18:41 | | | 20:33 | 41 | 08:58 (1) | 21:23 | | | 21:58 |
| 16 | 08:38 | 07:52 | | 06:51 | | | 06:41 | | 07:58 (2) | 05:44 | | | 05:18 |
| | 16:57 | 17:52 | | 18:42 | | | 20:35 | 50 | 08:59 (1) | 21:24 | | | 21:58 |
| 17 | 08:37 | 07:50 | | 06:49 | | | 06:39 | | 07:55 (2) | 05:43 | | | 05:18 |
| | 16:59 | 17:54 | | 18:44 | | | 20:37 | 57 | 08:59 (1) | 21:26 | | | 21:59 |
| 18 | 08:36 | 07:48 | | 06:47 | | | 06:37 | | 07:53 (2) | 05:41 | | | 05:18 |
| | 17:00 | 17:56 | | 18:46 | | | 20:39 | 61 | 08:59 (1) | 21:27 | | | 21:59 |
| 19 | 08:35 | 07:46 | | 06:45 | | | 06:35 | | 07:51 (2) | 05:40 | | | 05:18 |
| | 17:02 | 17:58 | | 18:48 | | | 20:40 | 65 | 08:59 (1) | 21:29 | | | 21:59 |
| 20 | 08:34 | 07:44 | | 06:42 | | | 06:33 | | 07:50 (2) | 05:39 | | | 05:18 |
| | 17:04 | 18:00 | | 18:49 | | | 20:42 | 67 | 08:59 (1) | 21:30 | | | 22:00 |
| 21 | 08:33 | 07:42 | | 06:40 | | | 06:30 | | 07:49 (2) | 05:37 | | | 05:18 |
| | 17:05 | 18:02 | | 18:51 | | | 20:44 | 70 | 08:59 (1) | 21:32 | | | 22:00 |
| 22 | 08:32 | 07:40 | 08:39 (3) | 06:38 | | | 06:28 | | 07:48 (2) | 05:36 | | | 05:18 |
| | 17:07 | 18:03 | 9 08:48 (3) | 18:53 | | | 20:45 | 71 | 08:59 (1) | 21:33 | | | 22:00 |
| 23 | 08:30 | 07:38 | 08:37 (3) | 06:35 | | | 06:26 | | 07:47 (2) | 05:35 | | | 05:19 |
| | 17:09 | 18:05 | 14 08:51 (3) | 18:54 | | | 20:47 | 71 | 08:58 (1) | 21:35 | | | 22:00 |
| 24 | 08:29 | 07:36 | 08:34 (3) | 06:33 | | | 06:24 | | 07:47 (2) | 05:34 | | | 05:19 |
| | 17:10 | 18:07 | 17 08:51 (3) | 18:56 | | | 20:49 | 71 | 08:58 (1) | 21:36 | | | 22:00 |
| 25 | 08:28 | 07:34 | 08:33 (3) | 06:31 | | | 06:22 | | 07:46 (2) | 05:32 | | | 05:19 |
| | 17:12 | 18:09 | 20 08:53 (3) | 18:58 | | | 20:50 | 71 | 08:57 (1) | 21:37 | | | 22:01 |
| 26 | 08:27 | 07:31 | 08:32 (3) | 06:28 | | | 06:20 | | 07:46 (2) | 05:31 | | | 05:20 |
| | 17:14 | 18:11 | 22 08:54 (3) | 19:00 | | | 20:52 | 70 | 08:56 (1) | 21:39 | | | 22:01 |
| 27 | 08:25 | 07:29 | 08:31 (3) | 06:26 | | | 06:18 | | 07:46 (2) | 05:30 | | | 05:20 |
| | 17:16 | 18:12 | 23 08:54 (3) | 19:01 | | | 20:54 | 68 | 08:55 (1) | 21:40 | | | 22:00 |
| 28 | 08:24 | 07:27 | 08:31 (3) | 06:24 | | | 06:16 | | 07:46 (2) | 05:29 | | | 05:21 |
| | 17:17 | 18:14 | 24 08:55 (3) | 19:03 | | | 20:55 | 67 | 08:55 (1) | 21:41 | | | 22:00 |
| 29 | 08:23 | | | 07:22 | | | 06:14 | | 07:46 (2) | 05:28 | | | 05:21 |
| | 17:19 | | | 20:05 | | | 20:57 | 65 | 08:53 (1) | 21:42 | | | 22:00 |
| 30 | 08:21 | | | 07:19 | | | 06:12 | | 07:47 (2) | 05:27 | | | 05:22 |
| | 17:21 | | | 20:06 | | | 20:59 | 61 | 08:52 (1) | 21:44 | | | 22:00 |
| 31 | 08:20 | | | 07:17 | | | | | | 05:26 | | | |
| | 17:23 | | | 20:08 | | | | | | 21:45 | | | |
| Potential sun hours | 260 | 278 | | 367 | | | 416 | | | 485 | | | 498 |
| Total, worst case | | | 129 | | 173 | | | 1279 | | | 308 | | |
| Sun reduction | | | 0.21 | | 0.24 | | | 0.35 | | | 0.37 | | |
| Oper. time red. | | | 1.00 | | 1.00 | | | 1.00 | | | 1.00 | | |
| Wind dir. red. | | | 0.55 | | 0.55 | | | 0.64 | | | 0.64 | | |
| Total reduction | | | 0.11 | | 0.13 | | | 0.23 | | | 0.24 | | |
| Total, real | | | 14 | | 23 | | | 289 | | | 73 | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** F - H6

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | July | | August | | | September | | | October | | | November | December | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 05:22 | | 05:59 | | | 06:48 | | 08:21 (1) | 07:37 | | | 07:30 | 08:21 | |
| | 22:00 | | 21:28 | | | 20:26 | 34 | 08:55 (1) | 19:17 | | | 17:11 | 16:31 | |
| 2 | 05:23 | | 06:00 | | | 06:50 | | 08:23 (1) | 07:38 | | | 07:32 | 08:22 | |
| | 21:59 | | 21:26 | | | 20:24 | 31 | 08:54 (1) | 19:15 | | | 17:09 | 16:31 | |
| 3 | 05:24 | | 06:02 | | | 06:51 | | 08:24 (1) | 07:40 | | | 07:34 | 08:24 | |
| | 21:59 | | 21:25 | | | 20:22 | 27 | 08:51 (1) | 19:13 | | | 17:08 | 16:30 | |
| 4 | 05:25 | | 06:03 | | 08:37 (1) | 06:53 | | 08:26 (1) | 07:42 | | | 07:36 | 08:25 | |
| | 21:59 | | 21:23 | 10 | 08:47 (1) | 20:20 | 23 | 08:49 (1) | 19:10 | | | 17:06 | 16:29 | |
| 5 | 05:25 | | 06:05 | | 08:33 (1) | 06:55 | | 08:28 (1) | 07:43 | | 09:12 (3) | 07:37 | 08:26 | |
| | 21:58 | | 21:21 | 17 | 08:50 (1) | 20:17 | 17 | 08:45 (1) | 19:08 | 11 | 09:23 (3) | 17:04 | 16:29 | |
| 6 | 05:26 | | 06:06 | | 08:31 (1) | 06:56 | | 08:34 (1) | 07:45 | | 09:09 (3) | 07:39 | 08:28 | |
| | 21:58 | | 21:20 | 22 | 08:53 (1) | 20:15 | 6 | 08:40 (1) | 19:06 | 15 | 09:24 (3) | 17:02 | 16:29 | |
| 7 | 05:27 | | 06:08 | | 08:29 (1) | 06:58 | | | 07:47 | | 09:08 (3) | 07:41 | 08:29 | |
| | 21:57 | | 21:18 | 25 | 08:54 (1) | 20:13 | | | 19:03 | 18 | 09:26 (3) | 17:01 | 16:28 | |
| 8 | 05:28 | | 06:10 | | 08:02 (2) | 06:59 | | | 07:49 | | 09:07 (3) | 07:43 | 08:30 | |
| | 21:56 | | 21:16 | 39 | 08:56 (1) | 20:10 | | | 19:01 | 20 | 09:27 (3) | 16:59 | 16:28 | |
| 9 | 05:29 | | 06:11 | | 08:00 (2) | 07:01 | | | 07:50 | | 09:05 (3) | 07:45 | 08:31 | |
| | 21:56 | | 21:14 | 45 | 08:57 (1) | 20:08 | | | 18:59 | 22 | 09:27 (3) | 16:57 | 16:28 | |
| 10 | 05:30 | | 06:13 | | 07:58 (2) | 07:03 | | | 07:52 | | 09:04 (3) | 07:46 | 08:33 | |
| | 21:55 | | 21:12 | 50 | 08:58 (1) | 20:06 | | | 18:57 | 24 | 09:28 (3) | 16:56 | 16:27 | |
| 11 | 05:31 | | 06:14 | | 07:57 (2) | 07:04 | | | 07:54 | | 09:04 (3) | 07:48 | 08:34 | |
| | 21:54 | | 21:10 | 55 | 08:59 (1) | 20:04 | | | 18:55 | 24 | 09:28 (3) | 16:54 | 16:27 | |
| 12 | 05:32 | | 06:16 | | 07:55 (2) | 07:06 | | | 07:55 | | 09:04 (3) | 07:50 | 08:35 | |
| | 21:53 | | 21:08 | 59 | 09:00 (1) | 20:01 | | | 18:52 | 24 | 09:28 (3) | 16:53 | 16:27 | |
| 13 | 05:33 | | 06:18 | | 07:55 (2) | 07:08 | | | 07:57 | | 09:04 (3) | 07:52 | 08:36 | |
| | 21:53 | | 21:06 | 62 | 09:01 (1) | 19:59 | | | 18:50 | 24 | 09:28 (3) | 16:51 | 16:27 | |
| 14 | 05:34 | | 06:19 | | 07:55 (2) | 07:09 | | | 07:59 | | 09:03 (3) | 07:53 | 08:37 | |
| | 21:52 | | 21:04 | 64 | 09:02 (1) | 19:57 | | | 18:48 | 24 | 09:27 (3) | 16:50 | 16:27 | |
| 15 | 05:35 | | 06:21 | | 07:54 (2) | 07:11 | | | 08:00 | | 09:04 (3) | 07:55 | 08:37 | |
| | 21:51 | | 21:03 | 66 | 09:02 (1) | 19:54 | | | 18:46 | 22 | 09:26 (3) | 16:48 | 16:27 | |
| 16 | 05:37 | | 06:22 | | 07:54 (2) | 07:12 | | | 08:02 | | 09:04 (3) | 07:57 | 08:38 | |
| | 21:50 | | 21:01 | 68 | 09:03 (1) | 19:52 | | | 18:44 | 21 | 09:25 (3) | 16:47 | 16:27 | |
| 17 | 05:38 | | 06:24 | | 07:53 (2) | 07:14 | | | 08:04 | | 09:05 (3) | 07:59 | 08:39 | |
| | 21:49 | | 20:58 | 70 | 09:03 (1) | 19:50 | | | 18:41 | 19 | 09:24 (3) | 16:46 | 16:27 | |
| 18 | 05:39 | | 06:26 | | 07:53 (2) | 07:16 | | | 08:06 | | 09:07 (3) | 08:00 | 08:40 | |
| | 21:47 | | 20:56 | 71 | 09:04 (1) | 19:47 | | | 18:39 | 16 | 09:23 (3) | 16:44 | 16:28 | |
| 19 | 05:40 | | 06:27 | | 07:53 (2) | 07:17 | | | 08:07 | | 09:08 (3) | 08:02 | 08:41 | |
| | 21:46 | | 20:54 | 70 | 09:03 (1) | 19:45 | | | 18:37 | 12 | 09:20 (3) | 16:43 | 16:28 | |
| 20 | 05:42 | | 06:29 | | 07:53 (2) | 07:19 | | | 08:09 | | 09:11 (3) | 08:04 | 08:41 | |
| | 21:45 | | 20:52 | 71 | 09:04 (1) | 19:43 | | | 18:35 | 6 | 09:17 (3) | 16:42 | 16:28 | |
| 21 | 05:43 | | 06:30 | | 07:53 (2) | 07:20 | | | 08:11 | | | 08:05 | 08:42 | |
| | 21:44 | | 20:50 | 70 | 09:03 (1) | 19:40 | | | 18:33 | | | 16:41 | 16:29 | |
| 22 | 05:44 | | 06:32 | | 07:54 (2) | 07:22 | | | 08:13 | | | 08:07 | 08:42 | |
| | 21:43 | | 20:48 | 69 | 09:04 (1) | 19:38 | | | 18:31 | | | 16:39 | 16:29 | |
| 23 | 05:46 | | 06:34 | | 07:54 (2) | 07:24 | | | 08:14 | | | 08:09 | 08:43 | |
| | 21:41 | | 20:46 | 68 | 09:03 (1) | 19:36 | | | 18:29 | | | 16:38 | 16:30 | |
| 24 | 05:47 | | 06:35 | | 07:55 (2) | 07:25 | | | 08:16 | | | 08:10 | 08:43 | |
| | 21:40 | | 20:44 | 65 | 09:03 (1) | 19:33 | | | 18:27 | | | 16:37 | 16:30 | |
| 25 | 05:48 | | 06:37 | | 07:56 (2) | 07:27 | | | 07:18 | | | 08:12 | 08:44 | |
| | 21:39 | | 20:42 | 62 | 09:02 (1) | 19:31 | | | 17:25 | | | 16:36 | 16:31 | |
| 26 | 05:50 | | 06:38 | | 07:58 (2) | 07:29 | | | 07:20 | | | 08:13 | 08:44 | |
| | 21:37 | | 20:40 | 57 | 09:02 (1) | 19:29 | | | 17:23 | | | 16:35 | 16:32 | |
| 27 | 05:51 | | 06:40 | | 08:01 (2) | 07:30 | | | 07:21 | | | 08:15 | 08:44 | |
| | 21:36 | | 20:37 | 48 | 09:01 (1) | 19:26 | | | 17:21 | | | 16:34 | 16:32 | |
| 28 | 05:53 | | 06:42 | | 08:18 (1) | 07:32 | | | 07:23 | | | 08:17 | 08:45 | |
| | 21:34 | | 20:35 | 42 | 09:00 (1) | 19:24 | | | 17:19 | | | 16:34 | 16:33 | |
| 29 | 05:54 | | 06:43 | | 08:18 (1) | 07:34 | | | 07:25 | | | 08:18 | 08:45 | |
| | 21:33 | | 20:33 | 41 | 08:59 (1) | 19:22 | | | 17:17 | | | 16:33 | 16:34 | |
| 30 | 05:56 | | 06:45 | | 08:19 (1) | 07:35 | | | 07:27 | | | 08:20 | 08:45 | |
| | 21:31 | | 20:31 | 39 | 08:58 (1) | 19:19 | | | 17:15 | | | 16:32 | 16:35 | |
| 31 | 05:57 | | 06:47 | | 08:21 (1) | | | | 07:29 | | | | 08:45 | |
| | 21:30 | | 20:29 | 36 | 08:57 (1) | | | | 17:13 | | | | 16:36 | |
| Potential sun hours | 501 | | 453 | | | 381 | | | 332 | | | 267 | 244 | |
| Total, worst case | | | | 1461 | | | 138 | | | 302 | | | | |
| Sun reduction | | | | 0.30 | | | 0.28 | | | 0.24 | | | | |
| Oper. time red. | | | | 1.00 | | | 1.00 | | | 1.00 | | | | |
| Wind dir. red. | | | | 0.64 | | | 0.63 | | | 0.55 | | | | |
| Total reduction | | | | 0.19 | | | 0.18 | | | 0.13 | | | | |
| Total, real | | | | 277 | | | 25 | | | 39 | | | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
**Jennings O'Donovan**
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kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** G - H7

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:15 | 06:10 | 05:25 | 05:22 | 05:59 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | 21:00 | 21:46 | 22:00 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:45 | 08:17 | 07:23 | 07:12 | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:30 |
| 3 | 08:45 | 08:15 | 07:21 | 07:10 | 06:06 | 05:24 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:20 | 20:13 | 21:04 | 21:48 | 21:59 | 21:25 | 20:22 | 19:12 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:04 | 05:23 | 05:24 | 06:03 | 06:53 | 07:42 | 07:36 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:59 | 21:23 | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | 06:03 | 05:22 | 05:25 | 06:05 | 06:55 | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:21 | 05:26 | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:09 | 21:51 | 21:58 | 21:19 | 20:15 | 19:06 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 21:10 | 21:52 | 21:57 | 21:18 | 20:13 | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:07 | 07:10 | 06:59 | 05:57 | 05:20 | 05:28 | 06:09 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:38 | 18:28 | 20:22 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:43 | 08:05 | 07:07 | 06:56 | 05:56 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:45 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 21:13 | 21:54 | 21:56 | 21:14 | 20:08 | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:19 | 05:30 | 06:13 | 07:03 | 07:52 | 07:46 | 08:33 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:54 | 07:48 | 08:34 |
| | 16:49 | 17:43 | 18:34 | 20:27 | 21:17 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:01 | 06:50 | 05:51 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:35 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:58 | 06:58 | 06:48 | 05:49 | 05:18 | 05:33 | 06:17 | 07:07 | 07:57 | 07:52 | 08:36 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 21:20 | 21:57 | 21:53 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:56 | 06:56 | 06:45 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:59 | 07:53 | 08:37 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 21:21 | 21:57 | 21:52 | 21:04 | 19:57 | 18:48 | 16:50 | 16:27 |
| 15 | 08:39 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:35 | 06:21 | 07:11 | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:41 | 20:33 | 21:23 | 21:58 | 21:51 | 21:02 | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 08:38 | 07:52 | 06:51 | 06:41 | 05:44 | 05:18 | 05:36 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:50 | 21:00 | 19:52 | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:59 | 08:39 |
| | 16:59 | 17:54 | 18:44 | 20:37 | 21:26 | 21:59 | 21:49 | 20:58 | 19:50 | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 | 05:18 | 05:39 | 06:25 | 07:16 | 08:06 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:45 | 06:35 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:41 |
| | 17:02 | 17:58 | 18:48 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 05:39 | 05:18 | 05:42 | 06:29 | 07:19 | 08:09 | 08:04 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | 21:30 | 22:00 | 21:45 | 20:52 | 19:43 | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:44 | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:40 | 16:29 |
| 22 | 08:32 | 07:40 | 06:38 | 06:28 | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 | 08:13 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | 21:33 | 22:00 | 21:43 | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 05:35 | 05:19 | 05:46 | 06:33 | 07:24 | 08:14 | 08:09 | 08:43 |
| | 17:09 | 18:05 | 18:54 | 20:47 | 21:35 | 22:00 | 21:41 | 20:46 | 19:36 | 18:29 | 16:38 | 16:30 |
| 24 | 08:29 | 07:36 | 06:33 | 06:24 | 05:33 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:49 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:34 | 06:31 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | 07:18 | 08:12 | 08:44 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:01 | 21:39 | 20:42 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:27 | 07:31 | 06:28 | 06:20 | 05:31 | 05:20 | 05:50 | 06:38 | 07:29 | 07:20 | 08:13 | 08:44 |
| | 17:14 | 18:11 | 18:59 | 20:52 | 21:39 | 22:01 | 21:37 | 20:39 | 19:29 | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:12 | 19:01 | 20:54 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:21 | 05:53 | 06:42 | 07:32 | 07:23 | 08:17 | 08:45 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:33 | 16:33 |
| 29 | 08:23 | | 07:22 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | 07:25 | 08:18 | 08:45 |
| | 17:19 | | 20:05 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:56 | 06:45 | 07:35 | 07:27 | 08:20 | 08:45 |
| | 17:21 | | 20:06 | 20:59 | 21:44 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:20 | | 07:17 | | 05:26 | | 05:57 | 06:46 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:45 | | 21:30 | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 244 |
| Total, worst case | | | | | | | | | | | | |
| Sun reduction | | | | | | | | | | | | |
| Oper. time red. | | | | | | | | | | | | |
| Wind dir. red. | | | | | | | | | | | | |
| Total reduction | | | | | | | | | | | | |
| Total, real | | | | | | | | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
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+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** H - H8

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:14 | 06:10 | 05:25 | 05:22 | 05:58 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:24 | 18:16 | 20:10 | 21:00 | 21:46 | 22:00 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:45 | 08:16 | 07:23 | 07:12 | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | 06:06 | 05:23 | 05:23 | 06:01 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 | 21:03 | 21:48 | 21:59 | 21:25 | 20:22 | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:04 | 05:23 | 05:24 | 06:03 | 06:53 | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | 06:02 | 05:22 | 05:25 | 06:05 | 06:54 | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:21 | 05:26 | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 19:05 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:35 | 18:26 | 20:20 | 21:10 | 21:52 | 21:57 | 21:18 | 20:12 | 19:03 | 17:00 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 05:57 | 05:20 | 05:28 | 06:09 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | 20:21 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:27 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | 05:55 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:46 | 17:39 | 18:30 | 20:23 | 21:13 | 21:53 | 21:56 | 21:14 | 20:08 | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:19 | 05:30 | 06:12 | 07:02 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:56 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | 20:26 | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | 06:50 | 05:50 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:52 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:47 | 05:49 | 05:18 | 05:33 | 06:17 | 07:07 | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 06:45 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:48 | 18:39 | 20:32 | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 18:48 | 16:49 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:35 | 06:20 | 07:10 | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | 20:33 | 21:23 | 21:58 | 21:50 | 21:02 | 19:54 | 18:45 | 16:48 | 16:27 |
| 16 | 08:38 | 07:52 | 06:51 | 06:41 | 05:44 | 05:18 | 05:36 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | 20:37 | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 | 05:18 | 05:39 | 06:25 | 07:15 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | 06:34 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 05:38 | 05:18 | 05:41 | 06:28 | 07:19 | 08:09 | 08:04 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | 21:30 | 22:00 | 21:45 | 20:52 | 19:42 | 18:35 | 16:41 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | 06:28 | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:52 | 20:45 | 21:33 | 22:00 | 21:43 | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 05:34 | 05:18 | 05:45 | 06:33 | 07:23 | 08:14 | 08:09 | 08:43 |
| | 17:08 | 18:05 | 18:54 | 20:47 | 21:34 | 22:00 | 21:41 | 20:46 | 19:35 | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | 05:33 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | 07:18 | 08:12 | 08:44 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:39 | 20:41 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:27 | 07:31 | 06:28 | 06:20 | 05:31 | 05:19 | 05:50 | 06:38 | 07:28 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | 20:52 | 21:38 | 22:00 | 21:37 | 20:39 | 19:28 | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 | 20:53 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:20 | 05:52 | 06:41 | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:21 | 17:17 | 16:32 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:21 | 05:55 | 06:45 | 07:35 | 07:27 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:58 | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | 05:26 | | 05:57 | 06:46 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:45 | | 21:29 | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 244 |
| Total, worst case | | | | | | | | | | | | |
| Sun reduction | | | | | | | | | | | | |
| Oper. time red. | | | | | | | | | | | | |
| Wind dir. red. | | | | | | | | | | | | |
| Total reduction | | | | | | | | | | | | |
| Total, real | | | | | | | | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
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Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** I - H9

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:14 | 06:10 | 05:25 | 05:22 | 05:58 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:24 | 18:16 | 20:10 | 21:00 | 21:46 | 22:00 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:45 | 08:16 | 07:23 | 07:12 | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | 06:06 | 05:23 | 05:23 | 06:01 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 | 21:03 | 21:48 | 21:59 | 21:25 | 20:22 | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:04 | 05:23 | 05:24 | 06:03 | 06:53 | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | 06:02 | 05:22 | 05:25 | 06:05 | 06:54 | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:21 | 05:26 | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 19:05 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:35 | 18:26 | 20:20 | 21:10 | 21:52 | 21:57 | 21:18 | 20:12 | 19:03 | 17:00 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 05:57 | 05:20 | 05:28 | 06:09 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | 20:21 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:27 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | 05:55 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:46 | 17:39 | 18:30 | 20:23 | 21:13 | 21:53 | 21:56 | 21:14 | 20:08 | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:19 | 05:30 | 06:12 | 07:02 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:56 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | 20:26 | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | 06:50 | 05:50 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:52 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:47 | 05:49 | 05:18 | 05:33 | 06:17 | 07:07 | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 06:45 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:48 | 18:39 | 20:32 | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 18:48 | 16:49 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:35 | 06:20 | 07:10 | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | 20:33 | 21:23 | 21:58 | 21:50 | 21:02 | 19:54 | 18:45 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | 05:44 | 05:18 | 05:36 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | 20:37 | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 | 05:18 | 05:39 | 06:25 | 07:15 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | 06:34 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 05:38 | 05:18 | 05:41 | 06:28 | 07:19 | 08:09 | 08:04 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | 21:30 | 22:00 | 21:45 | 20:52 | 19:42 | 18:35 | 16:41 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | 06:28 | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:52 | 20:45 | 21:33 | 22:00 | 21:43 | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 05:34 | 05:18 | 05:45 | 06:33 | 07:23 | 08:14 | 08:08 | 08:43 |
| | 17:08 | 18:05 | 18:54 | 20:47 | 21:34 | 22:00 | 21:41 | 20:46 | 19:35 | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | 05:33 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | 07:18 | 08:12 | 08:44 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:38 | 20:41 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:27 | 07:31 | 06:28 | 06:20 | 05:31 | 05:19 | 05:50 | 06:38 | 07:28 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | 20:52 | 21:38 | 22:00 | 21:37 | 20:39 | 19:28 | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 | 20:53 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:20 | 05:52 | 06:41 | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:21 | 17:17 | 16:32 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:21 | 05:55 | 06:45 | 07:35 | 07:27 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:58 | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | 05:26 | | 05:57 | 06:46 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:45 | | 21:29 | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 244 |
| Total, worst case | | | | | | | | | | | | |
| Sun reduction | | | | | | | | | | | | |
| Oper. time red. | | | | | | | | | | | | |
| Wind dir. red. | | | | | | | | | | | | |
| Total reduction | | | | | | | | | | | | |
| Total, real | | | | | | | | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
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+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** J - H10

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | | February | | | March | | | April | | | May | | | June | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | | 08:18 | | | 07:25 | | | 16:49 (7) | 07:15 | | | 18:51 (3) | 06:10 | | | 19:05 (4) | 05:25 | | 19:17 (4) |
| | 16:37 | | 17:25 | | | 18:16 | 22 | | 17:11 (7) | 20:10 | 20 | | 19:11 (3) | 21:00 | 30 | | 19:35 (4) | 21:46 | 11 | 19:28 (4) |
| 2 | 08:45 | | 08:16 | | | 07:23 | | | 16:49 (7) | 07:12 | | | 18:51 (3) | 06:08 | | | 19:04 (4) | 05:24 | | 19:19 (4) |
| | 16:38 | | 17:26 | | | 18:18 | 23 | | 17:12 (7) | 20:11 | 20 | | 19:11 (3) | 21:02 | 33 | | 19:37 (4) | 21:47 | 7 | 19:26 (4) |
| 3 | 08:44 | | 08:15 | | | 07:20 | | | 16:49 (7) | 07:10 | | | 18:52 (3) | 06:06 | | | 19:03 (4) | 05:24 | | |
| | 16:39 | | 17:28 | | | 18:19 | 23 | | 17:12 (7) | 20:13 | 18 | | 19:10 (3) | 21:03 | 34 | | 19:37 (4) | 21:48 | | |
| 4 | 08:44 | | 08:13 | | | 07:18 | | | 16:49 (7) | 07:08 | | | 18:52 (3) | 06:04 | | | 19:02 (4) | 05:23 | | |
| | 16:40 | | 17:30 | | | 18:21 | 23 | | 17:12 (7) | 20:15 | 17 | | 19:09 (3) | 21:05 | 35 | | 19:37 (4) | 21:49 | | |
| 5 | 08:44 | | 08:12 | | | 07:16 | | | 16:49 (7) | 07:05 | | | 18:53 (3) | 06:03 | | | 19:02 (4) | 05:22 | | |
| | 16:41 | | 17:32 | | | 18:23 | 23 | | 17:12 (8) | 20:16 | 14 | | 19:07 (3) | 21:07 | 35 | | 19:37 (4) | 21:50 | | |
| 6 | 08:44 | | 08:10 | | | 07:14 | | | 16:50 (7) | 07:03 | | | 18:55 (3) | 06:01 | | | 19:02 (4) | 05:22 | | |
| | 16:43 | | 17:34 | | | 18:25 | 25 | | 17:15 (8) | 20:18 | 10 | | 19:05 (3) | 21:08 | 36 | | 19:38 (4) | 21:51 | | |
| 7 | 08:43 | | 08:08 | | | 07:12 | | | 16:51 (7) | 07:01 | | | 18:59 (3) | 05:59 | | | 19:01 (4) | 05:21 | | |
| | 16:44 | | 17:36 | | | 18:27 | 26 | | 17:17 (8) | 20:20 | 2 | | 19:01 (3) | 21:10 | 37 | | 19:38 (4) | 21:52 | | |
| 8 | 08:43 | | 08:06 | | | 07:09 | | | 16:52 (7) | 06:59 | | | | 05:57 | | | 19:01 (4) | 05:20 | | |
| | 16:45 | | 17:37 | | | 18:28 | 27 | | 17:19 (8) | 20:21 | | | | 21:12 | 37 | | 19:38 (4) | 21:53 | | |
| 9 | 08:42 | | 08:05 | | | 07:07 | | | 16:52 (8) | 06:56 | | | | 05:56 | | | 19:01 (4) | 05:20 | | |
| | 16:47 | | 17:39 | | | 18:30 | 28 | | 17:20 (8) | 20:23 | | | | 21:13 | 38 | | 19:39 (4) | 21:53 | | |
| 10 | 08:42 | | 08:03 | | | 07:05 | | | 16:51 (8) | 06:54 | | | | 05:54 | | | 19:00 (4) | 05:19 | | |
| | 16:48 | | 17:41 | | | 18:32 | 30 | | 17:21 (8) | 20:25 | | | | 21:15 | 39 | | 19:39 (4) | 21:54 | | |
| 11 | 08:41 | | 08:01 | | | 07:03 | | | 16:50 (8) | 06:52 | | | | 05:52 | | | 19:01 (4) | 05:19 | | |
| | 16:49 | | 17:43 | | | 18:34 | 31 | | 17:21 (8) | 20:27 | | | | 21:16 | 38 | | 19:39 (4) | 21:55 | | |
| 12 | 08:41 | | 07:59 | | | 07:00 | | | 16:48 (8) | 06:50 | | | | 05:50 | | | 19:01 (4) | 05:19 | | |
| | 16:51 | | 17:45 | | | 18:35 | 33 | | 17:21 (8) | 20:28 | | | | 21:18 | 38 | | 19:39 (4) | 21:56 | | |
| 13 | 08:40 | | 07:57 | | | 06:58 | | | 16:48 (8) | 06:48 | | | | 05:49 | | | 19:01 (4) | 05:19 | | |
| | 16:52 | | 17:47 | | | 18:37 | 34 | | 17:22 (8) | 20:30 | | | | 21:20 | 38 | | 19:39 (4) | 21:56 | | |
| 14 | 08:39 | | 07:56 | | | 06:56 | | | 16:48 (8) | 06:45 | | | | 05:47 | | | 19:01 (4) | 05:18 | | |
| | 16:54 | | 17:49 | | | 18:39 | 34 | | 17:22 (8) | 20:32 | | | | 21:21 | 37 | | 19:38 (4) | 21:57 | | |
| 15 | 08:38 | | 07:54 | | | 06:54 | | | 16:47 (8) | 06:43 | | | | 05:46 | | | 19:02 (4) | 05:18 | | |
| | 16:55 | | 17:50 | | | 18:41 | 34 | | 17:21 (8) | 20:33 | | | | 21:23 | 36 | | 19:38 (4) | 21:57 | | |
| 16 | 08:37 | | 07:52 | | | 06:51 | | | 16:47 (8) | 06:41 | | | | 05:44 | | | 19:01 (4) | 05:18 | | |
| | 16:57 | | 17:52 | | | 18:42 | 34 | | 17:21 (8) | 20:35 | | | | 21:24 | 37 | | 19:38 (4) | 21:58 | | |
| 17 | 08:37 | | 07:50 | | | 06:49 | | | 16:47 (8) | 06:39 | | | | 05:43 | | | 19:02 (4) | 05:18 | | |
| | 16:59 | | 17:54 | | | 18:44 | 34 | | 17:21 (8) | 20:37 | | | | 21:26 | 36 | | 19:38 (4) | 21:58 | | |
| 18 | 08:36 | | 07:48 | | | 06:47 | | | 16:47 (8) | 06:37 | | | | 05:41 | | | 19:03 (4) | 05:18 | | |
| | 17:00 | | 17:56 | | | 18:46 | 33 | | 17:20 (8) | 20:38 | | | | 21:27 | 35 | | 19:38 (4) | 21:59 | | |
| 19 | 08:35 | | 07:46 | | | 06:44 | | | 16:47 (8) | 06:34 | | | | 05:40 | | | 19:04 (4) | 05:18 | | |
| | 17:02 | | 17:58 | | | 18:47 | 32 | | 17:19 (8) | 20:40 | | | | 21:29 | 34 | | 19:38 (4) | 21:59 | | |
| 20 | 08:34 | | 07:44 | | | 06:42 | | | 16:48 (8) | 06:32 | | | | 05:39 | | | 19:03 (4) | 05:18 | | |
| | 17:03 | | 18:00 | | | 18:49 | 31 | | 17:19 (8) | 20:42 | | | | 21:30 | 33 | | 19:36 (4) | 22:00 | | |
| 21 | 08:33 | | 07:42 | | | 06:40 | | | 16:49 (8) | 06:30 | | | | 05:37 | | | 19:04 (4) | 05:18 | | |
| | 17:05 | | 18:01 | | | 18:51 | 29 | | 17:18 (8) | 20:43 | | | | 21:32 | 32 | | 19:36 (4) | 22:00 | | |
| 22 | 08:31 | | 07:40 | | | 06:38 | | | 16:50 (8) | 06:28 | | | | 05:36 | | | 19:05 (4) | 05:18 | | |
| | 17:07 | | 18:03 | | | 18:53 | 26 | | 17:16 (8) | 20:45 | | | | 21:33 | 31 | | 19:36 (4) | 22:00 | | |
| 23 | 08:30 | | 07:38 | | | 06:35 | | | 16:51 (8) | 06:26 | | | | 05:35 | | | 19:06 (4) | 05:19 | | |
| | 17:09 | | 18:05 | | | 18:54 | 23 | | 17:14 (8) | 20:47 | | | | 21:34 | 29 | | 19:35 (4) | 22:00 | | |
| 24 | 08:29 | | 07:35 | | 16:57 (7) | 06:33 | | | 16:53 (8) | 06:24 | | | | 05:33 | | | 19:07 (4) | 05:19 | | |
| | 17:10 | | 18:07 | 8 | 17:05 (7) | 18:56 | 19 | | 17:12 (8) | 20:48 | | | | 21:36 | 28 | | 19:35 (4) | 22:00 | | |
| 25 | 08:28 | | 07:33 | | 16:54 (7) | 06:31 | | | 16:55 (8) | 06:22 | | | | 05:32 | | | 19:08 (4) | 05:19 | | |
| | 17:12 | | 18:09 | 14 | 17:08 (7) | 18:58 | 16 | | 18:04 (3) | 20:50 | | | | 21:37 | 26 | | 19:34 (4) | 22:00 | | |
| 26 | 08:27 | | 07:31 | | 16:53 (7) | 06:28 | | | 17:58 (3) | 06:20 | | | 19:15 (4) | 05:31 | | | 19:09 (4) | 05:20 | | |
| | 17:14 | | 18:11 | 17 | 17:10 (7) | 18:59 | 11 | | 18:09 (3) | 20:52 | 13 | | 19:28 (4) | 21:38 | 25 | | 19:34 (4) | 22:00 | | |
| 27 | 08:25 | | 07:29 | | 16:52 (7) | 06:26 | | | 17:56 (3) | 06:18 | | | 19:12 (4) | 05:30 | | | 19:10 (4) | 05:20 | | |
| | 17:16 | | 18:12 | 19 | 17:11 (7) | 19:01 | 15 | | 18:11 (3) | 20:53 | 18 | | 19:30 (4) | 21:40 | 23 | | 19:33 (4) | 22:00 | | |
| 28 | 08:24 | | 07:27 | | 16:51 (7) | 06:24 | | | 17:54 (3) | 06:16 | | | 19:09 (4) | 05:29 | | | 19:11 (4) | 05:21 | | |
| | 17:17 | | 18:14 | 21 | 17:12 (7) | 19:03 | 17 | | 18:11 (3) | 20:55 | 23 | | 19:32 (4) | 21:41 | 21 | | 19:32 (4) | 22:00 | | |
| 29 | 08:22 | | | | | 07:21 | | | 18:53 (3) | 06:14 | | | 19:07 (4) | 05:28 | | | 19:12 (4) | 05:21 | | |
| | 17:19 | | | | | 20:04 | 19 | | 19:12 (3) | 20:57 | 26 | | 19:33 (4) | 21:42 | 19 | | 19:31 (4) | 22:00 | | |
| 30 | 08:21 | | | | | 07:19 | | | 18:52 (3) | 06:12 | | | 19:06 (4) | 05:27 | | | 19:13 (4) | 05:22 | | |
| | 17:21 | | | | | 20:06 | 20 | | 19:12 (3) | 20:59 | 28 | | 19:34 (4) | 21:43 | 17 | | 19:30 (4) | 22:00 | | |
| 31 | 08:19 | | | | | 07:17 | | | 18:51 (3) | | | | | 05:26 | | | 19:14 (4) | | | |
| | 17:23 | | | | | 20:08 | 20 | | 19:11 (3) | | | | | 21:45 | 15 | | 19:29 (4) | | | |
| Potential sun hours | 260 | | 278 | | | 367 | | | | 416 | | | | 485 | | | | 498 | | |
| Total, worst case | | | | 79 | | | 795 | | | | 209 | | | | 982 | | | | 18 | |
| Sun reduction | | | | 0.21 | | | 0.24 | | | | 0.35 | | | | 0.37 | | | | 0.30 | |
| Oper. time red. | | | | 1.00 | | | 1.00 | | | | 1.00 | | | | 1.00 | | | | 1.00 | |
| Wind dir. red. | | | | 0.70 | | | 0.69 | | | | 0.64 | | | | 0.61 | | | | 0.61 | |
| Total reduction | | | | 0.14 | | | 0.17 | | | | 0.23 | | | | 0.23 | | | | 0.18 | |
| Total, real | | | | 11 | | | 134 | | | | 47 | | | | 222 | | | | 3 | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** J - H10

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | July | | | August | | | September | | | October | | | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 05:22 | | | 05:59 | | 19:11 (4) | 06:48 | | | 07:37 | | 17:28 (8) | 07:30 | 08:21 |
| | 22:00 | | | 21:28 | 38 | 19:49 (4) | 20:26 | | | 19:17 | 33 | 18:01 (8) | 17:11 | 16:31 |
| 2 | 05:23 | | | 06:00 | | 19:11 (4) | 06:50 | | | 07:38 | | 17:28 (8) | 07:32 | 08:22 |
| | 21:59 | | | 21:26 | 39 | 19:50 (4) | 20:24 | | | 19:15 | 32 | 18:00 (8) | 17:09 | 16:30 |
| 3 | 05:24 | | | 06:02 | | 19:11 (4) | 06:51 | | | 07:40 | | 17:28 (8) | 07:34 | 08:24 |
| | 21:59 | | | 21:25 | 38 | 19:49 (4) | 20:22 | | | 19:12 | 31 | 17:59 (8) | 17:08 | 16:30 |
| 4 | 05:24 | | | 06:03 | | 19:10 (4) | 06:53 | | | 07:42 | | 17:29 (8) | 07:35 | 08:25 |
| | 21:58 | | | 21:23 | 38 | 19:48 (4) | 20:19 | | | 19:10 | 29 | 17:58 (8) | 17:06 | 16:29 |
| 5 | 05:25 | | | 06:05 | | 19:11 (4) | 06:54 | | 18:55 (3) | 07:43 | | 17:29 (7) | 07:37 | 08:26 |
| | 21:58 | | | 21:21 | 38 | 19:49 (4) | 20:17 | 2 | 18:57 (3) | 19:08 | 27 | 17:56 (8) | 17:04 | 16:29 |
| 6 | 05:26 | | | 06:06 | | 19:11 (4) | 06:56 | | 18:51 (3) | 07:45 | | 17:27 (7) | 07:39 | 08:28 |
| | 21:57 | | | 21:19 | 37 | 19:48 (4) | 20:15 | 10 | 19:01 (3) | 19:06 | 27 | 17:54 (8) | 17:02 | 16:28 |
| 7 | 05:27 | | | 06:08 | | 19:11 (4) | 06:58 | | 18:48 (3) | 07:47 | | 17:26 (7) | 07:41 | 08:29 |
| | 21:57 | | | 21:18 | 37 | 19:48 (4) | 20:13 | 14 | 19:02 (3) | 19:03 | 26 | 17:52 (8) | 17:01 | 16:28 |
| 8 | 05:28 | | | 06:09 | | 19:11 (4) | 06:59 | | 18:47 (3) | 07:48 | | 17:25 (7) | 07:43 | 08:30 |
| | 21:56 | | | 21:16 | 36 | 19:47 (4) | 20:10 | 17 | 19:04 (3) | 19:01 | 25 | 17:50 (8) | 16:59 | 16:28 |
| 9 | 05:29 | | | 06:11 | | 19:12 (4) | 07:01 | | 18:45 (3) | 07:50 | | 17:24 (7) | 07:44 | 08:31 |
| | 21:56 | | | 21:14 | 35 | 19:47 (4) | 20:08 | 19 | 19:04 (3) | 18:59 | 22 | 17:46 (7) | 16:57 | 16:27 |
| 10 | 05:30 | | 19:28 (4) | 06:13 | | 19:12 (4) | 07:03 | | 18:45 (3) | 07:52 | | 17:23 (7) | 07:46 | 08:32 |
| | 21:55 | 3 | 19:31 (4) | 21:12 | 33 | 19:45 (4) | 20:06 | 19 | 19:04 (3) | 18:57 | 23 | 17:46 (7) | 16:56 | 16:27 |
| 11 | 05:31 | | 19:25 (4) | 06:14 | | 19:13 (4) | 07:04 | | 18:43 (3) | 07:53 | | 17:23 (7) | 07:48 | 08:33 |
| | 21:54 | 10 | 19:35 (4) | 21:10 | 32 | 19:45 (4) | 20:03 | 20 | 19:03 (3) | 18:54 | 23 | 17:46 (7) | 16:54 | 16:27 |
| 12 | 05:32 | | 19:23 (4) | 06:16 | | 19:13 (4) | 07:06 | | 18:43 (3) | 07:55 | | 17:23 (7) | 07:50 | 08:34 |
| | 21:53 | 13 | 19:36 (4) | 21:08 | 30 | 19:43 (4) | 20:01 | 21 | 19:04 (3) | 18:52 | 23 | 17:46 (7) | 16:53 | 16:27 |
| 13 | 05:33 | | 19:22 (4) | 06:17 | | 19:15 (4) | 07:07 | | 18:43 (3) | 07:57 | | 17:23 (7) | 07:51 | 08:35 |
| | 21:52 | 16 | 19:38 (4) | 21:06 | 28 | 19:43 (4) | 19:59 | 20 | 19:03 (3) | 18:50 | 21 | 17:44 (7) | 16:51 | 16:27 |
| 14 | 05:34 | | 19:21 (4) | 06:19 | | 19:15 (4) | 07:09 | | 18:43 (3) | 07:59 | | 17:23 (7) | 07:53 | 08:36 |
| | 21:51 | 18 | 19:39 (4) | 21:04 | 25 | 19:40 (4) | 19:56 | 19 | 19:02 (3) | 18:48 | 21 | 17:44 (7) | 16:50 | 16:27 |
| 15 | 05:35 | | 19:20 (4) | 06:21 | | 19:17 (4) | 07:11 | | 18:44 (3) | 08:00 | | 17:24 (7) | 07:55 | 08:37 |
| | 21:50 | 20 | 19:40 (4) | 21:02 | 22 | 19:39 (4) | 19:54 | 17 | 19:01 (3) | 18:46 | 19 | 17:43 (7) | 16:48 | 16:27 |
| 16 | 05:36 | | 19:19 (4) | 06:22 | | 19:19 (4) | 07:12 | | 18:44 (3) | 08:02 | | 17:25 (7) | 07:57 | 08:38 |
| | 21:49 | 22 | 19:41 (4) | 21:00 | 17 | 19:36 (4) | 19:52 | 15 | 18:59 (3) | 18:43 | 16 | 17:41 (7) | 16:47 | 16:27 |
| 17 | 05:38 | | 19:19 (4) | 06:24 | | 19:22 (4) | 07:14 | | 18:46 (3) | 08:04 | | 17:27 (7) | 07:58 | 08:39 |
| | 21:48 | 24 | 19:43 (4) | 20:58 | 11 | 19:33 (4) | 19:49 | 11 | 18:57 (3) | 18:41 | 13 | 17:40 (7) | 16:45 | 16:27 |
| 18 | 05:39 | | 19:18 (4) | 06:25 | | | 07:15 | | 17:43 (8) | 08:05 | | 17:29 (7) | 08:00 | 08:40 |
| | 21:47 | 26 | 19:44 (4) | 20:56 | | | 19:47 | 17 | 18:53 (3) | 18:39 | 6 | 17:35 (7) | 16:44 | 16:27 |
| 19 | 05:40 | | 19:17 (4) | 06:27 | | | 07:17 | | 17:40 (8) | 08:07 | | | 08:02 | 08:40 |
| | 21:46 | 27 | 19:44 (4) | 20:54 | | | 19:45 | 18 | 17:58 (8) | 18:37 | | | 16:43 | 16:28 |
| 20 | 05:42 | | 19:16 (4) | 06:29 | | | 07:19 | | 17:38 (8) | 08:09 | | | 08:04 | 08:41 |
| | 21:45 | 29 | 19:45 (4) | 20:52 | | | 19:42 | 22 | 18:00 (8) | 18:35 | | | 16:42 | 16:28 |
| 21 | 05:43 | | 19:15 (4) | 06:30 | | | 07:20 | | 17:35 (8) | 08:11 | | | 08:05 | 08:42 |
| | 21:44 | 30 | 19:45 (4) | 20:50 | | | 19:40 | 26 | 18:01 (8) | 18:33 | | | 16:40 | 16:29 |
| 22 | 05:44 | | 19:15 (4) | 06:32 | | | 07:22 | | 17:34 (8) | 08:12 | | | 08:07 | 08:42 |
| | 21:43 | 32 | 19:47 (4) | 20:48 | | | 19:38 | 28 | 18:02 (8) | 18:31 | | | 16:39 | 16:29 |
| 23 | 05:46 | | 19:14 (4) | 06:33 | | | 07:24 | | 17:32 (8) | 08:14 | | | 08:08 | 08:43 |
| | 21:41 | 33 | 19:47 (4) | 20:46 | | | 19:35 | 30 | 18:02 (8) | 18:29 | | | 16:38 | 16:30 |
| 24 | 05:47 | | 19:14 (4) | 06:35 | | | 07:25 | | 17:31 (8) | 08:16 | | | 08:10 | 08:43 |
| | 21:40 | 33 | 19:47 (4) | 20:44 | | | 19:33 | 32 | 18:03 (8) | 18:27 | | | 16:37 | 16:30 |
| 25 | 05:48 | | 19:14 (4) | 06:37 | | | 07:27 | | 17:31 (8) | 07:18 | | | 08:12 | 08:44 |
| | 21:38 | 34 | 19:48 (4) | 20:42 | | | 19:31 | 32 | 18:03 (8) | 17:25 | | | 16:36 | 16:31 |
| 26 | 05:50 | | 19:13 (4) | 06:38 | | | 07:28 | | 17:29 (8) | 07:19 | | | 08:13 | 08:44 |
| | 21:37 | 35 | 19:48 (4) | 20:39 | | | 19:29 | 34 | 18:03 (8) | 17:23 | | | 16:35 | 16:31 |
| 27 | 05:51 | | 19:12 (4) | 06:40 | | | 07:30 | | 17:29 (8) | 07:21 | | | 08:15 | 08:44 |
| | 21:36 | 36 | 19:48 (4) | 20:37 | | | 19:26 | 34 | 18:03 (8) | 17:21 | | | 16:34 | 16:32 |
| 28 | 05:53 | | 19:13 (4) | 06:42 | | | 07:32 | | 17:29 (8) | 07:23 | | | 08:16 | 08:44 |
| | 21:34 | 36 | 19:49 (4) | 20:35 | | | 19:24 | 34 | 18:03 (8) | 17:19 | | | 16:33 | 16:33 |
| 29 | 05:54 | | 19:12 (4) | 06:43 | | | 07:33 | | 17:28 (8) | 07:25 | | | 08:18 | 08:44 |
| | 21:33 | 37 | 19:49 (4) | 20:33 | | | 19:22 | 34 | 18:02 (8) | 17:17 | | | 16:33 | 16:34 |
| 30 | 05:56 | | 19:11 (4) | 06:45 | | | 07:35 | | 17:28 (8) | 07:27 | | | 08:19 | 08:45 |
| | 21:31 | 38 | 19:49 (4) | 20:31 | | | 19:19 | 34 | 18:02 (8) | 17:15 | | | 16:32 | 16:35 |
| 31 | 05:57 | | 19:12 (4) | 06:46 | | | | | | 07:28 | | | | 08:45 |
| | 21:29 | 37 | 19:49 (4) | 20:28 | | | | | | 17:13 | | | | 16:36 |
| Potential sun hours | 501 | | | 453 | | | 381 | | | 332 | | | 267 | 244 |
| Total, worst case | | 589 | | | 534 | | | 579 | | | 417 | | | |
| Sun reduction | | 0.27 | | | 0.30 | | | 0.28 | | | 0.24 | | | |
| Oper. time red. | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | | | |
| Wind dir. red. | | 0.61 | | | 0.61 | | | 0.68 | | | 0.69 | | | |
| Total reduction | | 0.16 | | | 0.18 | | | 0.19 | | | 0.16 | | | |
| Total, real | | 96 | | | 97 | | | 112 | | | 69 | | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** K - H11

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | | | March | | April | | | May | | | June | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | | | 07:25 | | 16:59 (7) | 07:15 | | 18:54 (3) | 06:10 | | 19:04 (4) | 05:25 |
| | 16:37 | 17:25 | | | 18:16 | 17 | 17:16 (7) | 20:10 | 19 | 19:13 (3) | 21:00 | 33 | 19:37 (4) | 21:46 |
| 2 | 08:45 | 08:16 | | | 07:23 | | 16:58 (7) | 07:12 | | 18:54 (3) | 06:08 | | 19:05 (4) | 05:24 |
| | 16:38 | 17:26 | | | 18:18 | 19 | 17:17 (7) | 20:11 | 18 | 19:12 (3) | 21:02 | 33 | 19:38 (4) | 21:47 |
| 3 | 08:44 | 08:15 | | | 07:20 | | 16:57 (7) | 07:10 | | 18:54 (3) | 06:06 | | 19:04 (4) | 05:24 |
| | 16:39 | 17:28 | | | 18:19 | 21 | 17:18 (7) | 20:13 | 18 | 19:12 (3) | 21:03 | 33 | 19:37 (4) | 21:48 |
| 4 | 08:44 | 08:13 | | | 07:18 | | 16:57 (7) | 07:08 | | 18:54 (3) | 06:04 | | 19:04 (4) | 05:23 |
| | 16:40 | 17:30 | | | 18:21 | 21 | 17:18 (7) | 20:15 | 16 | 19:10 (3) | 21:05 | 33 | 19:37 (4) | 21:49 |
| 5 | 08:44 | 08:12 | | | 07:16 | | 16:56 (7) | 07:05 | | 18:56 (3) | 06:03 | | 19:03 (4) | 05:22 |
| | 16:41 | 17:32 | | | 18:23 | 21 | 17:17 (7) | 20:16 | 13 | 19:09 (3) | 21:07 | 34 | 19:37 (4) | 21:50 |
| 6 | 08:44 | 08:10 | | | 07:14 | | 16:56 (7) | 07:03 | | 18:58 (3) | 06:01 | | 19:04 (4) | 05:22 |
| | 16:43 | 17:34 | | | 18:25 | 21 | 17:17 (7) | 20:18 | 8 | 19:06 (3) | 21:08 | 34 | 19:38 (4) | 21:51 |
| 7 | 08:43 | 08:08 | | | 07:12 | | 16:57 (7) | 07:01 | | | 05:59 | | 19:04 (4) | 05:21 |
| | 16:44 | 17:36 | | | 18:27 | 20 | 17:17 (7) | 20:20 | | | 21:10 | 33 | 19:37 (4) | 21:52 |
| 8 | 08:43 | 08:06 | | | 07:09 | | 16:58 (7) | 06:59 | | | 05:57 | | 19:04 (4) | 05:20 |
| | 16:45 | 17:37 | | | 18:28 | 24 | 17:22 (8) | 20:21 | | | 21:12 | 33 | 19:37 (4) | 21:53 |
| 9 | 08:42 | 08:05 | | | 07:07 | | 16:58 (7) | 06:56 | | | 05:56 | | 19:04 (4) | 05:20 |
| | 16:47 | 17:39 | | | 18:30 | 26 | 17:24 (8) | 20:23 | | | 21:13 | 33 | 19:37 (4) | 21:53 |
| 10 | 08:42 | 08:03 | | | 07:05 | | 16:59 (7) | 06:54 | | | 05:54 | | 19:04 (4) | 05:19 |
| | 16:48 | 17:41 | | | 18:32 | 27 | 17:26 (8) | 20:25 | | | 21:15 | 32 | 19:36 (4) | 21:54 |
| 11 | 08:41 | 08:01 | | | 07:03 | | 17:02 (7) | 06:52 | | | 05:52 | | 19:05 (4) | 05:19 |
| | 16:49 | 17:43 | | | 18:34 | 25 | 17:27 (8) | 20:27 | | | 21:16 | 31 | 19:36 (4) | 21:55 |
| 12 | 08:41 | 07:59 | | | 07:00 | | 17:01 (8) | 06:50 | | | 05:50 | | 19:05 (4) | 05:19 |
| | 16:51 | 17:45 | | | 18:35 | 27 | 17:28 (8) | 20:28 | | | 21:18 | 30 | 19:35 (4) | 21:56 |
| 13 | 08:40 | 07:57 | | | 06:58 | | 17:01 (8) | 06:48 | | | 05:49 | | 19:06 (4) | 05:18 |
| | 16:52 | 17:47 | | | 18:37 | 28 | 17:29 (8) | 20:30 | | | 21:20 | 29 | 19:35 (4) | 21:56 |
| 14 | 08:39 | 07:55 | | | 06:56 | | 17:00 (8) | 06:45 | | | 05:47 | | 19:07 (4) | 05:18 |
| | 16:54 | 17:49 | | | 18:39 | 29 | 17:29 (8) | 20:32 | | | 21:21 | 27 | 19:34 (4) | 21:57 |
| 15 | 08:38 | 07:54 | | | 06:54 | | 16:59 (8) | 06:43 | | | 05:46 | | 19:08 (4) | 05:18 |
| | 16:55 | 17:50 | | | 18:41 | 30 | 17:29 (8) | 20:33 | | | 21:23 | 26 | 19:34 (4) | 21:57 |
| 16 | 08:37 | 07:52 | | | 06:51 | | 16:58 (8) | 06:41 | | | 05:44 | | 19:08 (4) | 05:18 |
| | 16:57 | 17:52 | | | 18:42 | 31 | 17:29 (8) | 20:35 | | | 21:24 | 24 | 19:32 (4) | 21:58 |
| 17 | 08:37 | 07:50 | | | 06:49 | | 16:58 (8) | 06:39 | | | 05:43 | | 19:10 (4) | 05:18 |
| | 16:59 | 17:54 | | | 18:44 | 31 | 17:29 (8) | 20:37 | | | 21:26 | 21 | 19:31 (4) | 21:58 |
| 18 | 08:36 | 07:48 | | | 06:47 | | 16:58 (8) | 06:37 | | | 05:41 | | 19:11 (4) | 05:18 |
| | 17:00 | 17:56 | | | 18:46 | 30 | 17:28 (8) | 20:38 | | | 21:27 | 20 | 19:31 (4) | 21:59 |
| 19 | 08:35 | 07:46 | | | 06:44 | | 16:58 (8) | 06:34 | | | 05:40 | | 19:13 (4) | 05:18 |
| | 17:02 | 17:58 | | | 18:47 | 30 | 17:28 (8) | 20:40 | | | 21:29 | 17 | 19:30 (4) | 21:59 |
| 20 | 08:34 | 07:44 | | | 06:42 | | 16:58 (8) | 06:32 | | | 05:38 | | 19:14 (4) | 05:18 |
| | 17:03 | 18:00 | | | 18:49 | 30 | 17:28 (8) | 20:42 | | | 21:30 | 13 | 19:27 (4) | 22:00 |
| 21 | 08:33 | 07:42 | | | 06:40 | | 16:59 (8) | 06:30 | | | 05:37 | | 19:17 (4) | 05:18 |
| | 17:05 | 18:01 | | | 18:51 | 28 | 17:27 (8) | 20:43 | | | 21:32 | 8 | 19:25 (4) | 22:00 |
| 22 | 08:31 | 07:40 | | | 06:38 | | 16:59 (8) | 06:28 | | | 05:36 | | | 05:18 |
| | 17:07 | 18:03 | | | 18:53 | 26 | 17:25 (8) | 20:45 | | | 21:33 | | | 22:00 |
| 23 | 08:30 | 07:38 | | | 06:35 | | 17:00 (8) | 06:26 | | 19:16 (4) | 05:35 | | | 05:19 |
| | 17:09 | 18:05 | | | 18:54 | 24 | 17:24 (8) | 20:47 | 12 | 19:28 (4) | 21:34 | | | 22:00 |
| 24 | 08:29 | 07:35 | | | 06:33 | | 17:02 (8) | 06:24 | | 19:13 (4) | 05:33 | | | 05:19 |
| | 17:10 | 18:07 | | | 18:56 | 21 | 17:23 (8) | 20:48 | 18 | 19:31 (4) | 21:36 | | | 22:00 |
| 25 | 08:28 | 07:33 | | | 06:31 | | 17:03 (8) | 06:22 | | 19:11 (4) | 05:32 | | | 05:19 |
| | 17:12 | 18:09 | | | 18:58 | 17 | 17:20 (8) | 20:50 | 22 | 19:33 (4) | 21:37 | | | 22:00 |
| 26 | 08:26 | 07:31 | | | 06:28 | | 17:06 (8) | 06:20 | | 19:10 (4) | 05:31 | | | 05:20 |
| | 17:14 | 18:11 | | | 18:59 | 19 | 18:09 (3) | 20:52 | 24 | 19:34 (4) | 21:38 | | | 22:00 |
| 27 | 08:25 | 07:29 | | 17:03 (7) | 06:26 | | 17:59 (3) | 06:18 | | 19:08 (4) | 05:30 | | | 05:20 |
| | 17:16 | 18:12 | 11 | 17:14 (7) | 19:01 | 12 | 18:11 (3) | 20:53 | 27 | 19:35 (4) | 21:40 | | | 22:00 |
| 28 | 08:24 | 07:27 | | 17:01 (7) | 06:24 | | 17:57 (3) | 06:16 | | 19:07 (4) | 05:29 | | | 05:21 |
| | 17:17 | 18:14 | 15 | 17:16 (7) | 19:03 | 15 | 18:12 (3) | 20:55 | 28 | 19:35 (4) | 21:41 | | | 22:00 |
| 29 | 08:22 | | | | 07:21 | | 18:56 (3) | 06:14 | | 19:06 (4) | 05:28 | | | 05:21 |
| | 17:19 | | | | 20:04 | 17 | 19:13 (3) | 20:57 | 30 | 19:36 (4) | 21:42 | | | 22:00 |
| 30 | 08:21 | | | | 07:19 | | 18:55 (3) | 06:12 | | 19:05 (4) | 05:27 | | | 05:22 |
| | 17:21 | | | | 20:06 | 18 | 19:13 (3) | 20:58 | 31 | 19:36 (4) | 21:43 | | | 22:00 |
| 31 | 08:19 | | | | 07:17 | | 18:54 (3) | | | | 05:26 | | | |
| | 17:23 | | | | 20:08 | 19 | 19:13 (3) | | | | 21:45 | | | |
| Potential sun hours | 260 | 278 | | | 367 | | | 416 | | | 485 | | | 498 |
| Total, worst case | | | 26 | | | 724 | | | 284 | | | 577 | | |
| Sun reduction | | | 0.21 | | | 0.24 | | | 0.35 | | | 0.37 | | |
| Oper. time red. | | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | | |
| Wind dir. red. | | | 0.70 | | | 0.69 | | | 0.63 | | | 0.61 | | |
| Total reduction | | | 0.14 | | | 0.17 | | | 0.22 | | | 0.23 | | |
| Total, real | | | 4 | | | 121 | | | 63 | | | 131 | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** K - H11

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | July | | | August | | | September | | | October | | | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 05:22 | | | 05:59 | | 19:16 (4) | 06:48 | | | 07:37 | | 17:41 (8) | 07:30 | 08:21 |
| | 22:00 | | | 21:28 | 30 | 19:46 (4) | 20:26 | | | 19:17 | 27 | 18:08 (8) | 17:11 | 16:31 |
| 2 | 05:23 | | | 06:00 | | 19:16 (4) | 06:50 | | | 07:38 | | 17:41 (8) | 07:32 | 08:22 |
| | 21:59 | | | 21:26 | 31 | 19:47 (4) | 20:24 | | | 19:15 | 25 | 18:06 (8) | 17:09 | 16:30 |
| 3 | 05:24 | | | 06:02 | | 19:15 (4) | 06:51 | | | 07:40 | | 17:38 (7) | 07:34 | 08:24 |
| | 21:59 | | | 21:25 | 32 | 19:47 (4) | 20:22 | | | 19:12 | 27 | 18:05 (8) | 17:08 | 16:30 |
| 4 | 05:24 | | | 06:03 | | 19:14 (4) | 06:53 | | | 07:42 | | 17:36 (7) | 07:35 | 08:25 |
| | 21:58 | | | 21:23 | 32 | 19:46 (4) | 20:19 | | | 19:10 | 27 | 18:03 (8) | 17:06 | 16:29 |
| 5 | 05:25 | | | 06:05 | | 19:14 (4) | 06:54 | | | 07:43 | | 17:34 (7) | 07:37 | 08:26 |
| | 21:58 | | | 21:21 | 33 | 19:47 (4) | 20:17 | | | 19:08 | 25 | 17:59 (8) | 17:04 | 16:29 |
| 6 | 05:26 | | | 06:06 | | 19:13 (4) | 06:56 | | 18:54 (3) | 07:45 | | 17:33 (7) | 07:39 | 08:28 |
| | 21:57 | | | 21:19 | 34 | 19:47 (4) | 20:15 | 8 | 19:02 (3) | 19:06 | 22 | 17:55 (8) | 17:02 | 16:28 |
| 7 | 05:27 | | | 06:08 | | 19:13 (4) | 06:58 | | 18:51 (3) | 07:47 | | 17:33 (7) | 07:41 | 08:29 |
| | 21:57 | | | 21:18 | 34 | 19:47 (4) | 20:13 | 13 | 19:04 (3) | 19:03 | 20 | 17:53 (7) | 17:01 | 16:28 |
| 8 | 05:28 | | | 06:09 | | 19:13 (4) | 06:59 | | 18:50 (3) | 07:48 | | 17:32 (7) | 07:43 | 08:30 |
| | 21:56 | | | 21:16 | 33 | 19:46 (4) | 20:10 | 15 | 19:05 (3) | 19:01 | 21 | 17:53 (7) | 16:59 | 16:28 |
| 9 | 05:29 | | | 06:11 | | 19:13 (4) | 07:01 | | 18:48 (3) | 07:50 | | 17:31 (7) | 07:44 | 08:31 |
| | 21:56 | | | 21:14 | 34 | 19:47 (4) | 20:08 | 17 | 19:05 (3) | 18:59 | 21 | 17:52 (7) | 16:57 | 16:27 |
| 10 | 05:30 | | | 06:13 | | 19:13 (4) | 07:03 | | 18:47 (3) | 07:52 | | 17:31 (7) | 07:46 | 08:32 |
| | 21:55 | | | 21:12 | 33 | 19:46 (4) | 20:06 | 18 | 19:05 (3) | 18:57 | 21 | 17:52 (7) | 16:56 | 16:27 |
| 11 | 05:31 | | | 06:14 | | 19:13 (4) | 07:04 | | 18:46 (3) | 07:53 | | 17:32 (7) | 07:48 | 08:33 |
| | 21:54 | | | 21:10 | 33 | 19:46 (4) | 20:03 | 19 | 19:05 (3) | 18:54 | 20 | 17:52 (7) | 16:54 | 16:27 |
| 12 | 05:32 | | | 06:16 | | 19:13 (4) | 07:06 | | 18:46 (3) | 07:55 | | 17:32 (7) | 07:50 | 08:34 |
| | 21:53 | | | 21:08 | 32 | 19:45 (4) | 20:01 | 19 | 19:05 (3) | 18:52 | 19 | 17:51 (7) | 16:53 | 16:27 |
| 13 | 05:33 | | | 06:17 | | 19:14 (4) | 07:07 | | 18:46 (3) | 07:57 | | 17:33 (7) | 07:51 | 08:35 |
| | 21:52 | | | 21:06 | 31 | 19:45 (4) | 19:59 | 19 | 19:05 (3) | 18:50 | 16 | 17:49 (7) | 16:51 | 16:27 |
| 14 | 05:34 | | | 06:19 | | 19:14 (4) | 07:09 | | 18:46 (3) | 07:59 | | 17:34 (7) | 07:53 | 08:36 |
| | 21:51 | | | 21:04 | 29 | 19:43 (4) | 19:56 | 17 | 19:03 (3) | 18:48 | 13 | 17:47 (7) | 16:50 | 16:27 |
| 15 | 05:35 | | | 06:21 | | 19:15 (4) | 07:11 | | 18:47 (3) | 08:00 | | 17:36 (7) | 07:55 | 08:37 |
| | 21:50 | | | 21:02 | 28 | 19:43 (4) | 19:54 | 15 | 19:02 (3) | 18:46 | 9 | 17:45 (7) | 16:48 | 16:27 |
| 16 | 05:36 | | | 06:22 | | 19:15 (4) | 07:12 | | 18:47 (3) | 08:02 | | | 07:57 | 08:38 |
| | 21:49 | | | 21:00 | 26 | 19:41 (4) | 19:52 | 13 | 19:00 (3) | 18:43 | | | 16:47 | 16:27 |
| 17 | 05:38 | | | 06:24 | | 19:17 (4) | 07:14 | | 17:55 (8) | 08:04 | | | 07:58 | 08:39 |
| | 21:48 | | | 20:58 | 23 | 19:40 (4) | 19:49 | 19 | 18:58 (3) | 18:41 | | | 16:45 | 16:27 |
| 18 | 05:39 | | | 06:25 | | 19:17 (4) | 07:15 | | 17:51 (8) | 08:05 | | | 08:00 | 08:40 |
| | 21:47 | | | 20:56 | 21 | 19:38 (4) | 19:47 | 16 | 18:07 (8) | 18:39 | | | 16:44 | 16:27 |
| 19 | 05:40 | | | 06:27 | | 19:20 (4) | 07:17 | | 17:49 (8) | 08:07 | | | 08:02 | 08:40 |
| | 21:46 | | | 20:54 | 16 | 19:36 (4) | 19:45 | 20 | 18:09 (8) | 18:37 | | | 16:43 | 16:28 |
| 20 | 05:42 | | | 06:29 | | 19:22 (4) | 07:19 | | 17:47 (8) | 08:09 | | | 08:04 | 08:41 |
| | 21:45 | | | 20:52 | 10 | 19:32 (4) | 19:42 | 23 | 18:10 (8) | 18:35 | | | 16:42 | 16:28 |
| 21 | 05:43 | | | 06:30 | | | 07:20 | | 17:45 (8) | 08:11 | | | 08:05 | 08:42 |
| | 21:44 | | | 20:50 | | | 19:40 | 26 | 18:11 (8) | 18:33 | | | 16:40 | 16:29 |
| 22 | 05:44 | | 19:31 (4) | 06:32 | | | 07:22 | | 17:44 (8) | 08:12 | | | 08:07 | 08:42 |
| | 21:42 | 2 | 19:33 (4) | 20:48 | | | 19:38 | 27 | 18:11 (8) | 18:31 | | | 16:39 | 16:29 |
| 23 | 05:46 | | 19:26 (4) | 06:33 | | | 07:24 | | 17:42 (8) | 08:14 | | | 08:08 | 08:43 |
| | 21:41 | 11 | 19:37 (4) | 20:46 | | | 19:35 | 29 | 18:11 (8) | 18:29 | | | 16:38 | 16:30 |
| 24 | 05:47 | | 19:24 (4) | 06:35 | | | 07:25 | | 17:42 (8) | 08:16 | | | 08:10 | 08:43 |
| | 21:40 | 14 | 19:38 (4) | 20:44 | | | 19:33 | 30 | 18:12 (8) | 18:27 | | | 16:37 | 16:30 |
| 25 | 05:48 | | 19:23 (4) | 06:37 | | | 07:27 | | 17:41 (8) | 07:18 | | | 08:12 | 08:44 |
| | 21:38 | 18 | 19:41 (4) | 20:42 | | | 19:31 | 31 | 18:12 (8) | 17:25 | | | 16:36 | 16:31 |
| 26 | 05:50 | | 19:21 (4) | 06:38 | | | 07:28 | | 17:40 (8) | 07:19 | | | 08:13 | 08:44 |
| | 21:37 | 21 | 19:42 (4) | 20:39 | | | 19:28 | 31 | 18:11 (8) | 17:23 | | | 16:35 | 16:31 |
| 27 | 05:51 | | 19:20 (4) | 06:40 | | | 07:30 | | 17:40 (8) | 07:21 | | | 08:15 | 08:44 |
| | 21:36 | 22 | 19:42 (4) | 20:37 | | | 19:26 | 31 | 18:11 (8) | 17:21 | | | 16:34 | 16:32 |
| 28 | 05:53 | | 19:19 (4) | 06:42 | | | 07:32 | | 17:40 (8) | 07:23 | | | 08:16 | 08:44 |
| | 21:34 | 25 | 19:44 (4) | 20:35 | | | 19:24 | 31 | 18:11 (8) | 17:19 | | | 16:33 | 16:33 |
| 29 | 05:54 | | 19:18 (4) | 06:43 | | | 07:33 | | 17:40 (8) | 07:25 | | | 08:18 | 08:44 |
| | 21:33 | 26 | 19:44 (4) | 20:33 | | | 19:22 | 29 | 18:09 (8) | 17:17 | | | 16:33 | 16:34 |
| 30 | 05:56 | | 19:17 (4) | 06:45 | | | 07:35 | | 17:40 (8) | 07:27 | | | 08:19 | 08:45 |
| | 21:31 | 28 | 19:45 (4) | 20:31 | | | 19:19 | 29 | 18:09 (8) | 17:15 | | | 16:32 | 16:35 |
| 31 | 05:57 | | 19:17 (4) | 06:46 | | | | | | 07:28 | | | | 08:45 |
| | 21:29 | 29 | 19:46 (4) | 20:28 | | | | | | 17:13 | | | | 16:36 |
| Potential sun hours | 501 | | | 453 | | | 381 | | | 332 | | | 267 | 244 |
| Total, worst case | | 196 | | | 575 | | | 545 | | | 313 | | | |
| Sun reduction | | 0.27 | | | 0.30 | | | 0.28 | | | 0.24 | | | |
| Oper. time red. | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | | | |
| Wind dir. red. | | 0.61 | | | 0.61 | | | 0.68 | | | 0.69 | | | |
| Total reduction | | 0.16 | | | 0.18 | | | 0.19 | | | 0.16 | | | |
| Total, real | | 32 | | | 105 | | | 105 | | | 52 | | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** L - H12

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | | February | | March | | | April | | | May | | | June | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | | 08:18 | | 07:25 | | | 07:15 | | 18:14 (8) | 06:10 | | 19:17 (4) | 05:25 | |
| | 16:37 | | 17:25 | | 18:16 | | | 20:10 | 14 | 18:28 (8) | 21:00 | 21 | 19:38 (4) | 21:46 | |
| 2 | 08:45 | | 08:16 | | 07:23 | | | 07:12 | | 18:17 (8) | 06:08 | | 19:17 (4) | 05:24 | |
| | 16:38 | | 17:26 | | 18:18 | | | 20:11 | 7 | 18:24 (8) | 21:02 | 23 | 19:40 (4) | 21:47 | |
| 3 | 08:44 | | 08:15 | | 07:20 | | | 07:10 | | | 06:06 | | 19:15 (4) | 05:24 | |
| | 16:39 | | 17:28 | | 18:19 | | | 20:13 | | | 21:03 | 25 | 19:40 (4) | 21:48 | |
| 4 | 08:44 | | 08:13 | | 07:18 | | 17:14 (7) | 07:08 | | | 06:04 | | 19:14 (4) | 05:23 | |
| | 16:40 | | 17:30 | | 18:21 | 4 | 17:18 (7) | 20:15 | | | 21:05 | 27 | 19:41 (4) | 21:49 | |
| 5 | 08:44 | | 08:12 | | 07:16 | | 17:09 (7) | 07:05 | | | 06:03 | | 19:13 (4) | 05:22 | |
| | 16:41 | | 17:32 | | 18:23 | 12 | 17:21 (7) | 20:16 | | | 21:07 | 28 | 19:41 (4) | 21:50 | |
| 6 | 08:44 | | 08:10 | | 07:14 | | 17:08 (7) | 07:03 | | | 06:01 | | 19:13 (4) | 05:22 | |
| | 16:43 | | 17:34 | | 18:25 | 15 | 17:23 (7) | 20:18 | | | 21:08 | 29 | 19:42 (4) | 21:51 | |
| 7 | 08:43 | | 08:08 | | 07:12 | | 17:06 (7) | 07:01 | | | 05:59 | | 19:12 (4) | 05:21 | |
| | 16:44 | | 17:36 | | 18:27 | 18 | 17:24 (7) | 20:20 | | | 21:10 | 30 | 19:42 (4) | 21:52 | |
| 8 | 08:43 | | 08:06 | | 07:09 | | 17:06 (7) | 06:59 | | | 05:57 | | 19:12 (4) | 05:20 | |
| | 16:45 | | 17:37 | | 18:28 | 19 | 17:25 (7) | 20:21 | | | 21:12 | 30 | 19:42 (4) | 21:53 | |
| 9 | 08:42 | | 08:05 | | 07:07 | | 17:04 (7) | 06:56 | | | 05:56 | | 19:12 (4) | 05:20 | |
| | 16:47 | | 17:39 | | 18:30 | 20 | 17:24 (7) | 20:23 | | | 21:13 | 31 | 19:43 (4) | 21:53 | |
| 10 | 08:42 | | 08:03 | | 07:05 | | 17:04 (7) | 06:54 | | | 05:54 | | 19:12 (4) | 05:19 | |
| | 16:48 | | 17:41 | | 18:32 | 21 | 17:25 (7) | 20:25 | | | 21:15 | 31 | 19:43 (4) | 21:54 | |
| 11 | 08:41 | | 08:01 | | 07:03 | | 17:04 (7) | 06:52 | | | 05:52 | | 19:12 (4) | 05:19 | |
| | 16:49 | | 17:43 | | 18:34 | 21 | 17:25 (7) | 20:26 | | | 21:16 | 31 | 19:43 (4) | 21:55 | |
| 12 | 08:41 | | 07:59 | | 07:00 | | 17:04 (7) | 06:50 | | | 05:50 | | 19:12 (4) | 05:19 | |
| | 16:51 | | 17:45 | | 18:35 | 19 | 17:23 (7) | 20:28 | | | 21:18 | 31 | 19:43 (4) | 21:56 | |
| 13 | 08:40 | | 07:57 | | 06:58 | | 17:04 (7) | 06:47 | | | 05:49 | | 19:12 (4) | 05:18 | |
| | 16:52 | | 17:47 | | 18:37 | 19 | 17:23 (7) | 20:30 | | | 21:20 | 31 | 19:43 (4) | 21:56 | |
| 14 | 08:39 | | 07:55 | | 06:56 | | 17:05 (7) | 06:45 | | | 05:47 | | 19:12 (4) | 05:18 | |
| | 16:54 | | 17:49 | | 18:39 | 17 | 17:22 (7) | 20:32 | | | 21:21 | 30 | 19:42 (4) | 21:57 | |
| 15 | 08:38 | | 07:54 | | 06:54 | | 17:06 (7) | 06:43 | | | 05:46 | | 19:13 (4) | 05:18 | |
| | 16:55 | | 17:50 | | 18:41 | 18 | 17:27 (8) | 20:33 | | | 21:23 | 30 | 19:43 (4) | 21:57 | |
| 16 | 08:37 | | 07:52 | | 06:51 | | 17:08 (7) | 06:41 | | | 05:44 | | 19:12 (4) | 05:18 | |
| | 16:57 | | 17:52 | | 18:42 | 23 | 17:32 (8) | 20:35 | | | 21:24 | 30 | 19:42 (4) | 21:58 | |
| 17 | 08:37 | | 07:50 | | 06:49 | | 17:16 (8) | 06:39 | | | 05:43 | | 19:13 (4) | 05:18 | |
| | 16:59 | | 17:54 | | 18:44 | 18 | 17:34 (8) | 20:37 | | | 21:26 | 29 | 19:42 (4) | 21:58 | |
| 18 | 08:36 | | 07:48 | | 06:47 | | 17:13 (8) | 06:37 | | | 05:41 | | 19:14 (4) | 05:18 | |
| | 17:00 | | 17:56 | | 18:46 | 22 | 17:35 (8) | 20:38 | | | 21:27 | 28 | 19:42 (4) | 21:59 | |
| 19 | 08:35 | | 07:46 | | 06:44 | | 17:12 (8) | 06:34 | | | 05:40 | | 19:15 (4) | 05:18 | |
| | 17:02 | | 17:58 | | 18:47 | 24 | 17:36 (8) | 20:40 | | | 21:29 | 26 | 19:41 (4) | 21:59 | |
| 20 | 08:34 | | 07:44 | | 06:42 | | 17:11 (8) | 06:32 | | | 05:38 | | 19:15 (4) | 05:18 | |
| | 17:03 | | 18:00 | | 18:49 | 26 | 17:37 (8) | 20:42 | | | 21:30 | 25 | 19:40 (4) | 22:00 | |
| 21 | 08:33 | | 07:42 | | 06:40 | | 17:10 (8) | 06:30 | | | 05:37 | | 19:16 (4) | 05:18 | |
| | 17:05 | | 18:01 | | 18:51 | 27 | 17:37 (8) | 20:43 | | | 21:32 | 24 | 19:40 (4) | 22:00 | |
| 22 | 08:31 | | 07:40 | | 06:38 | | 17:09 (8) | 06:28 | | | 05:36 | | 19:17 (4) | 05:18 | |
| | 17:07 | | 18:03 | | 18:53 | 29 | 17:38 (8) | 20:45 | | | 21:33 | 22 | 19:39 (4) | 22:00 | |
| 23 | 08:30 | | 07:38 | | 06:35 | | 17:09 (8) | 06:26 | | | 05:35 | | 19:18 (4) | 05:19 | |
| | 17:09 | | 18:05 | | 18:54 | 29 | 17:38 (8) | 20:47 | | | 21:34 | 21 | 19:39 (4) | 22:00 | |
| 24 | 08:29 | | 07:35 | | 06:33 | | 17:09 (8) | 06:24 | | | 05:33 | | 19:19 (4) | 05:19 | |
| | 17:10 | | 18:07 | | 18:56 | 29 | 17:38 (8) | 20:48 | | | 21:36 | 19 | 19:38 (4) | 22:00 | |
| 25 | 08:28 | | 07:33 | | 06:31 | | 17:08 (8) | 06:22 | | | 05:32 | | 19:20 (4) | 05:19 | |
| | 17:12 | | 18:09 | | 18:58 | 29 | 17:37 (8) | 20:50 | | | 21:37 | 17 | 19:37 (4) | 22:00 | |
| 26 | 08:26 | | 07:31 | | 06:28 | | 17:08 (8) | 06:20 | | | 05:31 | | 19:22 (4) | 05:20 | |
| | 17:14 | | 18:11 | | 18:59 | 29 | 17:37 (8) | 20:52 | | | 21:38 | 14 | 19:36 (4) | 22:00 | |
| 27 | 08:25 | | 07:29 | | 06:26 | | 17:09 (8) | 06:18 | | | 05:30 | | 19:24 (4) | 05:20 | |
| | 17:16 | | 18:12 | | 19:01 | 27 | 17:36 (8) | 20:53 | | | 21:40 | 10 | 19:34 (4) | 22:00 | |
| 28 | 08:24 | | 07:27 | | 06:24 | | 17:09 (8) | 06:16 | | 19:27 (4) | 05:29 | | 19:26 (4) | 05:21 | |
| | 17:17 | | 18:14 | | 19:03 | 26 | 17:35 (8) | 20:55 | 3 | 19:30 (4) | 21:41 | 6 | 19:32 (4) | 22:00 | |
| 29 | 08:22 | | | | 07:21 | | 18:09 (8) | 06:14 | | 19:22 (4) | 05:28 | | | 05:21 | |
| | 17:19 | | | | 20:04 | 25 | 18:34 (8) | 20:57 | 12 | 19:34 (4) | 21:42 | | | 22:00 | |
| 30 | 08:21 | | | | 07:19 | | 18:11 (8) | 06:12 | | 19:19 (4) | 05:27 | | | 05:22 | |
| | 17:21 | | | | 20:06 | 22 | 18:33 (8) | 20:58 | 17 | 19:36 (4) | 21:43 | | | 22:00 | |
| 31 | 08:19 | | | | 07:17 | | 18:11 (8) | | | | 05:26 | | | | |
| | 17:23 | | | | 20:08 | 19 | 18:30 (8) | | | | 21:45 | | | | |
| Potential sun hours | 260 | | 278 | | 367 | | | 416 | | | 485 | | | 498 | |
| Total, worst case | | | | | | 607 | | | 53 | | | 699 | | | |
| Sun reduction | | | | | | 0.24 | | | 0.35 | | | 0.37 | | | |
| Oper. time red. | | | | | | 1.00 | | | 1.00 | | | 1.00 | | | |
| Wind dir. red. | | | | | | 0.69 | | | 0.63 | | | 0.60 | | | |
| Total reduction | | | | | | 0.17 | | | 0.23 | | | 0.22 | | | |
| Total, real | | | | | | 102 | | | 12 | | | 156 | | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** L - H12

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | July | | | August | | | September | | | October | | | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 05:22 | | | 05:59 | | 19:22 (4) | 06:48 | | | 07:37 | | 17:44 (7) | 07:30 | 08:21 |
| | 21:59 | | | 21:28 | 31 | 19:53 (4) | 20:26 | | | 19:17 | 19 | 18:03 (7) | 17:11 | 16:31 |
| 2 | 05:23 | | | 06:00 | | 19:22 (4) | 06:50 | | | 07:38 | | 17:42 (7) | 07:32 | 08:22 |
| | 21:59 | | | 21:26 | 32 | 19:54 (4) | 20:24 | | | 19:15 | 20 | 18:02 (7) | 17:09 | 16:30 |
| 3 | 05:24 | | | 06:02 | | 19:22 (4) | 06:51 | | | 07:40 | | 17:42 (7) | 07:34 | 08:24 |
| | 21:59 | | | 21:25 | 31 | 19:53 (4) | 20:22 | | | 19:12 | 20 | 18:02 (7) | 17:08 | 16:30 |
| 4 | 05:24 | | | 06:03 | | 19:22 (4) | 06:53 | | | 07:42 | | 17:42 (7) | 07:35 | 08:25 |
| | 21:58 | | | 21:23 | 30 | 19:52 (4) | 20:19 | | | 19:10 | 20 | 18:02 (7) | 17:06 | 16:29 |
| 5 | 05:25 | | | 06:05 | | 19:22 (4) | 06:54 | | | 07:43 | | 17:41 (7) | 07:37 | 08:26 |
| | 21:58 | | | 21:21 | 31 | 19:53 (4) | 20:17 | | | 19:08 | 20 | 18:01 (7) | 17:04 | 16:29 |
| 6 | 05:26 | | | 06:06 | | 19:22 (4) | 06:56 | | | 07:45 | | 17:42 (7) | 07:39 | 08:28 |
| | 21:57 | | | 21:19 | 30 | 19:52 (4) | 20:15 | | | 19:06 | 18 | 18:00 (7) | 17:02 | 16:28 |
| 7 | 05:27 | | | 06:08 | | 19:23 (4) | 06:58 | | | 07:47 | | 17:43 (7) | 07:41 | 08:29 |
| | 21:57 | | | 21:18 | 29 | 19:52 (4) | 20:13 | | | 19:03 | 16 | 17:59 (7) | 17:01 | 16:28 |
| 8 | 05:28 | | | 06:09 | | 19:23 (4) | 06:59 | | | 07:48 | | 17:44 (7) | 07:43 | 08:30 |
| | 21:56 | | | 21:16 | 28 | 19:51 (4) | 20:10 | | | 19:01 | 14 | 17:58 (7) | 16:59 | 16:28 |
| 9 | 05:29 | | | 06:11 | | 19:24 (4) | 07:01 | | | 07:50 | | 17:45 (7) | 07:44 | 08:31 |
| | 21:56 | | | 21:14 | 26 | 19:50 (4) | 20:08 | | | 18:59 | 10 | 17:55 (7) | 16:57 | 16:27 |
| 10 | 05:30 | | | 06:13 | | 19:24 (4) | 07:03 | | 18:11 (8) | 07:52 | | | 07:46 | 08:32 |
| | 21:55 | | | 21:12 | 25 | 19:49 (4) | 20:06 | 6 | 18:17 (8) | 18:57 | | | 16:56 | 16:27 |
| 11 | 05:31 | | | 06:14 | | 19:25 (4) | 07:04 | | 18:06 (8) | 07:53 | | | 07:48 | 08:33 |
| | 21:54 | | | 21:10 | 23 | 19:48 (4) | 20:03 | 14 | 18:20 (8) | 18:54 | | | 16:54 | 16:27 |
| 12 | 05:32 | | | 06:16 | | 19:26 (4) | 07:06 | | 18:04 (8) | 07:55 | | | 07:50 | 08:34 |
| | 21:53 | | | 21:08 | 20 | 19:46 (4) | 20:01 | 18 | 18:22 (8) | 18:52 | | | 16:53 | 16:27 |
| 13 | 05:33 | | | 06:17 | | 19:28 (4) | 07:07 | | 18:02 (8) | 07:57 | | | 07:51 | 08:35 |
| | 21:52 | | | 21:06 | 16 | 19:44 (4) | 19:59 | 22 | 18:24 (8) | 18:50 | | | 16:51 | 16:27 |
| 14 | 05:34 | | | 06:19 | | 19:30 (4) | 07:09 | | 18:00 (8) | 07:59 | | | 07:53 | 08:36 |
| | 21:51 | | | 21:04 | 11 | 19:41 (4) | 19:56 | 24 | 18:24 (8) | 18:48 | | | 16:50 | 16:27 |
| 15 | 05:35 | | | 06:21 | | | 07:11 | | 17:59 (8) | 08:00 | | | 07:55 | 08:37 |
| | 21:50 | | | 21:02 | | | 19:54 | 26 | 18:25 (8) | 18:46 | | | 16:48 | 16:27 |
| 16 | 05:36 | | 19:33 (4) | 06:22 | | | 07:12 | | 17:57 (8) | 08:02 | | | 07:57 | 08:38 |
| | 21:49 | 9 | 19:42 (4) | 21:00 | | | 19:52 | 28 | 18:25 (8) | 18:43 | | | 16:47 | 16:27 |
| 17 | 05:38 | | 19:32 (4) | 06:24 | | | 07:14 | | 17:57 (8) | 08:04 | | | 07:58 | 08:39 |
| | 21:48 | 12 | 19:44 (4) | 20:58 | | | 19:49 | 28 | 18:25 (8) | 18:41 | | | 16:45 | 16:27 |
| 18 | 05:39 | | 19:31 (4) | 06:25 | | | 07:15 | | 17:56 (8) | 08:05 | | | 08:00 | 08:40 |
| | 21:47 | 15 | 19:46 (4) | 20:56 | | | 19:47 | 28 | 18:24 (8) | 18:39 | | | 16:44 | 16:27 |
| 19 | 05:40 | | 19:29 (4) | 06:27 | | | 07:17 | | 17:55 (8) | 08:07 | | | 08:02 | 08:40 |
| | 21:46 | 18 | 19:47 (4) | 20:54 | | | 19:45 | 29 | 18:24 (8) | 18:37 | | | 16:43 | 16:28 |
| 20 | 05:42 | | 19:28 (4) | 06:29 | | | 07:19 | | 17:55 (8) | 08:09 | | | 08:04 | 08:41 |
| | 21:45 | 20 | 19:48 (4) | 20:52 | | | 19:42 | 29 | 18:24 (8) | 18:35 | | | 16:42 | 16:28 |
| 21 | 05:43 | | 19:27 (4) | 06:30 | | | 07:20 | | 17:55 (8) | 08:11 | | | 08:05 | 08:42 |
| | 21:44 | 21 | 19:48 (4) | 20:50 | | | 19:40 | 28 | 18:23 (8) | 18:33 | | | 16:40 | 16:29 |
| 22 | 05:44 | | 19:27 (4) | 06:32 | | | 07:22 | | 17:55 (8) | 08:12 | | | 08:07 | 08:42 |
| | 21:42 | 23 | 19:50 (4) | 20:48 | | | 19:38 | 28 | 18:23 (8) | 18:31 | | | 16:39 | 16:29 |
| 23 | 05:46 | | 19:26 (4) | 06:33 | | | 07:24 | | 17:55 (8) | 08:14 | | | 08:08 | 08:43 |
| | 21:41 | 24 | 19:50 (4) | 20:46 | | | 19:35 | 26 | 18:21 (8) | 18:29 | | | 16:38 | 16:30 |
| 24 | 05:47 | | 19:25 (4) | 06:35 | | | 07:25 | | 17:55 (8) | 08:16 | | | 08:10 | 08:43 |
| | 21:40 | 26 | 19:51 (4) | 20:44 | | | 19:33 | 25 | 18:20 (8) | 18:27 | | | 16:37 | 16:30 |
| 25 | 05:48 | | 19:25 (4) | 06:37 | | | 07:27 | | 17:57 (8) | 07:18 | | | 08:12 | 08:43 |
| | 21:38 | 27 | 19:52 (4) | 20:42 | | | 19:31 | 22 | 18:19 (8) | 17:25 | | | 16:36 | 16:31 |
| 26 | 05:50 | | 19:24 (4) | 06:38 | | | 07:28 | | 17:57 (8) | 07:19 | | | 08:13 | 08:44 |
| | 21:37 | 28 | 19:52 (4) | 20:39 | | | 19:28 | 20 | 18:17 (8) | 17:23 | | | 16:35 | 16:31 |
| 27 | 05:51 | | 19:23 (4) | 06:40 | | | 07:30 | | 17:51 (7) | 07:21 | | | 08:15 | 08:44 |
| | 21:36 | 29 | 19:52 (4) | 20:37 | | | 19:26 | 23 | 18:15 (8) | 17:21 | | | 16:34 | 16:32 |
| 28 | 05:53 | | 19:24 (4) | 06:42 | | | 07:32 | | 17:48 (7) | 07:23 | | | 08:16 | 08:44 |
| | 21:34 | 29 | 19:53 (4) | 20:35 | | | 19:24 | 22 | 18:11 (8) | 17:19 | | | 16:33 | 16:33 |
| 29 | 05:54 | | 19:23 (4) | 06:43 | | | 07:33 | | 17:46 (7) | 07:25 | | | 08:18 | 08:44 |
| | 21:33 | 30 | 19:53 (4) | 20:33 | | | 19:22 | 15 | 18:01 (7) | 17:17 | | | 16:33 | 16:34 |
| 30 | 05:56 | | 19:22 (4) | 06:45 | | | 07:35 | | 17:44 (7) | 07:27 | | | 08:19 | 08:45 |
| | 21:31 | 31 | 19:53 (4) | 20:31 | | | 19:19 | 18 | 18:02 (7) | 17:15 | | | 16:32 | 16:35 |
| 31 | 05:57 | | 19:23 (4) | 06:46 | | | | | | 07:28 | | | | 08:45 |
| | 21:29 | 31 | 19:54 (4) | 20:28 | | | | | | 17:13 | | | | 16:36 |
| Potential sun hours | 501 | | | 453 | | | 381 | | | 332 | | | 267 | 244 |
| Total, worst case | | 373 | | | 363 | | | 479 | | | 157 | | | |
| Sun reduction | | 0.27 | | | 0.30 | | | 0.28 | | | 0.24 | | | |
| Oper. time red. | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | | | |
| Wind dir. red. | | 0.60 | | | 0.60 | | | 0.68 | | | 0.69 | | | |
| Total reduction | | 0.16 | | | 0.18 | | | 0.19 | | | 0.16 | | | |
| Total, real | | 60 | | | 65 | | | 93 | | | 26 | | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** M - H13

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | | | April | | | May | | | June | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | | | 07:15 | | 18:15 (8) | 06:10 | | | 05:25 | | 19:29 (4) |
| | 16:37 | 17:25 | 18:16 | | | 20:10 | 26 | 18:41 (8) | 21:00 | | | 21:46 | 14 | 19:43 (4) |
| 2 | 08:45 | 08:16 | 07:23 | | | 07:12 | | 18:16 (8) | 06:08 | | 19:32 (4) | 05:24 | | 19:30 (4) |
| | 16:38 | 17:26 | 18:18 | | | 20:11 | 24 | 18:40 (8) | 21:02 | 5 | 19:37 (4) | 21:47 | 12 | 19:42 (4) |
| 3 | 08:44 | 08:15 | 07:20 | | | 07:10 | | 18:17 (8) | 06:06 | | 19:27 (4) | 05:24 | | 19:31 (4) |
| | 16:39 | 17:28 | 18:19 | | | 20:13 | 21 | 18:38 (8) | 21:03 | 14 | 19:41 (4) | 21:48 | 9 | 19:40 (4) |
| 4 | 08:44 | 08:13 | 07:18 | | | 07:08 | | 18:18 (8) | 06:04 | | 19:25 (4) | 05:23 | | 19:34 (4) |
| | 16:40 | 17:30 | 18:21 | | | 20:15 | 18 | 18:36 (8) | 21:05 | 17 | 19:42 (4) | 21:49 | 5 | 19:39 (4) |
| 5 | 08:44 | 08:12 | 07:16 | | | 07:05 | | 18:20 (8) | 06:03 | | 19:23 (4) | 05:22 | | |
| | 16:41 | 17:32 | 18:23 | | | 20:16 | 14 | 18:34 (8) | 21:07 | 20 | 19:43 (4) | 21:50 | | |
| 6 | 08:44 | 08:10 | 07:14 | | | 07:03 | | 18:24 (8) | 06:01 | | 19:23 (4) | 05:22 | | |
| | 16:43 | 17:34 | 18:25 | | | 20:18 | 6 | 18:30 (8) | 21:08 | 22 | 19:45 (4) | 21:51 | | |
| 7 | 08:43 | 08:08 | 07:12 | | 17:18 (7) | 07:01 | | | 05:59 | | 19:21 (4) | 05:21 | | |
| | 16:44 | 17:36 | 18:27 | 5 | 17:23 (7) | 20:20 | | | 21:10 | 25 | 19:46 (4) | 21:52 | | |
| 8 | 08:43 | 08:06 | 07:09 | | 17:14 (7) | 06:59 | | | 05:57 | | 19:20 (4) | 05:20 | | |
| | 16:45 | 17:37 | 18:28 | 12 | 17:26 (7) | 20:21 | | | 21:12 | 26 | 19:46 (4) | 21:53 | | |
| 9 | 08:42 | 08:05 | 07:07 | | 17:12 (7) | 06:56 | | | 05:56 | | 19:20 (4) | 05:20 | | |
| | 16:47 | 17:39 | 18:30 | 15 | 17:27 (7) | 20:23 | | | 21:13 | 27 | 19:47 (4) | 21:53 | | |
| 10 | 08:42 | 08:03 | 07:05 | | 17:11 (7) | 06:54 | | | 05:54 | | 19:19 (4) | 05:19 | | |
| | 16:48 | 17:41 | 18:32 | 17 | 17:28 (7) | 20:25 | | | 21:15 | 28 | 19:47 (4) | 21:54 | | |
| 11 | 08:41 | 08:01 | 07:03 | | 17:10 (7) | 06:52 | | | 05:52 | | 19:19 (4) | 05:19 | | |
| | 16:49 | 17:43 | 18:34 | 19 | 17:29 (7) | 20:26 | | | 21:16 | 29 | 19:48 (4) | 21:55 | | |
| 12 | 08:41 | 07:59 | 07:00 | | 17:09 (7) | 06:50 | | | 05:50 | | 19:18 (4) | 05:19 | | |
| | 16:51 | 17:45 | 18:35 | 20 | 17:29 (7) | 20:28 | | | 21:18 | 30 | 19:48 (4) | 21:56 | | |
| 13 | 08:40 | 07:57 | 06:58 | | 17:09 (7) | 06:47 | | | 05:49 | | 19:19 (4) | 05:18 | | |
| | 16:52 | 17:47 | 18:37 | 20 | 17:29 (7) | 20:30 | | | 21:20 | 30 | 19:49 (4) | 21:56 | | |
| 14 | 08:39 | 07:55 | 06:56 | | 17:09 (7) | 06:45 | | | 05:47 | | 19:18 (4) | 05:18 | | |
| | 16:54 | 17:49 | 18:39 | 20 | 17:29 (7) | 20:32 | | | 21:21 | 30 | 19:48 (4) | 21:57 | | |
| 15 | 08:38 | 07:54 | 06:54 | | 17:08 (7) | 06:43 | | | 05:46 | | 19:18 (4) | 05:18 | | |
| | 16:55 | 17:50 | 18:41 | 19 | 17:27 (7) | 20:33 | | | 21:23 | 31 | 19:49 (4) | 21:57 | | |
| 16 | 08:37 | 07:52 | 06:51 | | 17:09 (7) | 06:41 | | | 05:44 | | 19:18 (4) | 05:18 | | |
| | 16:57 | 17:52 | 18:42 | 18 | 17:27 (7) | 20:35 | | | 21:24 | 30 | 19:48 (4) | 21:58 | | |
| 17 | 08:37 | 07:50 | 06:49 | | 17:10 (7) | 06:39 | | | 05:43 | | 19:18 (4) | 05:18 | | |
| | 16:59 | 17:54 | 18:44 | 16 | 17:26 (7) | 20:37 | | | 21:26 | 31 | 19:49 (4) | 21:58 | | |
| 18 | 08:36 | 07:48 | 06:47 | | 17:11 (7) | 06:37 | | | 05:41 | | 19:19 (4) | 05:18 | | |
| | 17:00 | 17:56 | 18:46 | 13 | 17:24 (7) | 20:38 | | | 21:27 | 30 | 19:49 (4) | 21:59 | | |
| 19 | 08:35 | 07:46 | 06:44 | | 17:13 (7) | 06:34 | | | 05:40 | | 19:19 (4) | 05:18 | | |
| | 17:02 | 17:58 | 18:47 | 11 | 17:33 (8) | 20:40 | | | 21:29 | 30 | 19:49 (4) | 21:59 | | |
| 20 | 08:34 | 07:44 | 06:42 | | 17:25 (8) | 06:32 | | | 05:38 | | 19:19 (4) | 05:18 | | |
| | 17:03 | 18:00 | 18:49 | 13 | 17:38 (8) | 20:42 | | | 21:30 | 29 | 19:48 (4) | 22:00 | | |
| 21 | 08:33 | 07:42 | 06:40 | | 17:21 (8) | 06:30 | | | 05:37 | | 19:20 (4) | 05:18 | | |
| | 17:05 | 18:01 | 18:51 | 19 | 17:40 (8) | 20:43 | | | 21:32 | 28 | 19:48 (4) | 22:00 | | |
| 22 | 08:31 | 07:40 | 06:38 | | 17:20 (8) | 06:28 | | | 05:36 | | 19:20 (4) | 05:18 | | |
| | 17:07 | 18:03 | 18:53 | 21 | 17:41 (8) | 20:45 | | | 21:33 | 28 | 19:48 (4) | 22:00 | | |
| 23 | 08:30 | 07:38 | 06:35 | | 17:19 (8) | 06:26 | | | 05:35 | | 19:21 (4) | 05:19 | | |
| | 17:09 | 18:05 | 18:54 | 23 | 17:42 (8) | 20:47 | | | 21:34 | 27 | 19:48 (4) | 22:00 | | |
| 24 | 08:29 | 07:35 | 06:33 | | 17:18 (8) | 06:24 | | | 05:33 | | 19:22 (4) | 05:19 | | |
| | 17:10 | 18:07 | 18:56 | 25 | 17:43 (8) | 20:48 | | | 21:36 | 25 | 19:47 (4) | 22:00 | | |
| 25 | 08:28 | 07:33 | 06:31 | | 17:16 (8) | 06:22 | | | 05:32 | | 19:22 (4) | 05:19 | | |
| | 17:12 | 18:09 | 18:58 | 27 | 17:43 (8) | 20:50 | | | 21:37 | 25 | 19:47 (4) | 22:00 | | |
| 26 | 08:26 | 07:31 | 06:28 | | 17:16 (8) | 06:20 | | | 05:31 | | 19:23 (4) | 05:20 | | |
| | 17:14 | 18:11 | 18:59 | 28 | 17:44 (8) | 20:52 | | | 21:38 | 24 | 19:47 (4) | 22:00 | | |
| 27 | 08:25 | 07:29 | 06:26 | | 17:15 (8) | 06:18 | | | 05:30 | | 19:24 (4) | 05:20 | | |
| | 17:16 | 18:12 | 19:01 | 29 | 17:44 (8) | 20:53 | | | 21:40 | 22 | 19:46 (4) | 22:00 | | |
| 28 | 08:24 | 07:27 | 06:24 | | 17:14 (8) | 06:16 | | | 05:29 | | 19:24 (4) | 05:21 | | |
| | 17:17 | 18:14 | 19:03 | 29 | 17:43 (8) | 20:55 | | | 21:41 | 21 | 19:45 (4) | 22:00 | | |
| 29 | 08:22 | | 07:21 | | 18:14 (8) | 06:14 | | | 05:28 | | 19:25 (4) | 05:21 | | |
| | 17:19 | | 20:04 | 29 | 18:43 (8) | 20:57 | | | 21:42 | 20 | 19:45 (4) | 22:00 | | |
| 30 | 08:21 | | 07:19 | | 18:15 (8) | 06:12 | | | 05:27 | | 19:26 (4) | 05:22 | | |
| | 17:21 | | 20:06 | 28 | 18:43 (8) | 20:58 | | | 21:43 | 18 | 19:44 (4) | 22:00 | | |
| 31 | 08:19 | | 07:17 | | 18:14 (8) | | | | 05:26 | | 19:27 (4) | | | |
| | 17:23 | | 20:08 | 27 | 18:41 (8) | | | | 21:45 | 16 | 19:43 (4) | | | |
| Potential sun hours | 260 | 278 | 367 | | | 416 | | | 485 | | | 498 | | |
| Total, worst case | | | | 503 | | | 109 | | | 738 | | | 40 | |
| Sun reduction | | | | 0.24 | | | 0.35 | | | 0.37 | | | 0.30 | |
| Oper. time red. | | | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Wind dir. red. | | | | 0.68 | | | 0.68 | | | 0.60 | | | 0.60 | |
| Total reduction | | | | 0.17 | | | 0.24 | | | 0.22 | | | 0.18 | |
| Total, real | | | | 84 | | | 26 | | | 163 | | | 7 | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** M - H13

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | July | | | August | | | September | | | October | | | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 05:22 | | 19:39 (4) | 05:59 | | 19:29 (4) | 06:48 | | 18:21 (8) | 07:37 | | 17:48 (7) | 07:30 | 08:21 |
| | 21:59 | | | 21:28 | 29 | 19:58 (4) | 20:26 | | 18:25 (8) | 19:17 | 21 | 18:09 (7) | 17:11 | 16:31 |
| 2 | 05:23 | | 19:39 (4) | 06:00 | | 19:30 (4) | 06:50 | | 18:15 (8) | 07:38 | | 17:48 (7) | 07:32 | 08:22 |
| | 21:59 | | | 21:26 | 29 | 19:59 (4) | 20:24 | | 18:29 (8) | 19:15 | 19 | 18:07 (7) | 17:09 | 16:30 |
| 3 | 05:24 | | 19:38 (4) | 06:02 | | 19:30 (4) | 06:51 | | 18:13 (8) | 07:40 | | 17:48 (7) | 07:34 | 08:24 |
| | 21:59 | | | 21:25 | 28 | 19:58 (4) | 20:22 | | 18:31 (8) | 19:12 | 19 | 18:07 (7) | 17:08 | 16:30 |
| 4 | 05:24 | | 19:37 (4) | 06:03 | | 19:30 (4) | 06:53 | | 18:07 (8) | 07:42 | | 17:49 (7) | 07:35 | 08:25 |
| | 21:58 | | | 21:23 | 27 | 19:57 (4) | 20:19 | | 18:33 (8) | 19:10 | 17 | 18:06 (7) | 17:06 | 16:29 |
| 5 | 05:25 | | 19:36 (4) | 06:05 | | 19:31 (4) | 06:54 | | 18:07 (8) | 07:43 | | 17:50 (7) | 07:37 | 08:26 |
| | 21:58 | | | 21:21 | 25 | 19:56 (4) | 20:17 | | 18:33 (8) | 19:08 | 13 | 18:03 (7) | 17:04 | 16:29 |
| 6 | 05:26 | | 19:35 (4) | 06:06 | | 19:31 (4) | 06:56 | | 18:06 (8) | 07:45 | | 17:52 (7) | 07:39 | 08:28 |
| | 21:57 | | | 21:19 | 24 | 19:55 (4) | 20:15 | 4 | 18:34 (8) | 19:06 | 9 | 18:01 (7) | 17:02 | 16:28 |
| 7 | 05:27 | | 19:34 (4) | 06:08 | | 19:32 (4) | 06:58 | | 18:05 (8) | 07:47 | | | 07:41 | 08:29 |
| | 21:57 | | | 21:18 | 22 | 19:54 (4) | 20:13 | 14 | 18:33 (8) | 19:03 | | | 17:01 | 16:28 |
| 8 | 05:28 | | 19:33 (4) | 06:09 | | 19:33 (4) | 06:59 | | 18:05 (8) | 07:48 | | | 07:43 | 08:30 |
| | 21:56 | | | 21:16 | 19 | 19:52 (4) | 20:10 | 18 | 18:31 (8) | 19:01 | | | 16:59 | 16:28 |
| 9 | 05:29 | | 19:31 (4) | 06:11 | | 19:35 (4) | 07:01 | | 18:10 (8) | 07:50 | | | 07:44 | 08:31 |
| | 21:56 | 8 | 19:47 (4) | 21:14 | 16 | 19:51 (4) | 20:08 | 22 | 18:32 (8) | 18:59 | | | 16:57 | 16:27 |
| 10 | 05:30 | | 19:38 (4) | 06:13 | | 19:37 (4) | 07:03 | | 18:09 (8) | 07:52 | | | 07:46 | 08:32 |
| | 21:55 | 10 | 19:48 (4) | 21:12 | 11 | 19:48 (4) | 20:06 | 24 | 18:33 (8) | 18:57 | | | 16:56 | 16:27 |
| 11 | 05:31 | | 19:37 (4) | 06:14 | | | 07:04 | | 18:07 (8) | 07:53 | | | 07:48 | 08:33 |
| | 21:54 | 13 | 19:50 (4) | 21:10 | | | 20:03 | 26 | 18:33 (8) | 18:54 | | | 16:54 | 16:27 |
| 12 | 05:32 | | 19:36 (4) | 06:16 | | | 07:06 | | 18:07 (8) | 07:55 | | | 07:50 | 08:34 |
| | 21:53 | 15 | 19:51 (4) | 21:08 | | | 20:01 | 26 | 18:33 (8) | 18:52 | | | 16:53 | 16:27 |
| 13 | 05:33 | | 19:35 (4) | 06:17 | | | 07:07 | | 18:06 (8) | 07:57 | | | 07:51 | 08:35 |
| | 21:52 | 17 | 19:52 (4) | 21:06 | | | 19:59 | 28 | 18:34 (8) | 18:50 | | | 16:51 | 16:27 |
| 14 | 05:34 | | 19:34 (4) | 06:19 | | | 07:09 | | 18:05 (8) | 07:59 | | | 07:53 | 08:36 |
| | 21:51 | 19 | 19:53 (4) | 21:04 | | | 19:56 | 28 | 18:33 (8) | 18:48 | | | 16:50 | 16:27 |
| 15 | 05:35 | | 19:33 (4) | 06:21 | | | 07:11 | | 18:05 (8) | 08:00 | | | 07:55 | 08:37 |
| | 21:50 | 21 | 19:54 (4) | 21:02 | | | 19:54 | 28 | 18:33 (8) | 18:46 | | | 16:48 | 16:27 |
| 16 | 05:36 | | 19:33 (4) | 06:22 | | | 07:12 | | 18:04 (8) | 08:02 | | | 07:57 | 08:38 |
| | 21:49 | 21 | 19:54 (4) | 21:00 | | | 19:52 | 28 | 18:32 (8) | 18:43 | | | 16:47 | 16:27 |
| 17 | 05:38 | | 19:33 (4) | 06:24 | | | 07:14 | | 18:04 (8) | 08:04 | | | 07:58 | 08:39 |
| | 21:48 | 23 | 19:56 (4) | 20:58 | | | 19:49 | 28 | 18:32 (8) | 18:41 | | | 16:45 | 16:27 |
| 18 | 05:39 | | 19:32 (4) | 06:25 | | | 07:15 | | 18:03 (8) | 08:05 | | | 08:00 | 08:40 |
| | 21:47 | 24 | 19:56 (4) | 20:56 | | | 19:47 | 28 | 18:31 (8) | 18:39 | | | 16:44 | 16:27 |
| 19 | 05:40 | | 19:31 (4) | 06:27 | | | 07:17 | | 18:04 (8) | 08:07 | | | 08:02 | 08:40 |
| | 21:46 | 26 | 19:57 (4) | 20:54 | | | 19:45 | 26 | 18:30 (8) | 18:37 | | | 16:43 | 16:28 |
| 20 | 05:42 | | 19:31 (4) | 06:29 | | | 07:19 | | 18:05 (8) | 08:09 | | | 08:04 | 08:41 |
| | 21:45 | 26 | 19:57 (4) | 20:52 | | | 19:42 | 24 | 18:29 (8) | 18:35 | | | 16:42 | 16:28 |
| 21 | 05:43 | | 19:30 (4) | 06:30 | | | 07:20 | | 18:05 (8) | 08:11 | | | 08:05 | 08:42 |
| | 21:44 | 27 | 19:57 (4) | 20:50 | | | 19:40 | 22 | 18:27 (8) | 18:33 | | | 16:40 | 16:29 |
| 22 | 05:44 | | 19:30 (4) | 06:32 | | | 07:22 | | 18:06 (8) | 08:12 | | | 08:07 | 08:42 |
| | 21:42 | 28 | 19:58 (4) | 20:48 | | | 19:38 | 20 | 18:26 (8) | 18:31 | | | 16:39 | 16:29 |
| 23 | 05:46 | | 19:30 (4) | 06:33 | | | 07:24 | | 18:07 (8) | 08:14 | | | 08:08 | 08:43 |
| | 21:41 | 29 | 19:59 (4) | 20:46 | | | 19:35 | 16 | 18:23 (8) | 18:29 | | | 16:38 | 16:30 |
| 24 | 05:47 | | 19:29 (4) | 06:35 | | | 07:25 | | 17:58 (7) | 08:16 | | | 08:10 | 08:43 |
| | 21:40 | 30 | 19:59 (4) | 20:44 | | | 19:33 | 13 | 18:19 (8) | 18:27 | | | 16:37 | 16:30 |
| 25 | 05:48 | | 19:30 (4) | 06:37 | | | 07:27 | | 17:55 (7) | 07:18 | | | 08:12 | 08:43 |
| | 21:38 | 29 | 19:59 (4) | 20:42 | | | 19:31 | 12 | 18:07 (7) | 17:25 | | | 16:36 | 16:31 |
| 26 | 05:50 | | 19:29 (4) | 06:38 | | | 07:28 | | 17:52 (7) | 07:19 | | | 08:13 | 08:44 |
| | 21:37 | 30 | 19:59 (4) | 20:39 | | | 19:28 | 15 | 18:07 (7) | 17:23 | | | 16:35 | 16:31 |
| 27 | 05:51 | | 19:29 (4) | 06:40 | | | 07:30 | | 17:51 (7) | 07:21 | | | 08:15 | 08:44 |
| | 21:36 | 30 | 19:59 (4) | 20:37 | | | 19:26 | 17 | 18:08 (7) | 17:21 | | | 16:34 | 16:32 |
| 28 | 05:53 | | 19:29 (4) | 06:42 | | | 07:32 | | 17:50 (7) | 07:23 | | | 08:16 | 08:44 |
| | 21:34 | 31 | 20:00 (4) | 20:35 | | | 19:24 | 19 | 18:09 (7) | 17:19 | | | 16:33 | 16:33 |
| 29 | 05:54 | | 19:29 (4) | 06:43 | | | 07:33 | | 17:49 (7) | 07:25 | | | 08:18 | 08:44 |
| | 21:33 | 30 | 19:59 (4) | 20:33 | | | 19:22 | 19 | 18:08 (7) | 17:17 | | | 16:33 | 16:34 |
| 30 | 05:56 | | 19:28 (4) | 06:45 | | | 07:35 | | 17:48 (7) | 07:27 | | | 08:19 | 08:45 |
| | 21:31 | 31 | 19:59 (4) | 20:31 | | | 19:19 | 21 | 18:09 (7) | 17:15 | | | 16:32 | 16:35 |
| 31 | 05:57 | | 19:29 (4) | 06:46 | | | | | | 07:28 | | | | 08:45 |
| | 21:29 | 30 | 19:59 (4) | 20:28 | | | | | | 17:13 | | | | 16:36 |
| Potential sun hours | 501 | | | 453 | | | 381 | | | 332 | | | 267 | 244 |
| Total, worst case | | 548 | | | 230 | | | 526 | | | 98 | | | |
| Sun reduction | | 0.27 | | | 0.30 | | | 0.28 | | | 0.24 | | | |
| Oper. time red. | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | | | |
| Wind dir. red. | | 0.60 | | | 0.60 | | | 0.68 | | | 0.69 | | | |
| Total reduction | | 0.16 | | | 0.18 | | | 0.19 | | | 0.16 | | | |
| Total, real | | 87 | | | 41 | | | 101 | | | 16 | | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** N - H14

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | | February | | March | | April | | | May | | | June | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | | 08:18 | | 07:25 | | 17:08 (7) | 07:15 | | | 06:10 | | 19:05 (4) | 05:25 |
| | 16:37 | | 17:25 | | 18:16 | 9 | 17:17 (7) | 20:10 | | | 21:00 | 31 | 19:36 (4) | 21:46 |
| 2 | 08:45 | | 08:16 | | 07:23 | | 17:06 (7) | 07:12 | | | 06:08 | | 19:06 (4) | 05:24 |
| | 16:38 | | 17:26 | | 18:18 | 14 | 17:20 (7) | 20:11 | | | 21:02 | 31 | 19:37 (4) | 21:47 |
| 3 | 08:44 | | 08:15 | | 07:20 | | 17:05 (7) | 07:10 | | | 06:06 | | 19:06 (4) | 05:24 |
| | 16:39 | | 17:28 | | 18:19 | 16 | 17:21 (7) | 20:13 | | | 21:03 | 30 | 19:36 (4) | 21:48 |
| 4 | 08:44 | | 08:13 | | 07:18 | | 17:04 (7) | 07:08 | | | 06:04 | | 19:06 (4) | 05:23 |
| | 16:40 | | 17:30 | | 18:21 | 18 | 17:22 (7) | 20:15 | | | 21:05 | 30 | 19:36 (4) | 21:49 |
| 5 | 08:44 | | 08:12 | | 07:16 | | 17:03 (7) | 07:05 | | | 06:03 | | 19:06 (4) | 05:22 |
| | 16:41 | | 17:32 | | 18:23 | 19 | 17:22 (7) | 20:16 | | | 21:07 | 29 | 19:35 (4) | 21:50 |
| 6 | 08:44 | | 08:10 | | 07:14 | | 17:02 (7) | 07:03 | | | 06:01 | | 19:07 (4) | 05:22 |
| | 16:43 | | 17:34 | | 18:25 | 20 | 17:22 (7) | 20:18 | | | 21:08 | 28 | 19:35 (4) | 21:51 |
| 7 | 08:43 | | 08:08 | | 07:12 | | 17:02 (7) | 07:01 | | | 05:59 | | 19:07 (4) | 05:21 |
| | 16:44 | | 17:36 | | 18:27 | 20 | 17:22 (7) | 20:20 | | | 21:10 | 28 | 19:35 (4) | 21:52 |
| 8 | 08:43 | | 08:06 | | 07:09 | | 17:03 (7) | 06:59 | | | 05:57 | | 19:07 (4) | 05:20 |
| | 16:45 | | 17:37 | | 18:28 | 19 | 17:22 (7) | 20:21 | | | 21:12 | 27 | 19:34 (4) | 21:53 |
| 9 | 08:42 | | 08:05 | | 07:07 | | 17:02 (7) | 06:56 | | | 05:56 | | 19:08 (4) | 05:20 |
| | 16:47 | | 17:39 | | 18:30 | 19 | 17:21 (7) | 20:23 | | | 21:13 | 25 | 19:33 (4) | 21:53 |
| 10 | 08:42 | | 08:03 | | 07:05 | | 17:03 (7) | 06:54 | | | 05:54 | | 19:09 (4) | 05:19 |
| | 16:48 | | 17:41 | | 18:32 | 23 | 17:26 (8) | 20:25 | | | 21:15 | 23 | 19:32 (4) | 21:54 |
| 11 | 08:41 | | 08:01 | | 07:03 | | 17:04 (7) | 06:52 | | | 05:52 | | 19:10 (4) | 05:19 |
| | 16:49 | | 17:43 | | 18:34 | 25 | 17:29 (8) | 20:26 | | | 21:16 | 22 | 19:32 (4) | 21:55 |
| 12 | 08:41 | | 07:59 | | 07:00 | | 17:05 (7) | 06:50 | | | 05:50 | | 19:11 (4) | 05:19 |
| | 16:51 | | 17:45 | | 18:35 | 26 | 17:31 (8) | 20:28 | | | 21:18 | 19 | 19:30 (4) | 21:56 |
| 13 | 08:40 | | 07:57 | | 06:58 | | 17:09 (7) | 06:47 | | | 05:49 | | 19:13 (4) | 05:18 |
| | 16:52 | | 17:47 | | 18:37 | 23 | 17:32 (8) | 20:30 | | | 21:20 | 16 | 19:29 (4) | 21:56 |
| 14 | 08:39 | | 07:55 | | 06:56 | | 17:09 (8) | 06:45 | | | 05:47 | | 19:14 (4) | 05:18 |
| | 16:54 | | 17:49 | | 18:39 | 25 | 17:34 (8) | 20:32 | | | 21:21 | 13 | 19:27 (4) | 21:57 |
| 15 | 08:38 | | 07:54 | | 06:54 | | 17:08 (8) | 06:43 | | | 05:46 | | 19:17 (4) | 05:18 |
| | 16:55 | | 17:50 | | 18:41 | 25 | 17:33 (8) | 20:33 | | | 21:23 | 8 | 19:25 (4) | 21:57 |
| 16 | 08:37 | | 07:52 | | 06:51 | | 17:07 (8) | 06:41 | | | 05:44 | | | 05:18 |
| | 16:57 | | 17:52 | | 18:42 | 27 | 17:34 (8) | 20:35 | | | 21:24 | | | 21:58 |
| 17 | 08:37 | | 07:50 | | 06:49 | | 17:07 (8) | 06:39 | | | 05:43 | | | 05:18 |
| | 16:59 | | 17:54 | | 18:44 | 28 | 17:35 (8) | 20:37 | | | 21:26 | | | 21:58 |
| 18 | 08:36 | | 07:48 | | 06:47 | | 17:06 (8) | 06:37 | | | 05:41 | | | 05:18 |
| | 17:00 | | 17:56 | | 18:46 | 28 | 17:34 (8) | 20:38 | | | 21:27 | | | 21:59 |
| 19 | 08:35 | | 07:46 | | 06:44 | | 17:06 (8) | 06:34 | | | 05:40 | | | 05:18 |
| | 17:02 | | 17:58 | | 18:47 | 28 | 17:34 (8) | 20:40 | | | 21:29 | | | 21:59 |
| 20 | 08:34 | | 07:44 | | 06:42 | | 17:06 (8) | 06:32 | | | 05:38 | | | 05:18 |
| | 17:03 | | 18:00 | | 18:49 | 28 | 17:34 (8) | 20:42 | | | 21:30 | | | 22:00 |
| 21 | 08:33 | | 07:42 | | 06:40 | | 17:05 (8) | 06:30 | | 19:18 (4) | 05:37 | | | 05:18 |
| | 17:05 | | 18:01 | | 18:51 | 27 | 17:32 (8) | 20:43 | 10 | 19:28 (4) | 21:32 | | | 22:00 |
| 22 | 08:31 | | 07:40 | | 06:38 | | 17:06 (8) | 06:28 | | 19:15 (4) | 05:36 | | | 05:18 |
| | 17:07 | | 18:03 | | 18:53 | 26 | 17:32 (8) | 20:45 | 15 | 19:30 (4) | 21:33 | | | 22:00 |
| 23 | 08:30 | | 07:38 | | 06:35 | | 17:07 (8) | 06:26 | | 19:13 (4) | 05:35 | | | 05:19 |
| | 17:09 | | 18:05 | | 18:54 | 24 | 17:31 (8) | 20:47 | 19 | 19:32 (4) | 21:34 | | | 22:00 |
| 24 | 08:29 | | 07:35 | | 06:33 | | 17:08 (8) | 06:24 | | 19:11 (4) | 05:33 | | | 05:19 |
| | 17:10 | | 18:07 | | 18:56 | 22 | 17:30 (8) | 20:48 | 22 | 19:33 (4) | 21:36 | | | 22:00 |
| 25 | 08:28 | | 07:33 | | 06:31 | | 17:08 (8) | 06:22 | | 19:10 (4) | 05:32 | | | 05:19 |
| | 17:12 | | 18:09 | | 18:58 | 20 | 17:28 (8) | 20:50 | 24 | 19:34 (4) | 21:37 | | | 22:00 |
| 26 | 08:26 | | 07:31 | | 06:28 | | 17:10 (8) | 06:20 | | 19:09 (4) | 05:31 | | | 05:20 |
| | 17:14 | | 18:11 | | 18:59 | 16 | 17:26 (8) | 20:52 | 26 | 19:35 (4) | 21:38 | | | 22:00 |
| 27 | 08:25 | | 07:29 | | 06:26 | | 17:14 (8) | 06:18 | | 19:08 (4) | 05:30 | | | 05:20 |
| | 17:16 | | 18:12 | | 19:01 | 9 | 17:23 (8) | 20:53 | 28 | 19:36 (4) | 21:40 | | | 22:00 |
| 28 | 08:24 | | 07:27 | | 06:24 | | | 06:16 | | 19:07 (4) | 05:29 | | | 05:21 |
| | 17:17 | | 18:14 | | 19:03 | | | 20:55 | 29 | 19:36 (4) | 21:41 | | | 22:00 |
| 29 | 08:22 | | | | 07:21 | | | 06:14 | | 19:06 (4) | 05:28 | | | 05:21 |
| | 17:19 | | | | 20:04 | | | 20:57 | 30 | 19:36 (4) | 21:42 | | | 22:00 |
| 30 | 08:21 | | | | 07:19 | | | 06:12 | | 19:06 (4) | 05:27 | | | 05:22 |
| | 17:21 | | | | 20:06 | | | 20:58 | 30 | 19:36 (4) | 21:43 | | | 22:00 |
| 31 | 08:19 | | | | 07:17 | | | | | | 05:26 | | | |
| | 17:23 | | | | 20:08 | | | | | | 21:45 | | | |
| Potential sun hours | 260 | | 278 | | 367 | | | 416 | | | 485 | | | 498 |
| Total, worst case | | | | | | 584 | | | 233 | | | 360 | | |
| Sun reduction | | | | | | 0.24 | | | 0.35 | | | 0.37 | | |
| Oper. time red. | | | | | | 1.00 | | | 1.00 | | | 1.00 | | |
| Wind dir. red. | | | | | | 0.69 | | | 0.62 | | | 0.62 | | |
| Total reduction | | | | | | 0.17 | | | 0.22 | | | 0.23 | | |
| Total, real | | | | | | 98 | | | 51 | | | 82 | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
**Jennings O'Donovan**
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kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** N - H14

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | July | | | August | | | September | | | October | | | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 05:22 | | | 05:59 | | 19:21 (4) | 06:48 | | | 07:37 | | 17:46 (7) | 07:30 | 08:21 |
| | 21:59 | | | 21:28 | 20 | 19:41 (4) | 20:26 | | | 19:17 | 25 | 18:11 (8) | 17:11 | 16:31 |
| 2 | 05:23 | | | 06:00 | | 19:20 (4) | 06:50 | | | 07:38 | | 17:43 (7) | 07:32 | 08:22 |
| | 21:59 | | | 21:26 | 23 | 19:43 (4) | 20:24 | | | 19:15 | 25 | 18:08 (8) | 17:09 | 16:30 |
| 3 | 05:24 | | | 06:02 | | 19:19 (4) | 06:51 | | | 07:40 | | 17:41 (7) | 07:34 | 08:24 |
| | 21:59 | | | 21:25 | 24 | 19:43 (4) | 20:22 | | | 19:12 | 25 | 18:06 (8) | 17:08 | 16:30 |
| 4 | 05:24 | | | 06:03 | | 19:17 (4) | 06:53 | | | 07:42 | | 17:40 (7) | 07:35 | 08:25 |
| | 21:58 | | | 21:23 | 26 | 19:43 (4) | 20:19 | | | 19:10 | 18 | 17:58 (7) | 17:06 | 16:29 |
| 5 | 05:25 | | | 06:05 | | 19:17 (4) | 06:54 | | | 07:43 | | 17:39 (7) | 07:37 | 08:26 |
| | 21:58 | | | 21:21 | 27 | 19:44 (4) | 20:17 | | | 19:08 | 19 | 17:58 (7) | 17:04 | 16:29 |
| 6 | 05:26 | | | 06:06 | | 19:16 (4) | 06:56 | | | 07:45 | | 17:38 (7) | 07:39 | 08:28 |
| | 21:57 | | | 21:19 | 28 | 19:44 (4) | 20:15 | | | 19:06 | 20 | 17:58 (7) | 17:02 | 16:28 |
| 7 | 05:27 | | | 06:08 | | 19:16 (4) | 06:58 | | | 07:47 | | 17:38 (7) | 07:41 | 08:29 |
| | 21:57 | | | 21:18 | 29 | 19:45 (4) | 20:13 | | | 19:03 | 20 | 17:58 (7) | 17:01 | 16:28 |
| 8 | 05:28 | | | 06:09 | | 19:15 (4) | 06:59 | | | 07:48 | | 17:38 (7) | 07:43 | 08:30 |
| | 21:56 | | | 21:16 | 30 | 19:45 (4) | 20:10 | | | 19:01 | 20 | 17:58 (7) | 16:59 | 16:28 |
| 9 | 05:29 | | | 06:11 | | 19:15 (4) | 07:01 | | | 07:50 | | 17:38 (7) | 07:44 | 08:31 |
| | 21:56 | | | 21:14 | 30 | 19:45 (4) | 20:08 | | | 18:59 | 18 | 17:56 (7) | 16:57 | 16:27 |
| 10 | 05:30 | | | 06:13 | | 19:14 (4) | 07:03 | | | 07:52 | | 17:38 (7) | 07:46 | 08:32 |
| | 21:55 | | | 21:12 | 31 | 19:45 (4) | 20:06 | | | 18:57 | 18 | 17:56 (7) | 16:56 | 16:27 |
| 11 | 05:31 | | | 06:14 | | 19:15 (4) | 07:04 | | | 07:53 | | 17:40 (7) | 07:48 | 08:33 |
| | 21:54 | | | 21:10 | 30 | 19:45 (4) | 20:03 | | | 18:54 | 15 | 17:55 (7) | 16:54 | 16:27 |
| 12 | 05:32 | | | 06:16 | | 19:14 (4) | 07:06 | | | 07:55 | | 17:41 (7) | 07:50 | 08:34 |
| | 21:53 | | | 21:08 | 30 | 19:44 (4) | 20:01 | | | 18:52 | 12 | 17:53 (7) | 16:53 | 16:27 |
| 13 | 05:33 | | | 06:17 | | 19:14 (4) | 07:07 | | | 07:57 | | 17:43 (7) | 07:51 | 08:35 |
| | 21:52 | | | 21:06 | 30 | 19:44 (4) | 19:59 | | | 18:50 | 6 | 17:49 (7) | 16:51 | 16:27 |
| 14 | 05:34 | | | 06:19 | | 19:14 (4) | 07:09 | | | 07:59 | | | 07:53 | 08:36 |
| | 21:51 | | | 21:04 | 29 | 19:43 (4) | 19:56 | | | 18:48 | | | 16:50 | 16:27 |
| 15 | 05:35 | | | 06:21 | | 19:15 (4) | 07:11 | | | 08:00 | | | 07:55 | 08:37 |
| | 21:50 | | | 21:02 | 28 | 19:43 (4) | 19:54 | | | 18:46 | | | 16:48 | 16:27 |
| 16 | 05:36 | | | 06:22 | | 19:15 (4) | 07:12 | | 18:03 (8) | 08:02 | | | 07:57 | 08:38 |
| | 21:49 | | | 21:00 | 27 | 19:42 (4) | 19:52 | 7 | 18:10 (8) | 18:43 | | | 16:47 | 16:27 |
| 17 | 05:38 | | | 06:24 | | 19:15 (4) | 07:14 | | 17:59 (8) | 08:04 | | | 07:58 | 08:39 |
| | 21:48 | | | 20:58 | 27 | 19:42 (4) | 19:49 | 15 | 18:14 (8) | 18:41 | | | 16:45 | 16:27 |
| 18 | 05:39 | | | 06:25 | | 19:16 (4) | 07:15 | | 17:56 (8) | 08:05 | | | 08:00 | 08:40 |
| | 21:47 | | | 20:56 | 24 | 19:40 (4) | 19:47 | 19 | 18:15 (8) | 18:39 | | | 16:44 | 16:27 |
| 19 | 05:40 | | | 06:27 | | 19:17 (4) | 07:17 | | 17:55 (8) | 08:07 | | | 08:02 | 08:40 |
| | 21:46 | | | 20:54 | 22 | 19:39 (4) | 19:45 | 21 | 18:16 (8) | 18:37 | | | 16:43 | 16:28 |
| 20 | 05:41 | | | 06:29 | | 19:18 (4) | 07:19 | | 17:53 (8) | 08:09 | | | 08:04 | 08:41 |
| | 21:45 | | | 20:52 | 19 | 19:37 (4) | 19:42 | 24 | 18:17 (8) | 18:35 | | | 16:42 | 16:28 |
| 21 | 05:43 | | | 06:30 | | 19:20 (4) | 07:20 | | 17:52 (8) | 08:11 | | | 08:05 | 08:42 |
| | 21:44 | | | 20:50 | 15 | 19:35 (4) | 19:40 | 25 | 18:17 (8) | 18:33 | | | 16:40 | 16:29 |
| 22 | 05:44 | | | 06:32 | | 19:24 (4) | 07:22 | | 17:51 (8) | 08:12 | | | 08:07 | 08:42 |
| | 21:42 | | | 20:48 | 8 | 19:32 (4) | 19:38 | 27 | 18:18 (8) | 18:31 | | | 16:39 | 16:29 |
| 23 | 05:46 | | | 06:33 | | | 07:24 | | 17:50 (8) | 08:14 | | | 08:08 | 08:43 |
| | 21:41 | | | 20:46 | | | 19:35 | 27 | 18:17 (8) | 18:29 | | | 16:38 | 16:30 |
| 24 | 05:47 | | | 06:35 | | | 07:25 | | 17:49 (8) | 08:16 | | | 08:10 | 08:43 |
| | 21:40 | | | 20:44 | | | 19:33 | 28 | 18:17 (8) | 18:27 | | | 16:37 | 16:30 |
| 25 | 05:48 | | | 06:37 | | | 07:27 | | 17:49 (8) | 07:18 | | | 08:12 | 08:43 |
| | 21:38 | | | 20:42 | | | 19:31 | 28 | 18:17 (8) | 17:25 | | | 16:36 | 16:31 |
| 26 | 05:50 | | | 06:38 | | | 07:28 | | 17:48 (8) | 07:19 | | | 08:13 | 08:44 |
| | 21:37 | | | 20:39 | | | 19:28 | 28 | 18:16 (8) | 17:23 | | | 16:35 | 16:31 |
| 27 | 05:51 | | | 06:40 | | | 07:30 | | 17:49 (8) | 07:21 | | | 08:15 | 08:44 |
| | 21:36 | | | 20:37 | | | 19:26 | 27 | 18:16 (8) | 17:21 | | | 16:34 | 16:32 |
| 28 | 05:53 | | | 06:42 | | | 07:32 | | 17:49 (8) | 07:23 | | | 08:16 | 08:44 |
| | 21:34 | | | 20:35 | | | 19:24 | 26 | 18:15 (8) | 17:19 | | | 16:33 | 16:33 |
| 29 | 05:54 | | 19:26 (4) | 06:43 | | | 07:33 | | 17:49 (8) | 07:25 | | | 08:18 | 08:44 |
| | 21:33 | 11 | 19:37 (4) | 20:33 | | | 19:22 | 25 | 18:14 (8) | 17:17 | | | 16:33 | 16:34 |
| 30 | 05:56 | | 19:24 (4) | 06:45 | | | 07:35 | | 17:50 (8) | 07:27 | | | 08:19 | 08:45 |
| | 21:31 | 14 | 19:38 (4) | 20:31 | | | 19:19 | 23 | 18:13 (8) | 17:15 | | | 16:32 | 16:35 |
| 31 | 05:57 | | 19:22 (4) | 06:46 | | | | | | 07:28 | | | | 08:45 |
| | 21:29 | 18 | 19:40 (4) | 20:28 | | | | | | 17:13 | | | | 16:36 |
| Potential sun hours | 501 | | | 453 | | | 381 | | | 332 | | | 267 | 244 |
| Total, worst case | | 43 | | | 557 | | | 350 | | | 241 | | | |
| Sun reduction | | 0.27 | | | 0.30 | | | 0.28 | | | 0.24 | | | |
| Oper. time red. | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | | | |
| Wind dir. red. | | 0.62 | | | 0.62 | | | 0.69 | | | 0.69 | | | |
| Total reduction | | 0.17 | | | 0.18 | | | 0.19 | | | 0.16 | | | |
| Total, real | | 7 | | | 102 | | | 68 | | | 40 | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
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Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** O - H15

## Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:15 | 06:10 | 05:25 | 05:22 | 05:59 | 06:48 | 19:02 (4) | 07:37 | 17:53 (8) | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | 22 | 19:24 (4) | 19:17 | 23 | 18:16 (8) | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | 07:12 | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | 19:02 (4) | 07:38 | 17:53 (8) | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 20 | 19:22 (4) | 19:15 | 22 | 18:15 (8) | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | 06:06 | 05:24 | 05:24 | 06:02 | 06:51 | 19:04 (4) | 07:40 | 17:53 (8) | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 | 21:03 | 21:48 | 21:59 | 21:25 | 20:22 | 17 | 19:21 (4) | 19:12 | 22 | 18:15 (8) | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:04 | 05:23 | 05:24 | 06:03 | 06:53 | 19:06 (4) | 07:42 | 17:53 (8) | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 13 | 19:19 (4) | 19:10 | 21 | 18:14 (8) | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | 06:03 | 05:22 | 05:25 | 06:05 | 06:54 | 19:08 (4) | 07:43 | 17:53 (8) | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 7 | 19:15 (4) | 19:08 | 19 | 18:12 (8) | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 17:22 (8) | 07:03 | 06:01 | 05:21 | 05:26 | 06:06 | 06:56 | 07:45 | 17:55 (8) | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 9 | 17:31 (8) | 20:18 | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 19:06 | 16 | 18:11 (8) | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 17:19 (8) | 07:01 | 19:12 (4) | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 17:56 (8) | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 15 | 17:34 (8) | 20:20 | 7 | 19:19 (4) | 21:10 | 21:52 | 21:57 | 21:18 | 20:13 | 19:03 | 13 | 18:09 (8) | 17:01 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 17:17 (8) | 06:59 | 19:08 (4) | 05:57 | 05:20 | 05:28 | 06:09 | 06:59 | 07:48 | 18:00 (8) | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | 17 | 17:34 (8) | 20:21 | 13 | 19:21 (4) | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 5 | 18:05 (8) | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 17:16 (8) | 06:56 | 19:06 (4) | 05:55 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20 | 17:36 (8) | 20:23 | 17 | 19:23 (4) | 21:13 | 21:53 | 21:56 | 21:14 | 20:08 | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 17:15 (8) | 06:54 | 19:04 (4) | 05:54 | 05:19 | 05:30 | 06:13 | 07:02 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 21 | 17:36 (8) | 20:25 | 20 | 19:24 (4) | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 17:15 (8) | 06:52 | 19:03 (4) | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | 22 | 17:37 (8) | 20:26 | 22 | 19:25 (4) | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | 17:14 (8) | 06:50 | 19:03 (4) | 05:50 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 22 | 17:36 (8) | 20:28 | 22 | 19:25 (4) | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 17:14 (8) | 06:47 | 19:01 (4) | 05:49 | 05:18 | 05:33 | 06:17 | 07:07 | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 22 | 17:36 (8) | 20:30 | 24 | 19:25 (4) | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 17:14 (8) | 06:45 | 19:01 (4) | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:59 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | 22 | 17:36 (8) | 20:32 | 24 | 19:25 (4) | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 17:13 (8) | 06:43 | 19:00 (4) | 05:46 | 05:18 | 05:35 | 06:21 | 07:11 | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:41 | 22 | 17:35 (8) | 20:33 | 25 | 19:25 (4) | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 17:14 (8) | 06:41 | 19:01 (4) | 05:44 | 05:18 | 05:36 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20 | 17:34 (8) | 20:35 | 24 | 19:25 (4) | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 17:15 (8) | 06:39 | 19:01 (4) | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:59 | 17:54 | 18:44 | 18 | 17:33 (8) | 20:37 | 23 | 19:24 (4) | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 17:16 (8) | 06:37 | 19:01 (4) | 05:41 | 05:18 | 05:39 | 06:25 | 07:15 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 15 | 17:31 (8) | 20:38 | 23 | 19:24 (4) | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | 17:18 (8) | 06:34 | 19:02 (4) | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 10 | 17:28 (8) | 20:40 | 21 | 19:23 (4) | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 19:03 (4) | 05:38 | 05:18 | 05:41 | 06:29 | 19:12 (4) | 07:19 | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | 19 | 19:22 (4) | 21:30 | 22:00 | 21:45 | 20:52 | 9 | 19:21 (4) | 19:42 | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | 19:04 (4) | 05:37 | 05:18 | 05:43 | 06:30 | 19:10 (4) | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | 16 | 19:20 (4) | 21:32 | 22:00 | 21:44 | 20:50 | 13 | 19:23 (4) | 19:40 | 18:33 | 16:40 | 16:29 |
| 22 | 08:31 | 07:40 | 06:38 | 06:28 | 19:05 (4) | 05:36 | 05:18 | 05:44 | 06:32 | 19:07 (4) | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | 13 | 19:18 (4) | 21:33 | 22:00 | 21:42 | 20:48 | 17 | 19:24 (4) | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 19:08 (4) | 05:35 | 05:19 | 05:45 | 06:33 | 19:06 (4) | 07:24 | 08:14 | 08:08 | 08:43 |
| | 17:08 | 18:05 | 18:54 | 20:47 | 7 | 19:15 (4) | 21:34 | 22:00 | 21:41 | 20:46 | 19 | 19:25 (4) | 19:35 | 18:29 | 16:38 | 16:30 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | 05:33 | 05:19 | 05:47 | 06:35 | 19:05 (4) | 07:25 | 18:03 (8) | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 21:36 | 22:00 | 21:40 | 20:44 | 22 | 19:27 (4) | 19:33 | 8 | 18:11 (8) | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 19:04 (4) | 07:27 | 18:00 (8) | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:38 | 20:41 | 22 | 19:26 (4) | 19:31 | 14 | 18:14 (8) | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 06:20 | 05:31 | 05:20 | 05:50 | 06:38 | 19:03 (4) | 07:28 | 17:57 (8) | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | 20:52 | 21:38 | 22:00 | 21:37 | 20:39 | 24 | 19:27 (4) | 19:28 | 17 | 18:14 (8) | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 19:02 (4) | 07:30 | 17:56 (8) | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:12 | 19:01 | 20:53 | 21:40 | 22:00 | 21:36 | 20:37 | 24 | 19:26 (4) | 19:26 | 20 | 18:16 (8) | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:21 | 05:53 | 06:41 | 19:02 (4) | 07:32 | 17:55 (8) | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 25 | 19:27 (4) | 19:24 | 21 | 18:16 (8) | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 19:02 (4) | 07:33 | 17:54 (8) | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 24 | 19:26 (4) | 19:22 | 22 | 18:16 (8) | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:56 | 06:45 | 19:02 (4) | 07:35 | 17:53 (8) | 07:27 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:58 | 21:43 | 22:00 | 21:31 | 20:31 | 24 | 19:26 (4) | 19:19 | 23 | 18:16 (8) | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | 05:26 | | 05:57 | 06:46 | 19:01 (4) | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:44 | | 21:29 | 20:28 | 23 | 19:24 (4) | | | 17:13 | | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 244 |
| Total, worst case | | | 255 | 320 | | | | 246 | 204 | 141 | | |
| Sun reduction | | | 0.24 | 0.35 | | | | 0.30 | 0.28 | 0.24 | | |
| Oper. time red. | | | 1.00 | 1.00 | | | | 1.00 | 1.00 | 1.00 | | |
| Wind dir. red. | | | 0.69 | 0.64 | | | | 0.64 | 0.67 | 0.69 | | |
| Total reduction | | | 0.17 | 0.23 | | | | 0.19 | 0.19 | 0.16 | | |
| Total, real | | | 43 | 73 | | | | 47 | 39 | 23 | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
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kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** P - H17

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | | April | | May | | June | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | | 07:15 | | 06:10 | | 05:25 | | 20:19 (5) |
| | 16:37 | 17:25 | 18:16 | | 20:10 | | 21:00 | | 21:46 | 4 | 20:23 (5) |
| 2 | 08:44 | 08:16 | 07:23 | | 07:12 | | 06:08 | | 05:24 | | 20:16 (5) |
| | 16:38 | 17:26 | 18:18 | | 20:11 | | 21:02 | | 21:47 | 10 | 20:26 (5) |
| 3 | 08:44 | 08:15 | 07:20 | | 07:10 | | 06:06 | | 05:24 | | 20:15 (5) |
| | 16:39 | 17:28 | 18:19 | | 20:13 | | 21:03 | | 21:48 | 12 | 20:27 (5) |
| 4 | 08:44 | 08:13 | 07:18 | | 07:08 | | 06:04 | | 05:23 | | 20:14 (5) |
| | 16:40 | 17:30 | 18:21 | | 20:15 | | 21:05 | | 21:49 | 15 | 20:29 (5) |
| 5 | 08:44 | 08:12 | 07:16 | | 07:05 | | 06:03 | | 05:22 | | 20:13 (5) |
| | 16:41 | 17:32 | 18:23 | | 20:16 | | 21:07 | | 21:50 | 16 | 20:29 (5) |
| 6 | 08:44 | 08:10 | 07:14 | | 07:03 | | 06:01 | | 05:21 | | 20:13 (5) |
| | 16:43 | 17:34 | 18:25 | | 20:18 | | 21:08 | | 21:51 | 18 | 20:31 (5) |
| 7 | 08:43 | 08:08 | 07:12 | | 07:01 | | 05:59 | | 05:21 | | 20:12 (5) |
| | 16:44 | 17:36 | 18:27 | | 20:20 | | 21:10 | | 21:52 | 19 | 20:31 (5) |
| 8 | 08:43 | 08:06 | 07:09 | | 06:59 | | 05:57 | | 05:20 | | 20:12 (5) |
| | 16:45 | 17:37 | 18:28 | | 20:21 | | 21:12 | | 21:53 | 20 | 20:32 (5) |
| 9 | 08:42 | 08:05 | 07:07 | | 06:56 | | 05:55 | | 05:20 | | 20:12 (5) |
| | 16:47 | 17:39 | 18:30 | | 20:23 | | 21:13 | | 21:53 | 20 | 20:32 (5) |
| 10 | 08:42 | 08:03 | 07:05 | | 06:54 | | 05:54 | | 05:19 | | 20:12 (5) |
| | 16:48 | 17:41 | 18:32 | | 20:25 | | 21:15 | | 21:54 | 21 | 20:33 (5) |
| 11 | 08:41 | 08:01 | 07:03 | | 06:52 | | 19:21 (4) | | 05:52 | | 05:19 | | 20:12 (5) |
| | 16:49 | 17:43 | 18:34 | | 20:26 | 4 | 19:25 (4) | | 21:16 | | 21:55 | 22 | 20:34 (5) |
| 12 | 08:41 | 07:59 | 07:00 | | 06:50 | | 19:17 (4) | | 05:50 | | 05:19 | | 20:11 (5) |
| | 16:51 | 17:45 | 18:35 | | 20:28 | 12 | 19:29 (4) | | 21:18 | | 21:56 | 22 | 20:33 (5) |
| 13 | 08:40 | 07:57 | 06:58 | 17:34 (8) | 06:47 | | 19:14 (4) | | 05:49 | | 05:18 | | 20:11 (5) |
| | 16:52 | 17:47 | 18:37 | 9 | 17:43 (8) | 20:30 | 15 | 19:29 (4) | | 21:20 | | 21:56 | 23 | 20:34 (5) |
| 14 | 08:39 | 07:55 | 06:56 | 17:32 (8) | 06:45 | | 19:13 (4) | | 05:47 | | 05:18 | | 20:11 (5) |
| | 16:54 | 17:49 | 18:39 | 14 | 17:46 (8) | 20:32 | 18 | 19:31 (4) | | 21:21 | | 21:57 | 24 | 20:35 (5) |
| 15 | 08:38 | 07:54 | 06:54 | 17:30 (8) | 06:43 | | 19:12 (4) | | 05:46 | | 05:18 | | 20:12 (5) |
| | 16:55 | 17:50 | 18:41 | 16 | 17:46 (8) | 20:33 | 19 | 19:31 (4) | | 21:23 | | 21:57 | 23 | 20:35 (5) |
| 16 | 08:37 | 07:52 | 06:51 | 17:29 (8) | 06:41 | | 19:11 (4) | | 05:44 | | 05:18 | | 20:12 (5) |
| | 16:57 | 17:52 | 18:42 | 18 | 17:47 (8) | 20:35 | 21 | 19:32 (4) | | 21:24 | | 21:58 | 24 | 20:36 (5) |
| 17 | 08:37 | 07:50 | 06:49 | 17:28 (8) | 06:39 | | 19:11 (4) | | 05:43 | | 05:18 | | 20:12 (5) |
| | 16:58 | 17:54 | 18:44 | 20 | 17:48 (8) | 20:37 | 21 | 19:32 (4) | | 21:26 | | 21:58 | 24 | 20:36 (5) |
| 18 | 08:36 | 07:48 | 06:47 | 17:27 (8) | 06:37 | | 19:10 (4) | | 05:41 | | 05:18 | | 20:12 (5) |
| | 17:00 | 17:56 | 18:46 | 20 | 17:47 (8) | 20:38 | 22 | 19:32 (4) | | 21:27 | | 21:59 | 24 | 20:36 (5) |
| 19 | 08:35 | 07:46 | 06:44 | 17:27 (8) | 06:34 | | 19:10 (4) | | 05:40 | | 05:18 | | 20:12 (5) |
| | 17:02 | 17:58 | 18:47 | 20 | 17:47 (8) | 20:40 | 22 | 19:32 (4) | | 21:29 | | 21:59 | 24 | 20:36 (5) |
| 20 | 08:34 | 07:44 | 06:42 | 17:27 (8) | 06:32 | | 19:10 (4) | | 05:38 | | 05:18 | | 20:12 (5) |
| | 17:03 | 18:00 | 18:49 | 20 | 17:47 (8) | 20:42 | 21 | 19:31 (4) | | 21:30 | | 21:59 | 24 | 20:36 (5) |
| 21 | 08:33 | 07:42 | 06:40 | 17:26 (8) | 06:30 | | 19:10 (4) | | 05:37 | | 05:18 | | 20:12 (5) |
| | 17:05 | 18:01 | 18:51 | 20 | 17:46 (8) | 20:43 | 21 | 19:31 (4) | | 21:32 | | 22:00 | 24 | 20:36 (5) |
| 22 | 08:31 | 07:40 | 06:38 | 17:27 (8) | 06:28 | | 19:11 (4) | | 05:36 | | 05:18 | | 20:13 (5) |
| | 17:07 | 18:03 | 18:53 | 18 | 17:45 (8) | 20:45 | 19 | 19:30 (4) | | 21:33 | | 22:00 | 24 | 20:37 (5) |
| 23 | 08:30 | 07:38 | 06:35 | 17:28 (8) | 06:26 | | 19:12 (4) | | 05:35 | | 05:19 | | 20:13 (5) |
| | 17:08 | 18:05 | 18:54 | 16 | 17:44 (8) | 20:47 | 17 | 19:29 (4) | | 21:34 | | 22:00 | 24 | 20:37 (5) |
| 24 | 08:29 | 07:35 | 06:33 | 17:30 (8) | 06:24 | | 19:13 (4) | | 05:33 | | 05:19 | | 20:13 (5) |
| | 17:10 | 18:07 | 18:56 | 13 | 17:43 (8) | 20:48 | 15 | 19:28 (4) | | 21:36 | | 22:00 | 24 | 20:37 (5) |
| 25 | 08:28 | 07:33 | 06:31 | 17:32 (8) | 06:22 | | 19:14 (4) | | 05:32 | | 05:19 | | 20:14 (5) |
| | 17:12 | 18:09 | 18:58 | 7 | 17:39 (8) | 20:50 | 12 | 19:26 (4) | | 21:37 | | 22:00 | 24 | 20:38 (5) |
| 26 | 08:26 | 07:31 | 06:28 | | 06:20 | | 19:17 (4) | | 05:31 | | 05:20 | | 20:14 (5) |
| | 17:14 | 18:10 | 18:59 | | 20:52 | 5 | 19:22 (4) | | 21:38 | | 22:00 | 24 | 20:38 (5) |
| 27 | 08:25 | 07:29 | 06:26 | | 06:18 | | | | 05:30 | | 05:20 | | 20:15 (5) |
| | 17:16 | 18:12 | 19:01 | | 20:53 | | | | 21:40 | | 22:00 | 23 | 20:38 (5) |
| 28 | 08:24 | 07:27 | 06:24 | | 06:16 | | | | 05:29 | | 05:20 | | 20:14 (5) |
| | 17:17 | 18:14 | 19:03 | | 20:55 | | | | 21:41 | | 22:00 | 24 | 20:38 (5) |
| 29 | 08:22 | | 07:21 | | 06:14 | | | | 05:28 | | 05:21 | | 20:15 (5) |
| | 17:19 | | 20:04 | | 20:57 | | | | 21:42 | | 22:00 | 23 | 20:38 (5) |
| 30 | 08:21 | | 07:19 | | 06:12 | | | | 05:27 | | 05:22 | | 20:15 (5) |
| | 17:21 | | 20:06 | | 20:58 | | | | 21:43 | | 22:00 | 23 | 20:38 (5) |
| 31 | 08:19 | | 07:17 | | | | | | 05:26 | | | | |
| | 17:23 | | 20:08 | | | | | | 21:44 | | | | |
| Potential sun hours | 260 | 278 | 367 | | 416 | | 485 | | 498 | | |
| Total, worst case | | | | 211 | | 264 | | | | 626 | |
| Sun reduction | | | | 0.24 | | 0.35 | | | | 0.30 | |
| Oper. time red. | | | | 1.00 | | 1.00 | | | | 1.00 | |
| Wind dir. red. | | | | 0.68 | | 0.63 | | | | 0.56 | |
| Total reduction | | | | 0.17 | | 0.22 | | | | 0.17 | |
| Total, real | | | | 35 | | 59 | | | | 105 | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
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Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** P - H17

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | July | | | August | | | September | | | October | | | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 05:22 | | 20:16 (5) | 05:59 | | | 06:48 | | 19:20 (4) | 07:37 | | 18:17 (8) | 07:30 | 08:21 |
| | 21:59 | 22 | 20:38 (5) | 21:28 | | | 20:26 | 4 | 19:24 (4) | 19:17 | 3 | 18:20 (8) | 17:11 | 16:31 |
| 2 | 05:23 | | 20:16 (5) | 06:00 | | | 06:50 | | | 07:38 | | | 07:32 | 08:22 |
| | 21:59 | 21 | 20:37 (5) | 21:26 | | | 20:24 | | | 19:15 | | | 17:09 | 16:30 |
| 3 | 05:24 | | 20:17 (5) | 06:02 | | | 06:51 | | | 07:40 | | | 07:34 | 08:24 |
| | 21:59 | 20 | 20:37 (5) | 21:24 | | | 20:22 | | | 19:12 | | | 17:07 | 16:30 |
| 4 | 05:24 | | 20:17 (5) | 06:03 | | | 06:53 | | | 07:42 | | | 07:35 | 08:25 |
| | 21:58 | 20 | 20:37 (5) | 21:23 | | | 20:19 | | | 19:10 | | | 17:06 | 16:29 |
| 5 | 05:25 | | 20:18 (5) | 06:05 | | | 06:54 | | | 07:43 | | | 07:37 | 08:26 |
| | 21:58 | 19 | 20:37 (5) | 21:21 | | | 20:17 | | | 19:08 | | | 17:04 | 16:29 |
| 6 | 05:26 | | 20:18 (5) | 06:06 | | | 06:56 | | | 07:45 | | | 07:39 | 08:28 |
| | 21:57 | 18 | 20:36 (5) | 21:19 | | | 20:15 | | | 19:06 | | | 17:02 | 16:28 |
| 7 | 05:27 | | 20:19 (5) | 06:08 | | | 06:58 | | | 07:47 | | | 07:41 | 08:29 |
| | 21:57 | 17 | 20:36 (5) | 21:17 | | | 20:13 | | | 19:03 | | | 17:01 | 16:28 |
| 8 | 05:28 | | 20:20 (5) | 06:09 | | | 06:59 | | | 07:48 | | | 07:43 | 08:30 |
| | 21:56 | 15 | 20:35 (5) | 21:16 | | | 20:10 | | | 19:01 | | | 16:59 | 16:28 |
| 9 | 05:29 | | 20:21 (5) | 06:11 | | | 07:01 | | | 07:50 | | | 07:44 | 08:31 |
| | 21:55 | 14 | 20:35 (5) | 21:14 | | | 20:08 | | | 18:59 | | | 16:57 | 16:27 |
| 10 | 05:30 | | 20:23 (5) | 06:13 | | | 07:02 | | | 07:52 | | | 07:46 | 08:32 |
| | 21:55 | 11 | 20:34 (5) | 21:12 | | | 20:06 | | | 18:57 | | | 16:56 | 16:27 |
| 11 | 05:31 | | 20:25 (5) | 06:14 | | | 07:04 | | | 07:53 | | | 07:48 | 08:33 |
| | 21:54 | 7 | 20:32 (5) | 21:10 | | | 20:03 | | | 18:54 | | | 16:54 | 16:27 |
| 12 | 05:32 | | | 06:16 | | | 07:06 | | | 07:55 | | | 07:50 | 08:34 |
| | 21:53 | | | 21:08 | | | 20:01 | | | 18:52 | | | 16:53 | 16:27 |
| 13 | 05:33 | | | 06:17 | | | 07:07 | | | 07:57 | | | 07:51 | 08:35 |
| | 21:52 | | | 21:06 | | | 19:59 | | | 18:50 | | | 16:51 | 16:27 |
| 14 | 05:34 | | | 06:19 | | | 07:09 | | | 07:58 | | | 07:53 | 08:36 |
| | 21:51 | | | 21:04 | | | 19:56 | | | 18:48 | | | 16:50 | 16:27 |
| 15 | 05:35 | | | 06:21 | | | 07:11 | | | 08:00 | | | 07:55 | 08:37 |
| | 21:50 | | | 21:02 | | | 19:54 | | | 18:46 | | | 16:48 | 16:27 |
| 16 | 05:36 | | | 06:22 | | | 07:12 | | | 08:02 | | | 07:57 | 08:38 |
| | 21:49 | | | 21:00 | | | 19:52 | | | 18:43 | | | 16:47 | 16:27 |
| 17 | 05:38 | | | 06:24 | | 19:23 (4) | 07:14 | | | 08:04 | | | 07:58 | 08:39 |
| | 21:48 | | | 20:58 | 7 | 19:30 (4) | 19:49 | | | 18:41 | | | 16:45 | 16:27 |
| 18 | 05:39 | | | 06:25 | | 19:19 (4) | 07:15 | | 18:20 (8) | 08:05 | | | 08:00 | 08:40 |
| | 21:47 | | | 20:56 | 13 | 19:32 (4) | 19:47 | 5 | 18:25 (8) | 18:39 | | | 16:44 | 16:27 |
| 19 | 05:40 | | | 06:27 | | 19:18 (4) | 07:17 | | 18:17 (8) | 08:07 | | | 08:02 | 08:40 |
| | 21:46 | | | 20:54 | 15 | 19:33 (4) | 19:45 | 12 | 18:29 (8) | 18:37 | | | 16:43 | 16:28 |
| 20 | 05:41 | | | 06:29 | | 19:16 (4) | 07:19 | | 18:15 (8) | 08:09 | | | 08:03 | 08:41 |
| | 21:45 | | | 20:52 | 18 | 19:34 (4) | 19:42 | 15 | 18:30 (8) | 18:35 | | | 16:42 | 16:28 |
| 21 | 05:43 | | | 06:30 | | 19:16 (4) | 07:20 | | 18:13 (8) | 08:11 | | | 08:05 | 08:42 |
| | 21:44 | | | 20:50 | 19 | 19:35 (4) | 19:40 | 17 | 18:30 (8) | 18:33 | | | 16:40 | 16:29 |
| 22 | 05:44 | | | 06:32 | | 19:14 (4) | 07:22 | | 18:12 (8) | 08:12 | | | 08:07 | 08:42 |
| | 21:42 | | | 20:48 | 21 | 19:35 (4) | 19:38 | 19 | 18:31 (8) | 18:31 | | | 16:39 | 16:29 |
| 23 | 05:45 | | | 06:33 | | 19:14 (4) | 07:23 | | 18:11 (8) | 08:14 | | | 08:08 | 08:43 |
| | 21:41 | | | 20:46 | 21 | 19:35 (4) | 19:35 | 20 | 18:31 (8) | 18:29 | | | 16:38 | 16:29 |
| 24 | 05:47 | | | 06:35 | | 19:14 (4) | 07:25 | | 18:10 (8) | 08:16 | | | 08:10 | 08:43 |
| | 21:40 | | | 20:44 | 22 | 19:36 (4) | 19:33 | 21 | 18:31 (8) | 18:27 | | | 16:37 | 16:30 |
| 25 | 05:48 | | | 06:37 | | 19:13 (4) | 07:27 | | 18:10 (8) | 07:18 | | | 08:12 | 08:43 |
| | 21:38 | | | 20:41 | 22 | 19:35 (4) | 19:31 | 21 | 18:31 (8) | 17:25 | | | 16:36 | 16:31 |
| 26 | 05:50 | | | 06:38 | | 19:13 (4) | 07:28 | | 18:10 (8) | 07:19 | | | 08:13 | 08:44 |
| | 21:37 | | | 20:39 | 22 | 19:35 (4) | 19:28 | 20 | 18:30 (8) | 17:23 | | | 16:35 | 16:31 |
| 27 | 05:51 | | | 06:40 | | 19:13 (4) | 07:30 | | 18:10 (8) | 07:21 | | | 08:15 | 08:44 |
| | 21:36 | | | 20:37 | 21 | 19:34 (4) | 19:26 | 19 | 18:29 (8) | 17:21 | | | 16:34 | 16:32 |
| 28 | 05:53 | | | 06:41 | | 19:14 (4) | 07:32 | | 18:11 (8) | 07:23 | | | 08:16 | 08:44 |
| | 21:34 | | | 20:35 | 19 | 19:33 (4) | 19:24 | 17 | 18:28 (8) | 17:19 | | | 16:33 | 16:33 |
| 29 | 05:54 | | | 06:43 | | 19:14 (4) | 07:33 | | 18:11 (8) | 07:25 | | | 08:18 | 08:44 |
| | 21:33 | | | 20:33 | 17 | 19:31 (4) | 19:22 | 15 | 18:26 (8) | 17:17 | | | 16:33 | 16:34 |
| 30 | 05:56 | | | 06:45 | | 19:15 (4) | 07:35 | | 18:13 (8) | 07:27 | | | 08:19 | 08:45 |
| | 21:31 | | | 20:31 | 15 | 19:30 (4) | 19:19 | 11 | 18:24 (8) | 17:15 | | | 16:32 | 16:35 |
| 31 | 05:57 | | | 06:46 | | 19:16 (4) | | | | 07:28 | | | | 08:45 |
| | 21:29 | | | 20:28 | 11 | 19:27 (4) | | | | 17:13 | | | | 16:36 |
| Potential sun hours | 501 | | | 453 | | | 381 | | | 332 | | | 267 | 244 |
| Total, worst case | | 184 | | | 263 | | | 216 | | | 3 | | | |
| Sun reduction | | 0.27 | | | 0.30 | | | 0.28 | | | 0.24 | | | |
| Oper. time red. | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | | | |
| Wind dir. red. | | 0.56 | | | 0.63 | | | 0.68 | | | 0.68 | | | |
| Total reduction | | 0.15 | | | 0.19 | | | 0.19 | | | 0.16 | | | |
| Total, real | | 27 | | | 49 | | | 42 | | | 0 | | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** Q - H18

## Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:14 | 06:10 | 19:26 (5) | 05:25 | 05:22 | 19:42 (5) | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | 21:00 25 | 19:51 (5) | 21:46 | 21:59 | 21:28 14 | 19:56 (5) | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | 07:12 | 06:08 | 19:27 (5) | 05:24 | 05:23 | 19:41 (5) | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 21:02 25 | 19:52 (5) | 21:47 | 21:59 | 21:26 17 | 19:58 (5) | 20:24 | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | 06:06 | 19:27 (5) | 05:23 | 05:24 | 19:39 (5) | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 | 21:03 24 | 19:51 (5) | 21:48 | 21:59 | 21:24 19 | 19:58 (5) | 20:22 | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:04 | 19:26 (5) | 05:23 | 05:24 | 19:38 (5) | 06:53 | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 25 | 19:51 (5) | 21:49 | 21:58 | 21:23 20 | 19:58 (5) | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | 06:03 | 19:26 (5) | 05:22 | 05:25 | 19:38 (5) | 06:54 | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | 20:16 | 21:07 24 | 19:50 (5) | 21:50 | 21:58 | 21:21 21 | 19:59 (5) | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 19:27 (5) | 05:21 | 05:26 | 19:36 (5) | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:08 24 | 19:51 (5) | 21:51 | 21:57 | 21:19 23 | 19:59 (5) | 20:15 | 19:05 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 19:27 (5) | 05:21 | 05:27 | 19:36 (5) | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 21:10 23 | 19:50 (5) | 21:52 | 21:57 | 21:17 24 | 20:00 (5) | 20:12 | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 05:57 | 19:27 (5) | 05:20 | 05:28 | 19:36 (5) | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | 20:21 | 21:12 22 | 19:49 (5) | 21:53 | 21:56 | 21:16 24 | 20:00 (5) | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | 05:55 | 19:29 (5) | 05:20 | 05:29 | 19:36 (5) | 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 21:13 20 | 19:49 (5) | 21:53 | 21:55 | 21:14 24 | 20:00 (5) | 20:08 | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 19:29 (5) | 05:19 | 05:30 | 19:35 (5) | 07:02 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 18 | 19:47 (5) | 21:54 | 21:55 | 21:12 25 | 20:00 (5) | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 19:31 (5) | 05:19 | 05:31 | 06:14 | 19:36 (5) | 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | 20:26 | 21:16 16 | 19:47 (5) | 21:55 | 21:54 | 21:10 24 | 20:00 (5) | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | 06:50 | 05:50 | 19:32 (5) | 05:19 | 05:32 | 06:16 | 19:35 (5) | 07:06 | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 13 | 19:45 (5) | 21:56 | 21:53 | 21:08 24 | 19:59 (5) | 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:47 | 05:49 | 19:34 (5) | 05:18 | 05:33 | 06:17 | 19:36 (5) | 07:07 | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 21:20 9 | 19:43 (5) | 21:56 | 21:52 | 21:06 23 | 19:59 (5) | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 06:45 | 05:47 | | 05:18 | 05:34 | 06:19 | 19:36 (5) | 07:09 | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 21:21 | | 21:57 | 21:51 | 21:04 22 | 19:58 (5) | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | | 05:18 | 05:35 | 06:20 | 19:37 (5) | 07:11 | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | 20:33 | 21:23 | | 21:57 | 21:50 | 21:02 20 | 19:57 (5) | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | 05:44 | | 05:18 | 05:36 | 06:22 | 19:37 (5) | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | | 21:58 | 21:49 | 21:00 19 | 19:56 (5) | 19:52 | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | | 05:18 | 05:38 | 06:24 | 19:38 (5) | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | 20:37 | 21:26 | | 21:58 | 21:48 | 20:58 17 | 19:55 (5) | 19:49 | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 | | 05:18 | 05:39 | 06:25 | 19:39 (5) | 07:15 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | | 21:59 | 21:47 | 20:56 13 | 19:52 (5) | 19:47 | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | 06:34 | 05:40 | | 05:18 | 05:40 | 06:27 | 19:42 (5) | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | 21:29 | | 21:59 | 21:46 | 20:54 8 | 19:50 (5) | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 05:38 | | 05:18 | 05:41 | 06:29 | | 07:19 | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | 21:30 | | 21:59 | 21:45 | 20:52 | | 19:42 | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | 05:37 | | 05:18 | 05:43 | 06:30 | | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | 21:32 | | 22:00 | 21:44 | 20:50 | | 19:40 | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | 06:28 | 05:36 | | 05:18 | 05:44 | 06:32 | | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | 21:33 | | 22:00 | 21:42 | 20:48 | | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 05:35 | | 05:19 | 05:45 | 06:33 | | 07:23 | 08:14 | 08:08 | 08:43 |
| | 17:08 | 18:05 | 18:54 | 20:47 | 21:34 | | 22:00 | 21:41 | 20:46 | | 19:35 | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | 19:36 (5) 05:33 | | 05:19 | 05:47 | 06:35 | | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 9 | 19:45 (5) 21:36 | | 22:00 | 21:40 | 20:44 | | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 19:33 (5) 05:32 | | 05:19 | 05:48 | 06:37 | | 07:27 | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 14 | 19:47 (5) 21:37 | | 22:00 | 21:38 | 20:41 | | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 06:20 | 19:31 (5) 05:31 | | 05:20 | 05:50 | 06:38 | | 07:28 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | 20:52 17 | 19:48 (5) 21:38 | | 22:00 | 21:37 | 20:39 | | 19:28 | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 19:30 (5) 05:30 | | 05:20 | 05:51 | 06:40 | | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 | 20:53 19 | 19:49 (5) 21:40 | | 22:00 | 21:36 | 20:37 | | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 19:29 (5) 05:29 | | 05:20 | 05:53 | 06:41 | | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 21 | 19:50 (5) 21:41 | | 22:00 | 21:34 | 20:35 | | 19:24 | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 06:14 | 19:28 (5) 05:28 | | 05:21 | 05:54 | 06:43 | | 07:33 | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 20:57 22 | 19:50 (5) 21:42 | | 22:00 | 21:33 | 20:33 | | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 19:27 (5) 05:27 | | 05:22 | 05:56 19:46 (5) | 06:45 | | 07:35 | 07:27 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:58 24 | 19:51 (5) 21:43 | | 22:00 | 21:31 5 19:51 (5) | 20:31 | | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | 05:26 | | | 05:57 19:44 (5) | 06:46 | | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:44 | | | 21:29 11 19:55 (5) | 20:28 | | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 244 |
| Total, worst case | | | | 126 | 268 | | 16 | 381 | | | | |
| Sun reduction | | | | 0.35 | 0.37 | | 0.27 | 0.30 | | | | |
| Oper. time red. | | | | 1.00 | 1.00 | | 1.00 | 1.00 | | | | |
| Wind dir. red. | | | | 0.60 | 0.60 | | 0.60 | 0.60 | | | | |
| Total reduction | | | | 0.21 | 0.22 | | 0.16 | 0.18 | | | | |
| Total, real | | | | 27 | 59 | | 3 | 68 | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
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+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** R - H19

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | | April | | May | June | July | August | | September | | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | | 07:14 | | 06:10 | 05:25 | 05:22 | 05:59 | | 06:48 | | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | | 20:10 | | 21:00 | 21:46 | 21:59 | 21:28 | | 20:26 | | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | | 07:12 | | 06:08 | 05:24 | 05:23 | 06:00 | | 06:50 | | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | | 20:11 | | 21:02 | 21:47 | 21:59 | 21:26 | | 20:24 | | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | | 07:10 | | 06:06 | 05:23 | 05:24 | 06:02 | | 06:51 | | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | | 20:13 | | 21:03 | 21:48 | 21:59 | 21:24 | | 20:22 | | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | | 07:08 | | 06:04 | 05:23 | 05:24 | 06:03 | | 06:53 | | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | | 20:15 | | 21:05 | 21:49 | 21:58 | 21:23 | | 20:19 | | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | | 07:05 | | 06:03 | 05:22 | 05:25 | 06:05 | | 06:54 | | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | | 20:16 | | 21:07 | 21:50 | 21:58 | 21:21 | | 20:17 | | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | | 07:03 | | 06:01 | 05:21 | 05:26 | 06:06 | | 06:56 | | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | | 20:18 | | 21:08 | 21:51 | 21:57 | 21:19 | | 20:15 | | 19:05 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | | 07:01 | | 05:59 | 05:21 | 05:27 | 06:08 | | 06:58 | | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | | 20:20 | | 21:10 | 21:52 | 21:57 | 21:17 | | 20:12 | | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | | 06:59 | | 05:57 | 05:20 | 05:28 | 06:09 | | 06:59 | | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | | 20:21 | | 21:12 | 21:53 | 21:56 | 21:16 | | 20:10 | | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | | 06:56 | | 05:55 | 05:20 | 05:29 | 06:11 | | 07:01 | | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | | 20:23 | | 21:13 | 21:53 | 21:55 | 21:14 | | 20:08 | | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | | 06:54 | | 05:54 | 05:19 | 05:30 | 06:13 | | 07:02 | | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | | 20:25 | | 21:15 | 21:54 | 21:55 | 21:12 | | 20:06 | | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | | 06:52 | | 05:52 | 05:19 | 05:31 | 06:14 | | 07:04 | | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | | 20:26 | | 21:16 | 21:55 | 21:54 | 21:10 | | 20:03 | | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | | 06:50 | | 05:50 | 05:19 | 05:32 | 06:16 | | 07:06 | | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | | 20:28 | | 21:18 | 21:56 | 21:53 | 21:08 | | 20:01 | | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | | 06:47 | 19:21 (5) | 05:49 | 05:18 | 05:33 | 06:17 | 19:26 (5) | 07:07 | 18:40 (4) | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | | 20:30 | 9 19:30 (5) | 21:20 | 21:56 | 21:52 | 21:06 | 10 19:36 (5) | 19:59 | 7 18:47 (4) | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | | 06:45 | 19:18 (5) | 05:47 | 05:18 | 05:34 | 06:19 | 19:23 (5) | 07:09 | 18:37 (4) | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | | 20:32 | 14 19:32 (5) | 21:21 | 21:57 | 21:51 | 21:04 | 14 19:37 (5) | 19:56 | 12 18:49 (4) | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | | 06:43 | 19:16 (5) | 05:46 | 05:18 | 05:35 | 06:20 | 19:22 (5) | 07:11 | 18:35 (4) | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | | 20:33 | 18 19:34 (5) | 21:23 | 21:57 | 21:50 | 21:02 | 17 19:39 (5) | 19:54 | 15 18:50 (4) | 18:46 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | | 06:41 | 19:15 (5) | 05:44 | 05:18 | 05:36 | 06:22 | 19:20 (5) | 07:12 | 18:34 (4) | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | | 20:35 | 20 19:35 (5) | 21:24 | 21:58 | 21:49 | 21:00 | 19 19:39 (5) | 19:52 | 16 18:50 (4) | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | | 06:39 | 19:14 (5) | 05:43 | 05:18 | 05:38 | 06:24 | 19:19 (5) | 07:14 | 18:33 (4) | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | | 20:37 | 22 19:36 (5) | 21:26 | 21:58 | 21:48 | 20:58 | 22 19:41 (5) | 19:49 | 18 18:51 (4) | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | | 06:37 | 19:13 (5) | 05:41 | 05:18 | 05:39 | 06:25 | 19:18 (5) | 07:15 | 18:32 (4) | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | | 20:38 | 23 19:36 (5) | 21:27 | 21:59 | 21:47 | 20:56 | 22 19:40 (5) | 19:47 | 18 18:50 (4) | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | 17:55 (4) | 06:34 | 19:12 (5) | 05:40 | 05:18 | 05:40 | 06:27 | 19:17 (5) | 07:17 | 18:32 (4) | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 1 17:56 (4) | 20:40 | 25 19:37 (5) | 21:29 | 21:59 | 21:46 | 20:54 | 24 19:41 (5) | 19:45 | 18 18:50 (4) | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 17:50 (4) | 06:32 | 19:12 (5) | 05:38 | 05:18 | 05:41 | 06:29 | 19:16 (5) | 07:19 | 18:32 (4) | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 11 18:01 (4) | 20:42 | 25 19:37 (5) | 21:30 | 21:59 | 21:45 | 20:52 | 25 19:41 (5) | 19:42 | 18 18:50 (4) | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 17:47 (4) | 06:30 | 19:12 (5) | 05:37 | 05:18 | 05:43 | 06:30 | 19:16 (5) | 07:20 | 18:32 (4) | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 14 18:01 (4) | 20:43 | 25 19:37 (5) | 21:32 | 22:00 | 21:44 | 20:50 | 25 19:41 (5) | 19:40 | 16 18:48 (4) | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | 17:46 (4) | 06:28 | 19:11 (5) | 05:36 | 05:18 | 05:44 | 06:32 | 19:15 (5) | 07:22 | 18:33 (4) | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 16 18:02 (4) | 20:45 | 25 19:36 (5) | 21:33 | 22:00 | 21:42 | 20:48 | 25 19:40 (5) | 19:38 | 14 18:47 (4) | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 17:46 (4) | 06:26 | 19:11 (5) | 05:35 | 05:19 | 05:45 | 06:33 | 19:16 (5) | 07:23 | 18:33 (4) | 08:14 | 08:08 | 08:43 |
| | 17:08 | 18:05 | 18:54 | 17 18:03 (4) | 20:47 | 25 19:36 (5) | 21:34 | 22:00 | 21:41 | 20:46 | 24 19:40 (5) | 19:35 | 12 18:45 (4) | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | 17:45 (4) | 06:24 | 19:12 (5) | 05:33 | 05:19 | 05:47 | 06:35 | 19:16 (5) | 07:25 | 18:36 (4) | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 19 18:04 (4) | 20:48 | 23 19:35 (5) | 21:36 | 22:00 | 21:40 | 20:44 | 24 19:40 (5) | 19:33 | 6 18:42 (4) | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 17:44 (4) | 06:22 | 19:12 (5) | 05:32 | 05:19 | 05:48 | 06:37 | 19:16 (5) | 07:27 | | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 19 18:03 (4) | 20:50 | 23 19:35 (5) | 21:37 | 22:00 | 21:38 | 20:41 | 23 19:39 (5) | 19:31 | | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 17:45 (4) | 06:20 | 19:13 (5) | 05:31 | 05:20 | 05:50 | 06:38 | 19:17 (5) | 07:28 | | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | 17 18:02 (4) | 20:52 | 21 19:34 (5) | 21:38 | 22:00 | 21:37 | 20:39 | 22 19:39 (5) | 19:28 | | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 17:45 (4) | 06:18 | 19:13 (5) | 05:30 | 05:20 | 05:51 | 06:40 | 19:17 (5) | 07:30 | | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 | 17 18:02 (4) | 20:53 | 20 19:33 (5) | 21:40 | 22:00 | 21:36 | 20:37 | 20 19:37 (5) | 19:26 | | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 17:45 (4) | 06:16 | 19:14 (5) | 05:29 | 05:20 | 05:53 | 06:41 | 19:18 (5) | 07:32 | | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 15 18:00 (4) | 20:55 | 17 19:31 (5) | 21:41 | 22:00 | 21:34 | 20:35 | 18 19:36 (5) | 19:24 | | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 18:46 (4) | 06:14 | 19:16 (5) | 05:28 | 05:21 | 05:54 | 06:43 | 19:19 (5) | 07:33 | | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 13 18:59 (4) | 20:57 | 13 19:29 (5) | 21:42 | 22:00 | 21:33 | 20:33 | 14 19:33 (5) | 19:22 | | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 18:49 (4) | 06:12 | 19:18 (5) | 05:27 | 05:22 | 05:56 | 06:45 | 19:22 (5) | 07:35 | | 07:27 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 8 18:57 (4) | 20:58 | 8 19:26 (5) | 21:43 | 22:00 | 21:31 | 20:31 | 8 19:30 (5) | 19:19 | | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | | | 05:26 | | 05:57 | 06:46 | | | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | | | 21:44 | | 21:29 | 20:28 | | | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | | 416 | | 485 | 498 | 501 | 453 | | 381 | | 332 | 267 | 244 |
| Total, worst case | | | | 167 | | 356 | | | | | 356 | | 170 | | | |
| Sun reduction | | | | 0.24 | | 0.35 | | | | | 0.30 | | 0.28 | | | |
| Oper. time red. | | | | 1.00 | | 1.00 | | | | | 1.00 | | 1.00 | | | |
| Wind dir. red. | | | | 0.67 | | 0.63 | | | | | 0.63 | | 0.67 | | | |
| Total reduction | | | | 0.16 | | 0.22 | | | | | 0.19 | | 0.19 | | | |
| Total, real | | | | 27 | | 79 | | | | | 66 | | 32 | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
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kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** S - H20

## Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:14 | 06:10 | 05:25 | 05:22 | 05:59 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | 07:12 | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | 06:06 | 05:23 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 | 21:03 | 21:48 | 21:59 | 21:25 | 20:22 | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:04 | 05:23 | 05:24 | 06:03 | 06:53 | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | 06:03 | 05:22 | 05:25 | 06:05 | 06:54 | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:21 | 05:26 | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 19:06 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 21:10 | 21:52 | 21:57 | 21:18 | 20:13 | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 19:14 (5) 05:57 | 05:20 | 05:28 | 06:09 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | 20:21 12 | 19:26 (5) 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | 19:11 (5) 05:55 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 18 | 19:29 (5) 21:13 | 21:53 | 21:56 | 21:14 | 20:08 | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 19:10 (5) 05:54 | 05:19 | 05:30 | 06:13 | 07:02 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 20 | 19:30 (5) 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 19:08 (5) 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | 20:26 24 | 19:32 (5) 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | 06:50 | 19:07 (5) 05:50 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 26 | 19:33 (5) 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:47 | 19:05 (5) 05:49 | 05:18 | 05:33 | 06:17 | 07:07 | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 27 | 19:32 (5) 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 06:45 | 19:05 (5) 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:58 17:37 (8) | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | 20:32 28 | 19:33 (5) 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 18:48 4 17:41 (8) | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 19:04 (5) 05:46 | 05:18 | 05:35 | 06:20 | 07:11 | 08:00 17:33 (8) | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | 20:33 29 | 19:33 (5) 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | 18:46 11 17:44 (8) | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 17:02 (8) | 06:51 | 06:41 | 19:04 (5) 05:44 | 05:18 | 05:36 | 06:22 19:18 (5) | 07:12 | 08:02 17:32 (8) | 07:57 | 08:38 |
| | 16:57 | 17:52 10 17:12 (8) | 18:42 | 20:35 29 | 19:33 (5) 21:24 | 21:58 | 21:49 | 21:00 10 19:28 (5) | 19:52 | 18:43 14 17:46 (8) | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 17:01 (8) | 06:49 | 06:39 | 19:04 (5) 05:43 | 05:18 | 05:38 | 06:24 19:16 (5) | 07:14 | 08:04 17:29 (8) | 07:58 | 08:39 |
| | 16:58 | 17:54 13 17:14 (8) | 18:44 | 20:37 29 | 19:33 (5) 21:26 | 21:58 | 21:48 | 20:58 15 19:31 (5) | 19:49 | 18:41 17 17:46 (8) | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 16:59 (8) | 06:47 | 06:37 | 19:04 (5) 05:41 | 05:18 | 05:39 | 06:25 19:13 (5) | 07:15 | 08:05 17:29 (8) | 08:00 | 08:40 |
| | 17:00 | 17:56 16 17:15 (8) | 18:46 | 20:38 29 | 19:33 (5) 21:27 | 21:59 | 21:47 | 20:56 19 19:32 (5) | 19:47 | 18:39 17 17:46 (8) | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 16:59 (8) | 06:44 | 06:34 | 19:04 (5) 05:40 | 05:18 | 05:40 | 06:27 19:12 (5) | 07:17 | 08:07 17:28 (8) | 08:02 | 08:40 |
| | 17:02 | 17:58 17 17:16 (8) | 18:47 | 20:40 28 | 19:32 (5) 21:29 | 21:59 | 21:46 | 20:54 22 19:34 (5) | 19:45 | 18:37 19 17:47 (8) | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 16:58 (8) | 06:42 | 06:32 | 19:04 (5) 05:38 | 05:18 | 05:41 | 06:29 19:10 (5) | 07:19 | 08:09 17:28 (8) | 08:03 | 08:41 |
| | 17:03 | 18:00 18 17:16 (8) | 18:49 | 20:42 28 | 19:32 (5) 21:30 | 22:00 | 21:45 | 20:52 24 19:34 (5) | 19:42 | 18:35 19 17:47 (8) | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 16:58 (8) | 06:40 | 06:30 | 19:05 (5) 05:37 | 05:18 | 05:43 | 06:30 19:10 (5) | 07:20 | 08:11 17:28 (8) | 08:05 | 08:42 |
| | 17:05 | 18:01 18 17:16 (8) | 18:51 | 20:43 26 | 19:31 (5) 21:32 | 22:00 | 21:44 | 20:50 25 19:35 (5) | 19:40 | 18:33 19 17:47 (8) | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 16:58 (8) | 06:37 | 06:28 | 19:05 (5) 05:36 | 05:18 | 05:44 | 06:32 19:08 (5) | 07:22 | 08:12 17:29 (8) | 08:07 | 08:42 |
| | 17:07 | 18:03 19 17:17 (8) | 18:53 | 20:45 25 | 19:30 (5) 21:33 | 22:00 | 21:42 | 20:48 27 19:35 (5) | 19:38 | 18:31 17 17:46 (8) | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 16:57 (8) | 06:35 | 06:26 | 19:06 (5) 05:35 | 05:19 | 05:45 | 06:33 19:08 (5) | 07:23 | 08:14 17:29 (8) | 08:08 | 08:43 |
| | 17:08 | 18:05 18 17:15 (8) | 18:54 | 20:47 23 | 19:29 (5) 21:34 | 22:00 | 21:41 | 20:46 28 19:36 (5) | 19:35 | 18:29 17 17:46 (8) | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 16:58 (8) | 06:33 | 06:24 | 19:07 (5) 05:33 | 05:19 | 05:47 | 06:35 19:08 (5) | 07:25 | 08:16 17:29 (8) | 08:10 | 08:43 |
| | 17:10 | 18:07 17 17:15 (8) | 18:56 | 20:48 21 | 19:28 (5) 21:36 | 22:00 | 21:40 | 20:44 28 19:36 (5) | 19:33 | 18:27 15 17:44 (8) | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 16:59 (8) | 06:31 | 06:22 | 19:08 (5) 05:32 | 05:19 | 05:48 | 06:37 19:07 (5) | 07:27 | 07:18 16:30 (8) | 08:12 | 08:43 |
| | 17:12 | 18:09 15 17:14 (8) | 18:58 | 20:50 18 | 19:26 (5) 21:37 | 22:00 | 21:38 | 20:41 28 19:35 (5) | 19:31 | 17:25 13 16:43 (8) | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 17:00 (8) | 06:28 | 06:20 | 19:10 (5) 05:31 | 05:20 | 05:50 | 06:38 19:07 (5) | 07:28 | 07:19 16:33 (8) | 08:13 | 08:44 |
| | 17:14 | 18:10 13 17:13 (8) | 18:59 | 20:52 14 | 19:24 (5) 21:38 | 22:00 | 21:37 | 20:39 29 19:36 (5) | 19:28 | 17:23 7 16:40 (8) | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 17:02 (8) | 06:26 | 06:18 | 19:13 (5) 05:30 | 05:20 | 05:51 | 06:40 19:06 (5) | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 9 17:11 (8) | 19:01 | 20:53 8 | 19:21 (5) 21:40 | 22:00 | 21:36 | 20:37 29 19:35 (5) | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:20 | 05:53 | 06:41 19:06 (5) | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 29 19:35 (5) | 19:24 | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 19:06 (5) | 07:33 | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 28 19:34 (5) | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:56 | 06:45 19:06 (5) | 07:35 | 07:27 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:58 | 21:43 | 22:00 | 21:31 | 20:31 27 19:33 (5) | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | 05:26 | | 05:57 | 06:46 19:06 (5) | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:44 | | 21:29 | 20:28 25 19:31 (5) | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 244 |
| Total, worst case | | 183 | | 462 | | | | 393 | 75 | 189 | | |
| Sun reduction | | 0.21 | | 0.35 | | | | 0.30 | 0.28 | 0.24 | | |
| Oper. time red. | | 1.00 | | 1.00 | | | | 1.00 | 1.00 | 1.00 | | |
| Wind dir. red. | | 0.70 | | 0.64 | | | | 0.64 | 0.64 | 0.70 | | |
| Total reduction | | 0.14 | | 0.23 | | | | 0.19 | 0.18 | 0.17 | | |
| Total, real | | 26 | | 104 | | | | 74 | 14 | 31 | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** T - H21

## Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:14 | 19:03 (5) | 06:10 | 05:25 | 05:22 | 05:59 | 06:48 | 18:54 (5) | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 15 | 19:18 (5) | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 26 | 19:20 (5) | 19:17 | 17:11 | 16:31 |
| 2 | 08:45 | 08:16 | 07:23 | 07:12 | 19:01 (5) | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | 18:52 (5) | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 19 | 19:20 (5) | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 28 | 19:20 (5) | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | 19:00 (5) | 06:06 | 05:23 | 05:24 | 06:02 | 06:51 | 18:52 (5) | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 21 | 19:21 (5) | 21:03 | 21:48 | 21:59 | 21:25 | 20:22 28 | 19:20 (5) | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 18:57 (5) | 06:04 | 05:23 | 05:24 | 06:03 | 06:53 | 18:51 (5) | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 24 | 19:21 (5) | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 28 | 19:19 (5) | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | 18:57 (5) | 06:03 | 05:22 | 05:25 | 06:05 | 06:54 | 18:52 (5) | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | 20:16 25 | 19:22 (5) | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 27 | 19:19 (5) | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 18:56 (5) | 06:01 | 05:21 | 05:26 | 06:06 | 06:56 | 18:52 (5) | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 26 | 19:22 (5) | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 26 | 19:18 (5) | 19:06 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 18:56 (5) | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 18:52 (5) | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 27 | 19:23 (5) | 21:10 | 21:52 | 21:57 | 21:18 | 20:12 25 | 19:17 (5) | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 18:54 (5) | 05:57 | 05:20 | 05:28 | 06:09 | 06:59 | 18:53 (5) | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | 20:21 28 | 19:22 (5) | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 23 | 19:16 (5) | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | 18:54 (5) | 05:55 | 05:20 | 05:29 | 06:11 | 07:01 | 18:53 (5) | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 28 | 19:22 (5) | 21:13 | 21:53 | 21:56 | 21:14 | 20:08 21 | 19:14 (5) | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 18:54 (5) | 05:54 | 05:19 | 05:30 | 06:13 | 07:02 | 18:54 (5) | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 28 | 19:22 (5) | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 19 | 19:13 (5) | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 18:55 (5) | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 18:55 (5) | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | 20:26 26 | 19:21 (5) | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 15 | 19:10 (5) | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | 06:50 | 18:55 (5) | 05:50 | 05:19 | 05:32 | 06:16 | 07:06 | 18:58 (5) | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 26 | 19:21 (5) | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 9 | 19:07 (5) | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:47 | 18:55 (5) | 05:49 | 05:18 | 05:33 | 06:17 | 07:07 | | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 24 | 19:19 (5) | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 06:45 | 18:56 (5) | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | 20:32 22 | 19:18 (5) | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 18:57 (5) | 05:46 | 05:18 | 05:35 | 06:20 | 07:11 | | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | 20:33 19 | 19:16 (5) | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | | 18:46 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | 18:58 (5) | 05:44 | 05:18 | 05:36 | 06:22 | 07:12 | | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 17 | 19:15 (5) | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 19:00 (5) | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | 20:37 12 | 19:12 (5) | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | | 05:41 | 05:18 | 05:39 | 06:25 | 07:15 | | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | 06:34 | | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | | 05:38 | 05:18 | 05:41 | 06:29 | 07:19 | | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | | 21:30 | 22:00 | 21:45 | 20:52 | 19:42 | | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | 06:28 | | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 | | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | | 21:33 | 22:00 | 21:42 | 20:48 | 19:38 | | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | | 05:35 | 05:19 | 05:45 | 06:33 | 07:23 | | 08:14 | 08:08 | 08:43 |
| | 17:08 | 18:05 | 18:54 | 20:47 | | 21:34 | 22:00 | 21:41 | 20:46 | 19:35 | | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | | 05:33 | 05:19 | 05:47 | 06:35 | 07:25 | | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | | 05:32 | 05:19 | 05:48 | 06:37 | 19:07 (5) | 07:27 | | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | | 21:37 | 22:00 | 21:38 | 20:41 4 | 19:11 (5) | 19:31 | | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 06:20 | | 05:31 | 05:20 | 05:50 | 06:38 | 19:03 (5) | 07:28 | | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | 20:52 | | 21:38 | 22:00 | 21:37 | 20:39 12 | 19:15 (5) | 19:28 | | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | | 05:30 | 05:20 | 05:51 | 06:40 | 19:00 (5) | 07:30 | | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 | 20:53 | | 21:40 | 22:00 | 21:36 | 20:37 17 | 19:17 (5) | 19:26 | | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | | 05:29 | 05:20 | 05:53 | 06:41 | 18:58 (5) | 07:32 | | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | | 21:41 | 22:00 | 21:34 | 20:35 20 | 19:18 (5) | 19:24 | | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 06:14 | | 05:28 | 05:21 | 05:54 | 06:43 | 18:56 (5) | 07:33 | | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 20:57 | | 21:42 | 22:00 | 21:33 | 20:33 23 | 19:19 (5) | 19:22 | | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | | 05:27 | 05:22 | 05:56 | 06:45 | 18:56 (5) | 07:35 | | 07:27 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:58 | | 21:43 | 22:00 | 21:31 | 20:31 24 | 19:20 (5) | 19:19 | | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 19:07 (5) | | | 05:26 | | 05:57 | 06:46 | 18:54 (5) | | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 7 19:14 (5) | | | 21:44 | | 21:29 | 20:28 26 | 19:20 (5) | | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | | 485 | 498 | 501 | 453 | 381 | | 332 | 267 | 244 |
| Total, worst case | | | 7 | 387 | | | | | 126 | 275 | | | | |
| Sun reduction | | | 0.24 | 0.35 | | | | | 0.30 | 0.28 | | | | |
| Oper. time red. | | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | | | | |
| Wind dir. red. | | | 0.65 | 0.65 | | | | | 0.65 | 0.65 | | | | |
| Total reduction | | | 0.16 | 0.23 | | | | | 0.19 | 0.18 | | | | |
| Total, real | | | 1 | 89 | | | | | 24 | 51 | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** U - H22

## Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | | May | June | July | August | | September | | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:14 | | 19:12 (5) | 06:10 | 05:25 | 05:22 | 05:59 | 06:48 | | 19:00 (5) | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:24 | 18:16 | 20:10 | 5 | 19:17 (5) | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | 23 | 19:23 (5) | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | 07:12 | | 19:08 (5) | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | | 18:58 (5) | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 13 | 19:21 (5) | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 24 | 19:22 (5) | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | | 19:06 (5) | 06:06 | 05:23 | 05:24 | 06:02 | 06:51 | | 18:58 (5) | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 | 17 | 19:23 (5) | 21:03 | 21:48 | 21:59 | 21:24 | 20:22 | 24 | 19:22 (5) | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | | 19:04 (5) | 06:04 | 05:23 | 05:24 | 06:03 | 06:53 | | 18:57 (5) | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 19 | 19:23 (5) | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 24 | 19:21 (5) | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | | 19:03 (5) | 06:03 | 05:22 | 05:25 | 06:05 | 06:54 | | 18:58 (5) | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | 20:16 | 21 | 19:24 (5) | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 23 | 19:21 (5) | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | | 19:02 (5) | 06:01 | 05:21 | 05:26 | 06:06 | 06:56 | | 18:58 (5) | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 23 | 19:25 (5) | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 23 | 19:21 (5) | 19:05 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | | 19:02 (5) | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | | 18:58 (5) | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 23 | 19:25 (5) | 21:10 | 21:52 | 21:57 | 21:17 | 20:12 | 21 | 19:19 (5) | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | | 19:00 (5) | 05:57 | 05:20 | 05:28 | 06:09 | 06:59 | | 18:59 (5) | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | 20:21 | 24 | 19:24 (5) | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 20 | 19:19 (5) | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | | 19:00 (5) | 05:55 | 05:20 | 05:29 | 06:11 | 07:01 | | 18:59 (5) | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 24 | 19:24 (5) | 21:13 | 21:53 | 21:56 | 21:14 | 20:08 | 17 | 19:16 (5) | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | | 19:00 (5) | 05:54 | 05:19 | 05:30 | 06:13 | 07:02 | | 19:01 (5) | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 24 | 19:24 (5) | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 13 | 19:14 (5) | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | | 19:01 (5) | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | | 19:04 (5) | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | 20:26 | 23 | 19:24 (5) | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 6 | 19:10 (5) | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | 06:50 | | 19:01 (5) | 05:50 | 05:19 | 05:32 | 06:16 | 07:06 | | | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 22 | 19:23 (5) | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | | | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:47 | | 19:01 (5) | 05:49 | 05:18 | 05:33 | 06:17 | 07:07 | | | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 20 | 19:21 (5) | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | | | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 06:45 | | 19:02 (5) | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | | | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 18 | 19:20 (5) | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | | | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | | 19:03 (5) | 05:46 | 05:18 | 05:35 | 06:20 | 07:11 | | | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | 20:33 | 16 | 19:19 (5) | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | | | 18:46 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | | 19:05 (5) | 05:44 | 05:18 | 05:36 | 06:22 | 07:12 | | | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 11 | 19:16 (5) | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | | | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | | | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | | | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | 20:37 | | | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | | | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | | | 05:41 | 05:18 | 05:39 | 06:25 | 07:15 | | | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | | | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | | | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | 06:34 | | | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | | | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | | | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | | | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | | | 05:38 | 05:18 | 05:41 | 06:29 | 07:19 | | | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | | | 21:30 | 21:59 | 21:45 | 20:52 | 19:42 | | | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | | | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | | | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | | | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | | | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | 06:28 | | | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 | | | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | | | 21:33 | 22:00 | 21:42 | 20:48 | 19:38 | | | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | | | 05:35 | 05:19 | 05:45 | 06:33 | 07:23 | | | 08:14 | 08:08 | 08:43 |
| | 17:08 | 18:05 | 18:54 | 20:47 | | | 21:34 | 22:00 | 21:41 | 20:46 | 19:35 | | | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | | | 05:33 | 05:19 | 05:47 | 06:35 | 07:25 | | | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | | | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | | | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | | | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | | | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | | | 21:37 | 22:00 | 21:38 | 20:41 | 19:31 | | | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 06:20 | | | 05:31 | 05:20 | 05:50 | 06:38 | 19:13 (5) | | 07:28 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | 20:52 | | | 21:38 | 22:00 | 21:37 | 20:39 | 2 | 19:15 (5) | 19:28 | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | | | 05:30 | 05:20 | 05:51 | 06:40 | | 19:07 (5) | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 | 20:53 | | | 21:40 | 22:00 | 21:36 | 20:37 | 11 | 19:18 (5) | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | | | 05:29 | 05:20 | 05:53 | 06:41 | | 19:05 (5) | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | | | 21:41 | 22:00 | 21:34 | 20:35 | 15 | 19:20 (5) | 19:24 | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 06:14 | | | 05:28 | 05:21 | 05:54 | 06:43 | | 19:03 (5) | 07:33 | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 20:57 | | | 21:42 | 22:00 | 21:33 | 20:33 | 18 | 19:21 (5) | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | | | 05:27 | 05:22 | 05:55 | 06:45 | | 19:02 (5) | 07:35 | 07:27 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:58 | | | 21:43 | 22:00 | 21:31 | 20:31 | 20 | 19:22 (5) | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | | | 05:26 | | 05:57 | 06:46 | | 19:00 (5) | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | | | 21:44 | | 21:29 | 20:28 | 22 | 19:22 (5) | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | | | 485 | 498 | 501 | 453 | | | 381 | 332 | 267 | 244 |
| Total, worst case | | | | | 303 | | | | | | 88 | | 218 | | | |
| Sun reduction | | | | | 0.35 | | | | | | 0.30 | | 0.28 | | | |
| Oper. time red. | | | | | 1.00 | | | | | | 1.00 | | 1.00 | | | |
| Wind dir. red. | | | | | 0.65 | | | | | | 0.65 | | 0.65 | | | |
| Total reduction | | | | | 0.23 | | | | | | 0.19 | | 0.18 | | | |
| Total, real | | | | | 70 | | | | | | 17 | | 40 | | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** V - H23

## Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | | May | June | July | August | | September | | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:14 | | 06:10 | 05:25 | 05:22 | 05:58 | | 06:48 | | 19:03 (5) | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:24 | 18:16 | 20:10 | | 21:00 | 21:46 | 21:59 | 21:28 | | 20:26 | 21 | 19:24 (5) | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | 07:12 | 19:16 (5) | 06:08 | 05:24 | 05:23 | 06:00 | | 06:50 | | 19:02 (5) | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 3 19:19 (5) | 21:02 | 21:47 | 21:59 | 21:26 | | 20:24 | 22 | 19:24 (5) | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | 19:11 (5) | 06:06 | 05:23 | 05:24 | 06:02 | | 06:51 | | 19:02 (5) | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 | 12 19:23 (5) | 21:03 | 21:48 | 21:59 | 21:24 | | 20:22 | 22 | 19:24 (5) | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 19:08 (5) | 06:04 | 05:23 | 05:24 | 06:03 | | 06:53 | | 19:01 (5) | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 16 19:24 (5) | 21:05 | 21:49 | 21:58 | 21:23 | | 20:19 | 22 | 19:23 (5) | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | 19:07 (5) | 06:03 | 05:22 | 05:25 | 06:05 | | 06:54 | | 19:01 (5) | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | 20:16 | 18 19:25 (5) | 21:07 | 21:50 | 21:58 | 21:21 | | 20:17 | 22 | 19:23 (5) | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 19:06 (5) | 06:01 | 05:21 | 05:26 | 06:06 | | 06:56 | | 19:02 (5) | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 20 19:26 (5) | 21:08 | 21:51 | 21:57 | 21:19 | | 20:15 | 20 | 19:22 (5) | 19:05 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 19:05 (5) | 05:59 | 05:21 | 05:27 | 06:08 | | 06:58 | | 19:02 (5) | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 22 19:27 (5) | 21:10 | 21:52 | 21:57 | 21:17 | | 20:12 | 18 | 19:20 (5) | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 19:04 (5) | 05:57 | 05:20 | 05:28 | 06:09 | | 06:59 | | 19:03 (5) | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | 20:21 | 22 19:26 (5) | 21:12 | 21:53 | 21:56 | 21:16 | | 20:10 | 16 | 19:19 (5) | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | 19:04 (5) | 05:55 | 05:20 | 05:29 | 06:11 | | 07:01 | | 19:04 (5) | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 22 19:26 (5) | 21:13 | 21:53 | 21:55 | 21:14 | | 20:08 | 12 | 19:16 (5) | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 19:04 (5) | 05:54 | 05:19 | 05:30 | 06:12 | | 07:02 | | 19:08 (5) | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 22 19:26 (5) | 21:15 | 21:54 | 21:55 | 21:12 | | 20:06 | 5 | 19:13 (5) | 18:56 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 19:04 (5) | 05:52 | 05:19 | 05:31 | 06:14 | | 07:04 | | | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | 20:26 | 22 19:26 (5) | 21:16 | 21:55 | 21:54 | 21:10 | | 20:03 | | | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | 06:50 | 19:04 (5) | 05:50 | 05:19 | 05:32 | 06:16 | | 07:06 | | | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21 19:25 (5) | 21:18 | 21:56 | 21:53 | 21:08 | | 20:01 | | | 18:52 | 16:52 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:47 | 19:04 (5) | 05:49 | 05:18 | 05:33 | 06:17 | | 07:07 | | | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 19 19:23 (5) | 21:20 | 21:56 | 21:52 | 21:06 | | 19:59 | | | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 06:45 | 19:05 (5) | 05:47 | 05:18 | 05:34 | 06:19 | | 07:09 | | | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 17 19:22 (5) | 21:21 | 21:57 | 21:51 | 21:04 | | 19:56 | | | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 19:06 (5) | 05:46 | 05:18 | 05:35 | 06:20 | | 07:11 | | | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | 20:33 | 15 19:21 (5) | 21:23 | 21:57 | 21:50 | 21:02 | | 19:54 | | | 18:45 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | 19:08 (5) | 05:44 | 05:18 | 05:36 | 06:22 | | 07:12 | | | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 10 19:18 (5) | 21:24 | 21:58 | 21:49 | 21:00 | | 19:52 | | | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | | 05:43 | 05:18 | 05:38 | 06:24 | | 07:14 | | | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | 20:37 | | 21:26 | 21:58 | 21:48 | 20:58 | | 19:49 | | | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | | 05:41 | 05:18 | 05:39 | 06:25 | | 07:15 | | | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | | 21:27 | 21:59 | 21:47 | 20:56 | | 19:47 | | | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | 06:34 | | 05:40 | 05:18 | 05:40 | 06:27 | | 07:17 | | | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | | 21:29 | 21:59 | 21:46 | 20:54 | | 19:45 | | | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | | 05:38 | 05:18 | 05:41 | 06:29 | | 07:19 | | | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | | 21:30 | 21:59 | 21:45 | 20:52 | | 19:42 | | | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | | 05:37 | 05:18 | 05:43 | 06:30 | | 07:20 | | | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | | 21:32 | 22:00 | 21:44 | 20:50 | | 19:40 | | | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | 06:28 | | 05:36 | 05:18 | 05:44 | 06:32 | | 07:22 | | | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:52 | 20:45 | | 21:33 | 22:00 | 21:42 | 20:48 | | 19:38 | | | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | | 05:35 | 05:18 | 05:45 | 06:33 | | 07:23 | | | 08:14 | 08:08 | 08:43 |
| | 17:08 | 18:05 | 18:54 | 20:47 | | 21:34 | 22:00 | 21:41 | 20:46 | | 19:35 | | | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | | 05:33 | 05:19 | 05:47 | 06:35 | | 07:25 | | | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | | 21:36 | 22:00 | 21:40 | 20:44 | | 19:33 | | | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | | 05:32 | 05:19 | 05:48 | 06:37 | | 07:27 | | | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | | 21:37 | 22:00 | 21:38 | 20:41 | | 19:31 | | | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 06:20 | | 05:31 | 05:20 | 05:50 | 06:38 | | 07:28 | | | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | 20:52 | | 21:38 | 22:00 | 21:37 | 20:39 | | 19:28 | | | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | | 05:30 | 05:20 | 05:51 | 06:40 | 19:10 (5) | 07:30 | | | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 | 20:53 | | 21:40 | 22:00 | 21:36 | 20:37 | 10 19:20 (5) | 19:26 | | | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | | 05:29 | 05:20 | 05:53 | 06:41 | 19:08 (5) | 07:32 | | | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | | 21:41 | 22:00 | 21:34 | 20:35 | 14 19:22 (5) | 19:24 | | | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 06:14 | | 05:28 | 05:21 | 05:54 | 06:43 | 19:06 (5) | 07:33 | | | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 20:57 | | 21:42 | 22:00 | 21:33 | 20:33 | 17 19:23 (5) | 19:21 | | | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | | 05:27 | 05:22 | 05:55 | 06:45 | 19:05 (5) | 07:35 | | | 07:27 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:58 | | 21:43 | 22:00 | 21:31 | 20:31 | 19 19:24 (5) | 19:19 | | | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | | 05:26 | | 05:57 | 06:46 | 19:03 (5) | | | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | | 21:44 | | 21:29 | 20:28 | 21 19:24 (5) | | | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | | 485 | 498 | 501 | 453 | | 381 | | | 332 | 267 | 244 |
| Total, worst case | | | | | 261 | | | | | 81 | | 180 | | | | |
| Sun reduction | | | | | 0.35 | | | | | 0.30 | | 0.28 | | | | |
| Oper. time red. | | | | | 1.00 | | | | | 1.00 | | 1.00 | | | | |
| Wind dir. red. | | | | | 0.65 | | | | | 0.65 | | 0.65 | | | | |
| Total reduction | | | | | 0.23 | | | | | 0.19 | | 0.18 | | | | |
| Total, real | | | | | 60 | | | | | 16 | | 33 | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** W - H24

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:14 | 19:02 (5) | 06:10 | 05:25 | 05:22 | 05:58 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:24 | 18:16 | 20:09 | 19 19:21 (5) | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | 07:12 | 19:02 (5) | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | 19:05 (5) | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 20 19:22 (5) | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 5 19:10 (5) | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | 19:01 (5) | 06:06 | 05:23 | 05:24 | 06:02 | 06:51 | 19:02 (5) | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 | 21 19:22 (5) | 21:03 | 21:48 | 21:59 | 21:24 | 20:22 | 11 19:13 (5) | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 19:00 (5) | 06:04 | 05:23 | 05:24 | 06:03 | 06:53 | 18:59 (5) | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21 19:21 (5) | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 15 19:14 (5) | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | 19:01 (5) | 06:03 | 05:22 | 05:25 | 06:05 | 06:54 | 18:58 (5) | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | 20:16 | 19 19:20 (5) | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 17 19:15 (5) | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 19:01 (5) | 06:01 | 05:21 | 05:26 | 06:06 | 06:56 | 18:57 (5) | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 19 19:20 (5) | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 19 19:16 (5) | 19:05 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 19:02 (5) | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 18:56 (5) | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:26 | 20:20 | 17 19:19 (5) | 21:10 | 21:52 | 21:57 | 21:17 | 20:12 | 20 19:16 (5) | 19:03 | 17:00 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 19:02 (5) | 05:57 | 05:20 | 05:28 | 06:09 | 06:59 | 18:56 (5) | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | 20:21 | 15 19:17 (5) | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 20 19:16 (5) | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | 19:04 (5) | 05:55 | 05:20 | 05:29 | 06:11 | 07:01 | 18:55 (5) | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 11 19:15 (5) | 21:13 | 21:53 | 21:55 | 21:14 | 20:08 | 20 19:15 (5) | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 19:07 (5) | 05:54 | 05:19 | 05:30 | 06:12 | 07:02 | 18:55 (5) | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 5 19:12 (5) | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 20 19:15 (5) | 18:56 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 18:54 (5) | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | 20:26 | | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 19 19:13 (5) | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | 06:50 | | 05:50 | 05:19 | 05:32 | 06:16 | 07:06 | 18:55 (5) | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18 19:13 (5) | 18:52 | 16:52 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:47 | | 05:49 | 05:18 | 05:33 | 06:17 | 07:07 | 18:55 (5) | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 16 19:11 (5) | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 06:45 | | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 18:57 (5) | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:48 | 18:39 | 20:32 | | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 12 19:09 (5) | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | | 05:46 | 05:18 | 05:35 | 06:20 | 07:11 | 19:01 (5) | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | 20:33 | | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | 5 19:06 (5) | 18:45 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | | 05:44 | 05:18 | 05:36 | 06:22 | 07:12 | | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | 20:37 | | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | | 05:41 | 05:18 | 05:39 | 06:25 | 07:15 | | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | 06:34 | | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | | 05:38 | 05:18 | 05:41 | 06:29 | 07:19 | | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | | 21:30 | 21:59 | 21:45 | 20:52 | 19:42 | | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | 06:28 | | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 | | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:52 | 20:45 | | 21:33 | 22:00 | 21:42 | 20:48 | 19:38 | | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | | 05:35 | 05:18 | 05:45 | 06:33 | 07:23 | | 08:14 | 08:08 | 08:43 |
| | 17:08 | 18:05 | 18:54 | 20:47 | | 21:34 | 22:00 | 21:41 | 20:46 | 19:35 | | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | | 05:33 | 05:19 | 05:47 | 06:35 | 07:25 | | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | | 21:37 | 22:00 | 21:38 | 20:41 | 19:31 | | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 06:20 | | 05:31 | 05:20 | 05:50 | 06:38 | 07:28 | | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | 20:52 | | 21:38 | 22:00 | 21:37 | 20:39 | 19:28 | | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 | 20:53 | | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 18:12 (5) | 06:16 | 05:29 | 05:20 | 05:53 | 06:41 | 07:32 | | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 1 18:13 (5) | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 19:07 (5) | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 11 19:18 (5) | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:21 | | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 19:05 (5) | 06:12 | 05:27 | 05:22 | 05:55 | 06:45 | 07:35 | | 07:26 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 15 19:20 (5) | 20:58 | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | 19:03 (5) | | 05:26 | | 05:57 | 06:46 | | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | 17 19:20 (5) | | 21:44 | | 21:29 | 20:28 | | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | | 485 | 498 | 501 | 453 | 381 | | 332 | 267 | 244 |
| Total, worst case | | | 44 | 167 | | | | | | 217 | | | | |
| Sun reduction | | | 0.24 | 0.35 | | | | | | 0.28 | | | | |
| Oper. time red. | | | 1.00 | 1.00 | | | | | | 1.00 | | | | |
| Wind dir. red. | | | 0.65 | 0.65 | | | | | | 0.65 | | | | |
| Total reduction | | | 0.16 | 0.23 | | | | | | 0.19 | | | | |
| Total, real | | | 7 | 39 | | | | | | 40 | | | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
**Jennings O'Donovan**
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Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** X - H25

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:14 | 19:07 (5) | 06:10 | 05:25 | 05:22 | 05:58 | 06:48 | 19:05 (5) | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:24 | 18:16 | 20:09 15 | 19:22 (5) | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 11 | 19:16 (5) | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | 07:12 | 19:06 (5) | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | 19:03 (5) | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 17 | 19:23 (5) | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 14 | 19:17 (5) | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | 19:05 (5) | 06:06 | 05:23 | 05:24 | 06:02 | 06:51 | 19:01 (5) | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 18 | 19:23 (5) | 21:03 | 21:48 | 21:59 | 21:24 | 20:22 17 | 19:18 (5) | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 19:03 (5) | 06:04 | 05:23 | 05:24 | 06:03 | 06:53 | 19:00 (5) | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 20 | 19:23 (5) | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 18 | 19:18 (5) | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | 19:03 (5) | 06:03 | 05:22 | 05:25 | 06:05 | 06:54 | 18:59 (5) | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | 20:16 20 | 19:23 (5) | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 20 | 19:19 (5) | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 19:03 (5) | 06:01 | 05:21 | 05:26 | 06:06 | 06:56 | 18:59 (5) | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 20 | 19:23 (5) | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 20 | 19:19 (5) | 19:05 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 19:03 (5) | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 18:58 (5) | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:26 | 20:20 20 | 19:23 (5) | 21:10 | 21:52 | 21:57 | 21:17 | 20:12 20 | 19:18 (5) | 19:03 | 17:00 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 19:03 (5) | 05:57 | 05:20 | 05:28 | 06:09 | 06:59 | 18:58 (5) | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | 20:21 18 | 19:21 (5) | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 20 | 19:18 (5) | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | 19:03 (5) | 05:55 | 05:20 | 05:29 | 06:11 | 07:01 | 18:58 (5) | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 17 | 19:20 (5) | 21:13 | 21:53 | 21:55 | 21:14 | 20:08 19 | 19:17 (5) | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 19:05 (5) | 05:54 | 05:19 | 05:30 | 06:12 | 07:02 | 18:59 (5) | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 14 | 19:19 (5) | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 17 | 19:16 (5) | 18:56 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 19:06 (5) | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 18:59 (5) | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | 20:26 11 | 19:17 (5) | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 15 | 19:14 (5) | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | 06:50 | 19:10 (5) | 05:50 | 05:19 | 05:32 | 06:16 | 07:06 | 19:01 (5) | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 3 | 19:13 (5) | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 11 | 19:12 (5) | 18:52 | 16:52 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:47 | | 05:49 | 05:18 | 05:33 | 06:17 | 07:07 | 19:03 (5) | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 5 | 19:08 (5) | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 06:45 | | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:48 | 18:39 | 20:32 | | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | | 05:46 | 05:18 | 05:35 | 06:20 | 07:11 | | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | 20:33 | | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | | 18:45 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | | 05:44 | 05:18 | 05:36 | 06:22 | 07:12 | | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | 20:37 | | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | | 05:41 | 05:18 | 05:39 | 06:25 | 07:15 | | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | 06:34 | | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | | 05:38 | 05:18 | 05:41 | 06:29 | 07:19 | | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | | 21:30 | 21:59 | 21:45 | 20:52 | 19:42 | | 18:35 | 16:42 | 16:28 |
| 21 | 08:32 | 07:42 | 06:40 | 06:30 | | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | 06:28 | | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 | | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:52 | 20:45 | | 21:33 | 22:00 | 21:42 | 20:48 | 19:38 | | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | | 05:35 | 05:18 | 05:45 | 06:33 | 07:23 | | 08:14 | 08:08 | 08:43 |
| | 17:08 | 18:05 | 18:54 | 20:47 | | 21:34 | 22:00 | 21:41 | 20:46 | 19:35 | | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | | 05:33 | 05:19 | 05:47 | 06:35 | 07:25 | | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | | 21:37 | 22:00 | 21:38 | 20:41 | 19:31 | | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 06:20 | | 05:31 | 05:20 | 05:50 | 06:38 | 07:28 | | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | 20:52 | | 21:38 | 22:00 | 21:37 | 20:39 | 19:28 | | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 | 20:53 | | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | | 05:29 | 05:20 | 05:53 | 06:41 | 07:32 | | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 06:14 | | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 20:57 | | 21:42 | 22:00 | 21:33 | 20:33 | 19:21 | | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 19:13 (5) 06:12 | | 05:27 | 05:22 | 05:55 | 06:45 | 07:35 | | 07:26 | 08:19 | 08:45 |
| | 17:21 | | 20:06 4 | 19:17 (5) 20:58 | | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | 19:09 (5) | | 05:26 | | 05:57 | 06:46 | 19:09 (5) | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 11 | 19:20 (5) | | 21:44 | | 21:29 | 20:28 3 | 19:12 (5) | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | | 485 | 498 | 501 | 453 | 381 | | 332 | 267 | 244 |
| Total, worst case | | | 15 | 193 | | | | | 3 | 207 | | | | |
| Sun reduction | | | 0.24 | 0.35 | | | | | 0.30 | 0.28 | | | | |
| Oper. time red. | | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | | | | |
| Wind dir. red. | | | 0.65 | 0.65 | | | | | 0.65 | 0.65 | | | | |
| Total reduction | | | 0.16 | 0.23 | | | | | 0.19 | 0.18 | | | | |
| Total, real | | | 2 | 45 | | | | | 1 | 38 | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
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+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** Y - H26

## Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | | May | June | July | August | | September | | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:14 | | 19:14 (5) | 06:10 | 05:25 | 05:22 | 05:58 | | 06:48 | 19:08 (5) | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:24 | 18:16 | 20:09 | 8 | 19:22 (5) | 21:00 | 21:46 | 21:59 | 21:28 | | 20:26 | 19:22 (5) | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | 07:12 | | 19:12 (5) | 06:08 | 05:24 | 05:23 | 06:00 | | 06:50 | 19:06 (5) | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 13 | 19:25 (5) | 21:02 | 21:47 | 21:59 | 21:26 | | 20:24 | 19:22 (5) | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | | 19:10 (5) | 06:06 | 05:23 | 05:24 | 06:02 | | 06:51 | 19:05 (5) | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 | 16 | 19:26 (5) | 21:03 | 21:48 | 21:59 | 21:24 | | 20:22 | 19:23 (5) | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | | 19:08 (5) | 06:04 | 05:23 | 05:24 | 06:03 | | 06:53 | 19:04 (5) | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 18 | 19:26 (5) | 21:05 | 21:49 | 21:58 | 21:23 | | 20:19 | 19:22 (5) | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | | 19:08 (5) | 06:03 | 05:22 | 05:25 | 06:05 | | 06:54 | 19:03 (5) | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | 20:16 | 18 | 19:26 (5) | 21:07 | 21:50 | 21:58 | 21:21 | | 20:17 | 19:23 (5) | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | | 19:07 (5) | 06:01 | 05:21 | 05:26 | 06:06 | | 06:56 | 19:04 (5) | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 20 | 19:27 (5) | 21:08 | 21:51 | 21:57 | 21:19 | | 20:15 | 19:23 (5) | 19:05 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | | 19:07 (5) | 05:59 | 05:21 | 05:27 | 06:08 | | 06:58 | 19:03 (5) | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:26 | 20:20 | 20 | 19:27 (5) | 21:10 | 21:52 | 21:57 | 21:17 | | 20:12 | 19:22 (5) | 19:03 | 17:00 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | | 19:06 (5) | 05:57 | 05:20 | 05:28 | 06:09 | | 06:59 | 19:03 (5) | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | 20:21 | 19 | 19:25 (5) | 21:12 | 21:53 | 21:56 | 21:16 | | 20:10 | 19:21 (5) | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | | 19:07 (5) | 05:55 | 05:20 | 05:29 | 06:11 | | 07:01 | 19:03 (5) | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 18 | 19:25 (5) | 21:13 | 21:53 | 21:55 | 21:14 | | 20:08 | 19:19 (5) | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | | 19:08 (5) | 05:54 | 05:19 | 05:30 | 06:12 | | 07:02 | 19:05 (5) | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 16 | 19:24 (5) | 21:15 | 21:54 | 21:55 | 21:12 | | 20:06 | 19:18 (5) | 18:56 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | | 19:09 (5) | 05:52 | 05:19 | 05:31 | 06:14 | | 07:04 | 19:06 (5) | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | 20:26 | 14 | 19:23 (5) | 21:16 | 21:55 | 21:54 | 21:10 | | 20:03 | 19:15 (5) | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | 06:50 | | 19:10 (5) | 05:50 | 05:19 | 05:32 | 06:16 | | 07:06 | | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 11 | 19:21 (5) | 21:18 | 21:56 | 21:53 | 21:08 | | 20:01 | | 18:52 | 16:52 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:47 | | 19:13 (5) | 05:49 | 05:18 | 05:33 | 06:17 | | 07:07 | | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 3 | 19:16 (5) | 21:20 | 21:56 | 21:52 | 21:06 | | 19:59 | | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 06:45 | | | 05:47 | 05:18 | 05:34 | 06:19 | | 07:09 | | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:48 | 18:39 | 20:32 | | | 21:21 | 21:57 | 21:51 | 21:04 | | 19:56 | | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | | | 05:46 | 05:18 | 05:35 | 06:20 | | 07:10 | | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | 20:33 | | | 21:23 | 21:57 | 21:50 | 21:02 | | 19:54 | | 18:45 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | | | 05:44 | 05:18 | 05:36 | 06:22 | | 07:12 | | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | | | 21:24 | 21:58 | 21:49 | 21:00 | | 19:52 | | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | | | 05:43 | 05:18 | 05:38 | 06:24 | | 07:14 | | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | 20:37 | | | 21:26 | 21:58 | 21:48 | 20:58 | | 19:49 | | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | | | 05:41 | 05:18 | 05:39 | 06:25 | | 07:15 | | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | | | 21:27 | 21:59 | 21:47 | 20:56 | | 19:47 | | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | 06:34 | | | 05:40 | 05:18 | 05:40 | 06:27 | | 07:17 | | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | | | 21:29 | 21:59 | 21:46 | 20:54 | | 19:45 | | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | | | 05:38 | 05:18 | 05:41 | 06:29 | | 07:19 | | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | | | 21:30 | 21:59 | 21:45 | 20:52 | | 19:42 | | 18:35 | 16:42 | 16:28 |
| 21 | 08:32 | 07:42 | 06:40 | 06:30 | | | 05:37 | 05:18 | 05:43 | 06:30 | | 07:20 | | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | | | 21:31 | 22:00 | 21:44 | 20:50 | | 19:40 | | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | 06:28 | | | 05:36 | 05:18 | 05:44 | 06:32 | | 07:22 | | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:52 | 20:45 | | | 21:33 | 22:00 | 21:42 | 20:48 | | 19:38 | | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:37 | 06:35 | 06:26 | | | 05:35 | 05:18 | 05:45 | 06:33 | | 07:23 | | 08:14 | 08:08 | 08:43 |
| | 17:08 | 18:05 | 18:54 | 20:47 | | | 21:34 | 22:00 | 21:41 | 20:46 | | 19:35 | | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | | | 05:33 | 05:19 | 05:47 | 06:35 | | 07:25 | | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | | | 21:36 | 22:00 | 21:40 | 20:44 | | 19:33 | | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | | | 05:32 | 05:19 | 05:48 | 06:37 | | 07:27 | | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | | | 21:37 | 22:00 | 21:38 | 20:41 | | 19:31 | | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 06:20 | | | 05:31 | 05:20 | 05:50 | 06:38 | | 07:28 | | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | 20:52 | | | 21:38 | 22:00 | 21:37 | 20:39 | | 19:28 | | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | | | 05:30 | 05:20 | 05:51 | 06:40 | | 07:30 | | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 | 20:53 | | | 21:40 | 22:00 | 21:36 | 20:37 | | 19:26 | | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | | | 05:29 | 05:20 | 05:53 | 06:41 | | 07:32 | | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | | | 21:41 | 22:00 | 21:34 | 20:35 | | 19:24 | | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 06:14 | | | 05:28 | 05:21 | 05:54 | 06:43 | | 07:33 | | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 20:57 | | | 21:42 | 22:00 | 21:33 | 20:33 | | 19:21 | | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | | | 05:27 | 05:22 | 05:55 | 06:45 | 19:13 (5) | 07:35 | | 07:26 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:58 | | | 21:43 | 22:00 | 21:31 | 20:31 | 5 19:18 (5) | 19:19 | | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | | | 05:26 | | 05:57 | 06:46 | 19:09 (5) | | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | | | 21:44 | | 21:29 | 20:28 | 11 19:20 (5) | | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | | | 485 | 498 | 501 | 453 | | 381 | | 332 | 267 | 244 |
| Total, worst case | | | | | 194 | | | | | | 16 | | 180 | | | |
| Sun reduction | | | | | 0.35 | | | | | | 0.30 | | 0.28 | | | |
| Oper. time red. | | | | | 1.00 | | | | | | 1.00 | | 1.00 | | | |
| Wind dir. red. | | | | | 0.65 | | | | | | 0.65 | | 0.65 | | | |
| Total reduction | | | | | 0.23 | | | | | | 0.19 | | 0.18 | | | |
| Total, real | | | | | 45 | | | | | | 3 | | 33 | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
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Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** Z - H27

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:14 | 06:10 | 05:25 | 05:22 | 05:58 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:24 | 18:16 | 20:09 | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | 07:12 | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | 06:06 | 05:23 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 | 21:03 | 21:48 | 21:59 | 21:24 | 20:22 | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:04 | 05:23 | 05:24 | 06:03 | 06:53 | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | 06:02 | 05:22 | 05:25 | 06:05 | 06:54 | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:21 | 05:26 | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 19:05 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:26 | 20:20 | 21:10 | 21:52 | 21:57 | 21:17 | 20:12 | 19:03 | 17:00 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 05:57 | 05:20 | 05:28 | 06:09 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | 20:21 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | 05:55 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 21:13 | 21:53 | 21:55 | 21:14 | 20:08 | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:19 | 05:30 | 06:12 | 07:02 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:56 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:33 | 20:26 | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:40 | 07:59 | 07:00 | 06:50 | 05:50 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:52 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:47 | 05:49 | 05:18 | 05:33 | 06:17 | 07:07 | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 06:45 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:48 | 18:39 | 20:32 | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:35 | 06:20 | 07:10 | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | 20:33 | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | 18:45 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | 05:44 | 05:18 | 05:36 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | 20:37 | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 | 05:18 | 05:39 | 06:25 | 07:15 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | 06:34 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 05:38 | 05:18 | 05:41 | 06:28 | 07:19 | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | 21:30 | 21:59 | 21:45 | 20:52 | 19:42 | 18:35 | 16:42 | 16:28 |
| 21 | 08:32 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | 21:31 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | 06:28 | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:52 | 20:45 | 21:33 | 22:00 | 21:42 | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:37 | 06:35 | 06:26 | 05:34 | 05:18 | 05:45 | 06:33 | 07:23 | 08:14 | 08:08 | 08:43 |
| | 17:08 | 18:05 | 18:54 | 20:47 | 21:34 | 22:00 | 21:41 | 20:46 | 19:35 | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | 05:33 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:38 | 20:41 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 06:20 | 05:31 | 05:19 | 05:50 | 06:38 | 07:28 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | 20:52 | 21:38 | 22:00 | 21:37 | 20:39 | 19:28 | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 | 20:53 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:20 | 05:53 | 06:41 | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:21 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:55 | 06:45 | 07:35 | 07:26 | 08:19 | 08:44 |
| | 17:21 | | 20:06 | 20:58 | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | 05:26 | | 05:57 | 06:46 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:44 | | 21:29 | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 244 |
| Total, worst case | | | | | | | | | | | | |
| Sun reduction | | | | | | | | | | | | |
| Oper. time red. | | | | | | | | | | | | |
| Wind dir. red. | | | | | | | | | | | | |
| Total reduction | | | | | | | | | | | | |
| Total, real | | | | | | | | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
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Finisklin Business Park
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+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** AA - H28

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:14 | 06:10 | 05:25 | 05:22 | 05:58 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:24 | 18:16 | 20:09 | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | 07:12 | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | 06:06 | 05:23 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 | 21:03 | 21:48 | 21:59 | 21:24 | 20:22 | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:04 | 05:23 | 05:24 | 06:03 | 06:53 | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | 06:02 | 05:22 | 05:25 | 06:05 | 06:54 | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:21 | 05:26 | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 19:05 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:26 | 20:20 | 21:10 | 21:52 | 21:57 | 21:17 | 20:12 | 19:03 | 17:00 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 05:57 | 05:20 | 05:28 | 06:09 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | 20:21 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | 05:55 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:46 | 17:39 | 18:30 | 20:23 | 21:13 | 21:53 | 21:55 | 21:14 | 20:08 | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:19 | 05:30 | 06:12 | 07:02 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:56 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:33 | 20:26 | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:40 | 07:59 | 07:00 | 06:50 | 05:50 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:52 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:47 | 05:49 | 05:18 | 05:33 | 06:17 | 07:07 | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 06:45 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:48 | 18:39 | 20:32 | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:35 | 06:20 | 07:10 | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | 20:33 | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | 18:45 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | 05:44 | 05:18 | 05:36 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | 20:37 | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 | 05:18 | 05:39 | 06:25 | 07:15 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | 06:34 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 05:38 | 05:18 | 05:41 | 06:28 | 07:19 | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | 21:30 | 21:59 | 21:45 | 20:52 | 19:42 | 18:35 | 16:42 | 16:28 |
| 21 | 08:32 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | 21:31 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | 06:28 | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:52 | 20:45 | 21:33 | 22:00 | 21:42 | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:37 | 06:35 | 06:26 | 05:34 | 05:18 | 05:45 | 06:33 | 07:23 | 08:14 | 08:08 | 08:43 |
| | 17:08 | 18:05 | 18:54 | 20:47 | 21:34 | 22:00 | 21:41 | 20:46 | 19:35 | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | 05:33 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:38 | 20:41 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 06:20 | 05:31 | 05:19 | 05:50 | 06:38 | 07:28 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | 20:52 | 21:38 | 22:00 | 21:37 | 20:39 | 19:28 | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 | 20:53 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:20 | 05:53 | 06:41 | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:21 | 17:17 | 16:32 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:55 | 06:45 | 07:35 | 07:26 | 08:19 | 08:44 |
| | 17:21 | | 20:06 | 20:58 | 21:43 | 22:00 | 21:31 | 20:30 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | 05:26 | | 05:57 | 06:46 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:44 | | 21:29 | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 244 |
| Total, worst case | | | | | | | | | | | | |
| Sun reduction | | | | | | | | | | | | |
| Oper. time red. | | | | | | | | | | | | |
| Wind dir. red. | | | | | | | | | | | | |
| Total reduction | | | | | | | | | | | | |
| Total, real | | | | | | | | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
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Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** AB - H29

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:14 | 06:10 | 05:25 | 05:22 | 05:58 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:24 | 18:16 | 20:09 | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | 07:12 | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | 06:06 | 05:23 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 | 21:03 | 21:48 | 21:59 | 21:24 | 20:22 | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:04 | 05:23 | 05:24 | 06:03 | 06:53 | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | 06:02 | 05:22 | 05:25 | 06:05 | 06:54 | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:21 | 05:26 | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 19:05 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:26 | 20:20 | 21:10 | 21:52 | 21:57 | 21:17 | 20:12 | 19:03 | 17:00 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 05:57 | 05:20 | 05:28 | 06:09 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | 20:21 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | 05:55 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:46 | 17:39 | 18:30 | 20:23 | 21:13 | 21:53 | 21:55 | 21:14 | 20:08 | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:19 | 05:30 | 06:12 | 07:02 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:56 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:33 | 20:26 | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | 06:50 | 05:50 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:52 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:47 | 05:49 | 05:18 | 05:33 | 06:17 | 07:07 | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 06:45 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:48 | 18:39 | 20:32 | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:35 | 06:20 | 07:10 | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | 20:33 | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | 18:45 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | 05:44 | 05:18 | 05:36 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | 20:37 | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 | 05:18 | 05:39 | 06:25 | 07:15 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | 06:34 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 05:38 | 05:18 | 05:41 | 06:28 | 07:19 | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | 21:30 | 21:59 | 21:45 | 20:52 | 19:42 | 18:35 | 16:42 | 16:28 |
| 21 | 08:32 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | 06:28 | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:52 | 20:45 | 21:33 | 22:00 | 21:42 | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:37 | 06:35 | 06:26 | 05:34 | 05:18 | 05:45 | 06:33 | 07:23 | 08:14 | 08:08 | 08:43 |
| | 17:08 | 18:05 | 18:54 | 20:47 | 21:34 | 22:00 | 21:41 | 20:46 | 19:35 | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | 05:33 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:38 | 20:41 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 06:20 | 05:31 | 05:19 | 05:50 | 06:38 | 07:28 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | 20:52 | 21:38 | 22:00 | 21:37 | 20:39 | 19:28 | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 | 20:53 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:20 | 05:53 | 06:41 | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:21 | 17:17 | 16:32 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:55 | 06:45 | 07:35 | 07:26 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:58 | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | 05:26 | | 05:57 | 06:46 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:44 | | 21:29 | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 244 |
| Total, worst case | | | | | | | | | | | | |
| Sun reduction | | | | | | | | | | | | |
| Oper. time red. | | | | | | | | | | | | |
| Wind dir. red. | | | | | | | | | | | | |
| Total reduction | | | | | | | | | | | | |
| Total, real | | | | | | | | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
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kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** AC - H30

## Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:15 | 06:10 | 19:01 (7) 05:25 | 05:22 | 05:59 | 19:05 (7) 06:48 | 19:16 (6) 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | 21:00 | 18 19:19 (7) 21:46 | 21:59 | 21:28 | 31 19:36 (7) 20:26 | 15 19:31 (6) 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | 07:12 | 06:08 | 19:01 (7) 05:24 | 05:23 | 06:00 | 19:06 (7) 06:50 | 19:17 (6) 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 21:02 | 20 19:21 (7) 21:47 | 21:59 | 21:26 | 30 19:36 (7) 20:24 | 11 19:28 (6) 19:15 | 17:09 | 16:31 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | 06:06 | 18:59 (7) 05:24 | 05:24 | 06:02 | 19:05 (7) 06:51 | 19:21 (6) 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:20 | 20:13 | 21:03 | 23 19:22 (7) 21:48 | 21:59 | 21:25 | 30 19:35 (7) 20:22 | 4 19:25 (6) 19:12 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:04 | 18:58 (7) 05:23 | 05:24 | 06:03 | 19:06 (7) 06:53 | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 25 19:23 (7) 21:49 | 21:58 | 21:23 | 30 19:36 (7) 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | 06:03 | 18:57 (7) 05:22 | 05:25 | 06:05 | 19:06 (7) 06:54 | 07:43 | 07:37 | 08:26 |
| | 16:42 | 17:32 | 18:23 | 20:16 | 21:07 | 26 19:23 (7) 21:50 | 21:58 | 21:21 | 29 19:35 (7) 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 18:57 (7) 05:22 | 05:26 | 06:06 | 19:05 (7) 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:08 | 27 19:24 (7) 21:51 | 21:57 | 21:19 | 29 19:34 (7) 20:15 | 19:06 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 18:56 (7) 05:21 | 05:27 | 06:08 | 19:06 (7) 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 21:10 | 29 19:25 (7) 21:52 | 21:57 | 21:18 | 28 19:34 (7) 20:13 | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 05:57 | 18:55 (7) 05:20 | 05:28 | 06:09 | 19:06 (7) 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:38 | 18:28 | 20:21 | 21:12 | 30 19:25 (7) 21:53 | 21:56 | 21:16 | 26 19:32 (7) 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | 19:23 (6) 05:56 | 18:55 (7) 05:20 | 05:29 | 06:11 | 19:08 (7) 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 4 19:27 (6) 21:13 | 30 19:25 (7) 21:53 | 21:56 | 21:14 | 24 19:32 (7) 20:08 | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 19:19 (6) 05:54 | 18:55 (7) 05:20 | 05:30 | 06:13 | 19:08 (7) 07:03 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 11 19:30 (6) 21:15 | 30 19:25 (7) 21:54 | 21:55 | 21:12 | 22 19:30 (7) 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 19:17 (6) 05:52 | 18:55 (7) 05:19 | 05:31 | 06:14 | 19:10 (7) 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | 20:27 | 15 19:32 (6) 21:16 | 31 19:26 (7) 21:55 | 21:54 | 21:10 | 19 19:29 (7) 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | 06:50 | 19:16 (6) 05:51 | 18:55 (7) 05:19 | 05:32 | 06:16 | 19:10 (7) 07:06 | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 17 19:33 (6) 21:18 | 30 19:25 (7) 21:56 | 21:53 | 21:08 | 17 19:27 (7) 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:48 | 19:14 (6) 05:49 | 18:55 (7) 05:19 | 05:33 | 06:17 | 19:13 (7) 07:07 | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 19 19:33 (6) 21:20 | 31 19:26 (7) 21:56 | 21:52 | 21:06 | 12 19:25 (7) 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:56 | 06:56 | 06:45 | 19:14 (6) 05:47 | 18:55 (7) 05:18 | 05:34 | 06:19 | 07:09 | 07:59 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 19 19:33 (6) 21:21 | 30 19:25 (7) 21:57 | 21:51 | 21:04 | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 19:13 (6) 05:46 | 18:56 (7) 05:18 | 05:35 | 19:18 (7) 06:21 | 07:11 | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:41 | 20:33 | 20 19:33 (6) 21:23 | 29 19:25 (7) 21:57 | 21:50 | 5 19:23 (7) 21:02 | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | 19:13 (6) 05:44 | 18:56 (7) 05:18 | 05:37 | 19:15 (7) 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 20 19:33 (6) 21:24 | 29 19:25 (7) 21:58 | 21:49 | 11 19:26 (7) 21:00 | 19:52 | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 19:13 (6) 05:43 | 18:56 (7) 05:18 | 05:38 | 19:15 (7) 06:24 | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:59 | 17:54 | 18:44 | 20:37 | 20 19:33 (6) 21:26 | 28 19:24 (7) 21:58 | 21:48 | 13 19:28 (7) 20:58 | 19:49 | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 19:14 (6) 05:41 | 18:57 (7) 05:18 | 05:39 | 19:13 (7) 06:25 | 07:15 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 18 19:32 (6) 21:27 | 27 19:24 (7) 21:59 | 21:47 | 16 19:29 (7) 20:56 | 19:47 | 18:39 | 16:44 | 16:28 |
| 19 | 08:35 | 07:46 | 06:44 | 06:35 | 19:14 (6) 05:40 | 18:58 (7) 05:18 | 05:40 | 19:12 (7) 06:27 | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | 17 19:31 (6) 21:29 | 26 19:24 (7) 21:59 | 21:46 | 18 19:30 (7) 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 19:15 (6) 05:39 | 18:58 (7) 05:18 | 05:42 | 19:11 (7) 06:29 | 07:19 | 08:09 | 08:04 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | 15 19:30 (6) 21:30 | 25 19:23 (7) 22:00 | 21:45 | 20 19:31 (7) 20:52 | 19:42 | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | 19:16 (6) 05:37 | 18:59 (7) 05:18 | 05:43 | 19:10 (7) 06:30 | 19:23 (6) 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | 13 19:29 (6) 21:32 | 24 19:23 (7) 22:00 | 21:44 | 22 19:32 (7) 20:50 | 9 19:32 (6) 19:40 | 18:33 | 16:41 | 16:29 |
| 22 | 08:31 | 07:40 | 06:38 | 06:28 | 19:18 (6) 05:36 | 19:00 (7) 05:18 | 05:44 | 19:10 (7) 06:32 | 19:21 (6) 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | 8 19:26 (6) 21:33 | 22 19:22 (7) 22:00 | 21:42 | 23 19:33 (7) 20:48 | 13 19:34 (6) 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 05:35 | 19:01 (7) 05:19 | 05:46 | 19:09 (7) 06:33 | 19:19 (6) 07:24 | 08:14 | 08:08 | 08:43 |
| | 17:09 | 18:05 | 18:54 | 20:47 | 21:34 | 21 19:22 (7) 22:00 | 21:41 | 24 19:33 (7) 20:46 | 15 19:34 (6) 19:35 | 18:29 | 16:38 | 16:30 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | 05:33 | 19:02 (7) 05:19 | 05:47 | 19:08 (7) 06:35 | 19:18 (6) 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 21:36 | 19 19:21 (7) 22:00 | 21:40 | 26 19:34 (7) 20:44 | 17 19:35 (6) 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 19:03 (7) 05:19 | 05:48 | 19:08 (7) 06:37 | 19:16 (6) 07:27 | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 17 19:20 (7) 22:00 | 21:38 | 27 19:35 (7) 20:42 | 19 19:35 (6) 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 06:20 | 05:31 | 19:04 (7) 05:20 | 05:50 | 19:07 (7) 06:38 | 19:16 (6) 07:28 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:11 | 18:59 | 20:52 | 21:38 | 15 19:19 (7) 22:00 | 21:37 | 28 19:35 (7) 20:39 | 20 19:36 (6) 19:29 | 17:23 | 16:35 | 16:32 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 19:06 (7) 05:20 | 05:51 | 19:06 (7) 06:40 | 19:15 (6) 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:12 | 19:01 | 20:53 | 21:40 | 12 19:18 (7) 22:00 | 21:36 | 29 19:35 (7) 20:37 | 20 19:35 (6) 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 19:08 (7) 05:21 | 05:53 | 19:07 (7) 06:42 | 19:15 (6) 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 8 19:16 (7) 22:00 | 21:34 | 29 19:36 (7) 20:35 | 20 19:35 (6) 19:24 | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 06:14 | 19:08 (7) 05:28 | 05:21 | 05:54 | 19:06 (7) 06:43 | 19:15 (6) 07:33 | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 20:57 | 5 19:13 (7) 21:42 | 22:00 | 21:33 | 30 19:36 (7) 20:33 | 19 19:34 (6) 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 19:04 (7) 05:27 | 05:22 | 05:56 | 19:05 (7) 06:45 | 19:15 (6) 07:35 | 07:27 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:58 | 13 19:17 (7) 21:43 | 22:00 | 21:31 | 30 19:35 (7) 20:31 | 19 19:34 (6) 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | 05:26 | | 05:57 | 19:06 (7) 06:46 | 19:15 (6) | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:44 | | 21:29 | 30 19:36 (7) 20:28 | 17 19:32 (6) | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 244 |
| Total, worst case | | | | 234 | 682 | | 381 | 515 | 30 | | | |
| Sun reduction | | | | 0.35 | 0.37 | | 0.27 | 0.30 | 0.28 | | | |
| Oper. time red. | | | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | | | |
| Wind dir. red. | | | | 0.63 | 0.62 | | 0.62 | 0.62 | 0.63 | | | |
| Total reduction | | | | 0.22 | 0.23 | | 0.17 | 0.19 | 0.18 | | | |
| Total, real | | | | 53 | 156 | | 63 | 96 | 5 | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
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Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** AD - H31

## Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45<br>16:37 | 08:18<br>17:25 | 07:25<br>18:16 | 07:15<br>20:10 | 06:10<br>21:00 | 05:25<br>21:46 | 19:23 (7)<br>9 19:32 (7) | 05:22<br>21:59 | 05:59<br>21:28 | 27 19:21 (7)<br>19:48 (7) | 06:48<br>20:26 | 07:37<br>19:17 | 07:30<br>17:11 | 08:21<br>16:31 |
| 2 | 08:44<br>16:38 | 08:16<br>17:26 | 07:23<br>18:18 | 07:12<br>20:11 | 06:08<br>21:02 | 05:24<br>21:47 | 19:25 (7)<br>5 19:30 (7) | 05:23<br>21:59 | 06:00<br>21:26 | 26 19:22 (7)<br>19:48 (7) | 06:50<br>20:24 | 07:38<br>19:15 | 07:32<br>17:09 | 08:22<br>16:31 |
| 3 | 08:44<br>16:39 | 08:15<br>17:28 | 07:20<br>18:19 | 07:10<br>20:13 | 06:06<br>21:03 | 19:24 (7)<br>3 19:27 (7) | 05:24<br>21:48 | 05:24<br>21:59 | 06:02<br>21:25 | 25 19:22 (7)<br>19:47 (7) | 06:51<br>20:22 | 07:40<br>19:12 | 07:34<br>17:08 | 08:24<br>16:30 |
| 4 | 08:44<br>16:40 | 08:13<br>17:30 | 07:18<br>18:21 | 07:08<br>20:15 | 06:04<br>21:05 | 19:19 (7)<br>12 19:31 (7) | 05:23<br>21:49 | 05:24<br>21:58 | 06:03<br>21:23 | 19:23 (7)<br>24 19:47 (7) | 06:53<br>20:19 | 07:42<br>19:10 | 07:35<br>17:06 | 08:25<br>16:29 |
| 5 | 08:44<br>16:42 | 08:12<br>17:32 | 07:16<br>18:23 | 07:05<br>20:16 | 06:03<br>21:07 | 19:16 (7)<br>16 19:32 (7) | 05:22<br>21:50 | 05:25<br>21:58 | 06:05<br>21:21 | 19:24 (7)<br>22 19:46 (7) | 06:54<br>20:17 | 07:43<br>19:08 | 07:37<br>17:04 | 08:26<br>16:29 |
| 6 | 08:44<br>16:43 | 08:10<br>17:34 | 07:14<br>18:25 | 07:03<br>20:18 | 06:01<br>21:08 | 19:16 (7)<br>19 19:35 (7) | 05:22<br>21:51 | 05:26<br>21:57 | 06:06<br>21:19 | 19:24 (7)<br>20 19:44 (7) | 06:56<br>20:15 | 07:45<br>19:06 | 07:39<br>17:02 | 08:28<br>16:28 |
| 7 | 08:43<br>16:44 | 08:08<br>17:36 | 07:12<br>18:27 | 07:01<br>20:20 | 05:59<br>21:10 | 19:14 (7)<br>21 19:35 (7) | 05:21<br>21:52 | 05:27<br>21:57 | 06:08<br>21:18 | 19:26 (7)<br>18 19:44 (7) | 06:58<br>20:13 | 07:47<br>19:03 | 07:41<br>17:01 | 08:29<br>16:28 |
| 8 | 08:43<br>16:45 | 08:06<br>17:38 | 07:09<br>18:28 | 06:59<br>20:21 | 05:57<br>21:12 | 19:13 (7)<br>23 19:36 (7) | 05:20<br>21:53 | 05:28<br>21:56 | 06:09<br>21:16 | 19:27 (7)<br>14 19:41 (7) | 06:59<br>20:10 | 07:48<br>19:01 | 07:43<br>16:59 | 08:30<br>16:28 |
| 9 | 08:42<br>16:47 | 08:05<br>17:39 | 07:07<br>18:30 | 06:56<br>20:23 | 05:56<br>21:13 | 19:13 (7)<br>24 19:37 (7) | 05:20<br>21:53 | 05:29<br>21:55 | 06:11<br>21:14 | 19:29 (7)<br>10 19:39 (7) | 07:01<br>20:08 | 07:50<br>18:59 | 07:44<br>16:57 | 08:31<br>16:27 |
| 10 | 08:42<br>16:48 | 08:03<br>17:41 | 07:05<br>18:32 | 06:54<br>20:25 | 05:54<br>21:15 | 19:12 (7)<br>25 19:37 (7) | 05:20<br>21:54 | 05:30<br>21:55 | 06:13<br>21:12 | | 07:03<br>20:06 | 07:52<br>18:57 | 07:46<br>16:56 | 08:32<br>16:27 |
| 11 | 08:41<br>16:49 | 08:01<br>17:43 | 07:03<br>18:34 | 06:52<br>20:27 | 05:52<br>21:16 | 19:12 (7)<br>26 19:38 (7) | 05:19<br>21:55 | 05:31<br>21:54 | 19:31 (7)<br>7 19:38 (7) | 06:14<br>21:10 | 07:04<br>20:03 | 07:53<br>18:54 | 07:48<br>16:54 | 08:33<br>16:27 |
| 12 | 08:41<br>16:51 | 07:59<br>17:45 | 07:00<br>18:35 | 06:50<br>20:28 | 05:51<br>21:18 | 19:11 (7)<br>27 19:38 (7) | 05:19<br>21:56 | 05:32<br>21:53 | 19:29 (7)<br>11 19:40 (7) | 06:16<br>21:08 | 07:06<br>20:01 | 07:55<br>18:52 | 07:50<br>16:53 | 08:34<br>16:27 |
| 13 | 08:40<br>16:52 | 07:57<br>17:47 | 06:58<br>18:37 | 06:48<br>20:30 9 | 19:28 (6)<br>19:37 (6) | 05:49<br>21:20 28 | 19:11 (7)<br>19:39 (7) | 05:19<br>21:56 | 05:33<br>21:52 | 19:28 (7)<br>13 19:41 (7) | 06:17<br>21:06 | 07:07<br>19:59 | 07:57<br>18:50 | 07:51<br>16:51 | 08:35<br>16:27 |
| 14 | 08:39<br>16:54 | 07:55<br>17:49 | 06:56<br>18:39 | 06:45<br>20:32 13 | 19:26 (6)<br>19:39 (6) | 05:47<br>21:21 28 | 19:10 (7)<br>19:38 (7) | 05:18<br>21:57 | 05:34<br>21:51 | 19:27 (7)<br>15 19:42 (7) | 06:19<br>21:04 | 07:09<br>19:56 | 07:59<br>18:48 | 07:53<br>16:50 | 08:36<br>16:27 |
| 15 | 08:38<br>16:55 | 07:54<br>17:50 | 06:54<br>18:41 | 06:43<br>20:33 15 | 19:25 (6)<br>19:40 (6) | 05:46<br>21:23 28 | 19:11 (7)<br>19:39 (7) | 05:18<br>21:57 | 05:35<br>21:50 | 19:26 (7)<br>17 19:43 (7) | 06:21<br>21:02 | 07:11<br>19:54 | 08:00<br>18:46 | 07:55<br>16:48 | 08:37<br>16:27 |
| 16 | 08:37<br>16:57 | 07:52<br>17:52 | 06:51<br>18:42 | 06:41<br>20:35 17 | 19:24 (6)<br>19:41 (6) | 05:44<br>21:24 28 | 19:10 (7)<br>19:38 (7) | 05:18<br>21:58 | 05:37<br>21:49 | 19:25 (7)<br>19 19:44 (7) | 06:22<br>21:00 | 07:12<br>19:52 | 08:02<br>18:43 | 07:57<br>16:47 | 08:38<br>16:27 |
| 17 | 08:37<br>16:59 | 07:50<br>17:54 | 06:49<br>18:44 | 06:39<br>20:37 18 | 19:23 (6)<br>19:41 (6) | 05:43<br>21:26 28 | 19:11 (7)<br>19:39 (7) | 05:18<br>21:58 | 05:38<br>21:48 | 19:25 (7)<br>21 19:46 (7) | 06:24<br>20:58 | 07:14<br>19:49 | 08:04<br>18:41 | 07:58<br>16:45 | 08:39<br>16:27 |
| 18 | 08:36<br>17:00 | 07:48<br>17:56 | 06:47<br>18:46 | 06:37<br>20:38 18 | 19:23 (6)<br>19:41 (6) | 05:41<br>21:27 28 | 19:11 (7)<br>19:39 (7) | 05:18<br>21:59 | 05:39<br>21:47 | 19:25 (7)<br>21 19:46 (7) | 06:25<br>20:56 9 | 19:32 (6)<br>19:41 (6) | 07:15<br>19:47 | 08:05<br>18:39 | 08:00<br>16:44 | 08:40<br>16:28 |
| 19 | 08:35<br>17:02 | 07:46<br>17:58 | 06:44<br>18:47 | 06:35<br>20:40 19 | 19:22 (6)<br>19:41 (6) | 05:40<br>21:29 27 | 19:12 (7)<br>19:39 (7) | 05:18<br>21:59 | 05:40<br>21:46 | 19:24 (7)<br>23 19:47 (7) | 06:27<br>20:54 13 | 19:30 (6)<br>19:43 (6) | 07:17<br>19:45 | 08:07<br>18:37 | 08:02<br>16:43 | 08:40<br>16:28 |
| 20 | 08:34<br>17:03 | 07:44<br>18:00 | 06:42<br>18:49 | 06:32<br>20:42 19 | 19:22 (6)<br>19:41 (6) | 05:39<br>21:30 27 | 19:11 (7)<br>19:38 (7) | 05:18<br>21:59 | 05:42<br>21:45 | 19:23 (7)<br>24 19:47 (7) | 06:29<br>20:52 15 | 19:28 (6)<br>19:43 (6) | 07:19<br>19:42 | 08:09<br>18:35 | 08:03<br>16:42 | 08:41<br>16:28 |
| 21 | 08:33<br>17:05 | 07:42<br>18:01 | 06:40<br>18:51 | 06:30<br>20:43 17 | 19:23 (6)<br>19:40 (6) | 05:37<br>21:32 26 | 19:12 (7)<br>19:38 (7) | 05:18<br>22:00 | 05:43<br>21:44 | 19:23 (7)<br>24 19:47 (7) | 06:30<br>20:50 16 | 19:28 (6)<br>19:44 (6) | 07:20<br>19:40 | 08:11<br>18:33 | 08:05<br>16:40 | 08:42<br>16:29 |
| 22 | 08:31<br>17:07 | 07:40<br>18:03 | 06:38<br>18:53 | 06:28<br>20:45 17 | 19:23 (6)<br>19:40 (6) | 05:36<br>21:33 25 | 19:13 (7)<br>19:38 (7) | 05:18<br>22:00 | 05:44<br>21:42 | 19:23 (7)<br>25 19:48 (7) | 06:32<br>20:48 18 | 19:27 (6)<br>19:45 (6) | 07:22<br>19:38 | 08:12<br>18:31 | 08:07<br>16:39 | 08:42<br>16:29 |
| 23 | 08:30<br>17:09 | 07:38<br>18:05 | 06:35<br>18:54 | 06:26<br>20:47 14 | 19:24 (6)<br>19:38 (6) | 05:35<br>21:34 25 | 19:13 (7)<br>19:38 (7) | 05:19<br>22:00 | 05:46<br>21:41 | 19:22 (7)<br>27 19:49 (7) | 06:33<br>20:46 19 | 19:26 (6)<br>19:45 (6) | 07:24<br>19:35 | 08:14<br>18:29 | 08:08<br>16:38 | 08:43<br>16:30 |
| 24 | 08:29<br>17:10 | 07:35<br>18:07 | 06:33<br>18:56 | 06:24<br>20:48 12 | 19:25 (6)<br>19:37 (6) | 05:33<br>21:36 23 | 19:14 (7)<br>19:37 (7) | 05:19<br>22:00 | 05:47<br>21:40 | 19:22 (7)<br>27 19:49 (7) | 06:35<br>20:44 19 | 19:26 (6)<br>19:45 (6) | 07:25<br>19:33 | 08:16<br>18:27 | 08:10<br>16:37 | 08:43<br>16:30 |
| 25 | 08:28<br>17:12 | 07:33<br>18:09 | 06:31<br>18:58 | 06:22<br>20:50 8 | 19:27 (6)<br>19:35 (6) | 05:32<br>21:37 22 | 19:15 (7)<br>19:37 (7) | 05:19<br>22:00 | 05:48<br>21:38 | 19:22 (7)<br>27 19:49 (7) | 06:37<br>20:42 18 | 19:26 (6)<br>19:44 (6) | 07:27<br>19:31 | 08:18<br>17:25 | 08:12<br>16:36 | 08:43<br>16:31 |
| 26 | 08:26<br>17:14 | 07:31<br>18:11 | 06:28<br>18:59 | 06:20<br>20:52 | 05:31<br>21:38 | 19:16 (7)<br>20 19:36 (7) | 05:20<br>22:00 | 05:50<br>21:37 | 19:22 (7)<br>27 19:49 (7) | 06:38<br>20:39 18 | 19:26 (6)<br>19:44 (6) | 07:28<br>19:29 | 07:19<br>17:23 | 08:13<br>16:35 | 08:44<br>16:31 |
| 27 | 08:25<br>17:16 | 07:29<br>18:12 | 06:26<br>19:01 | 06:18<br>20:53 | 05:30<br>21:40 | 19:16 (7)<br>20 19:36 (7) | 05:20<br>22:00 | 05:51<br>21:36 | 19:21 (7)<br>28 19:49 (7) | 06:40<br>20:37 17 | 19:26 (6)<br>19:43 (6) | 07:30<br>19:26 | 07:21<br>17:21 | 08:15<br>16:34 | 08:44<br>16:32 |
| 28 | 08:24<br>17:17 | 07:27<br>18:14 | 06:24<br>19:03 | 06:16<br>20:55 | 05:29<br>21:41 | 19:17 (7)<br>18 19:35 (7) | 05:21<br>22:00 | 05:53<br>21:34 | 19:22 (7)<br>28 19:50 (7) | 06:42<br>20:35 15 | 19:27 (6)<br>19:42 (6) | 07:32<br>19:24 | 07:23<br>17:19 | 08:16<br>16:33 | 08:44<br>16:33 |
| 29 | 08:22<br>17:19 | | 07:21<br>20:04 | 06:14<br>20:57 | 05:28<br>21:42 | 19:18 (7)<br>16 19:34 (7) | 05:21<br>22:00 | 05:54<br>21:33 | 19:21 (7)<br>28 19:49 (7) | 06:43<br>20:33 13 | 19:27 (6)<br>19:40 (6) | 07:33<br>19:22 | 07:25<br>17:17 | 08:18<br>16:33 | 08:44<br>16:34 |
| 30 | 08:21<br>17:21 | | 07:19<br>20:06 | 06:12<br>20:58 | 05:27<br>21:43 | 19:19 (7)<br>14 19:33 (7) | 05:22<br>22:00 | 05:56<br>21:31 | 19:21 (7)<br>28 19:49 (7) | 06:45<br>20:31 9 | 19:29 (6)<br>19:38 (6) | 07:35<br>19:19 | 07:27<br>17:15 | 08:19<br>16:32 | 08:45<br>16:35 |
| 31 | 08:19<br>17:23 | | 07:17<br>20:08 | | 05:26<br>21:44 | 19:20 (7)<br>12 19:32 (7) | | 05:57<br>21:29 | 19:22 (7)<br>27 19:49 (7) | 06:46<br>20:28 | | 07:28<br>17:13 | | 08:45<br>16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 244 |
| Total, worst case | | | | 196 | 639 | 14 | 467 | 385 | | | | |
| Sun reduction | | | | 0.35 | 0.37 | 0.30 | 0.27 | 0.30 | | | | |
| Oper. time red. | | | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | |
| Wind dir. red. | | | | 0.62 | 0.60 | 0.60 | 0.60 | 0.61 | | | | |
| Total reduction | | | | 0.22 | 0.22 | 0.18 | 0.16 | 0.18 | | | | |
| Total, real | | | | 43 | 142 | 3 | 75 | 70 | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

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Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** AE - H33

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | | June | | July | | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:15 | 06:10 | | 05:25 | | 20:08 (8) 05:22 | | 20:16 (8) 05:59 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | 21:00 | | 21:46 | 21 | 20:29 (8) 21:59 | 17 | 20:33 (8) 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | 07:12 | 06:08 | | 05:24 | | 20:08 (8) 05:23 | | 20:15 (8) 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 21:02 | | 21:47 | 21 | 20:29 (8) 21:59 | 18 | 20:33 (8) 21:26 | 20:24 | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | 06:06 | | 05:24 | | 20:08 (8) 05:24 | | 20:16 (8) 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 | 21:03 | | 21:48 | 21 | 20:29 (8) 21:59 | 18 | 20:34 (8) 21:24 | 20:22 | 19:12 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:04 | | 05:23 | | 20:09 (8) 05:24 | | 20:16 (8) 06:03 | 06:53 | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | | 21:49 | 20 | 20:29 (8) 21:58 | 18 | 20:34 (8) 21:23 | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | 06:03 | | 05:22 | | 20:09 (8) 05:25 | | 20:16 (8) 06:05 | 06:54 | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | 20:16 | 21:07 | | 21:50 | 20 | 20:29 (8) 21:58 | 19 | 20:35 (8) 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | | 05:22 | | 20:10 (8) 05:26 | | 20:15 (8) 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:08 | | 21:51 | 19 | 20:29 (8) 21:57 | 19 | 20:34 (8) 21:19 | 20:15 | 19:06 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | | 05:21 | | 20:10 (8) 05:27 | | 20:15 (8) 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 21:10 | | 21:52 | 19 | 20:29 (8) 21:57 | 20 | 20:35 (8) 21:17 | 20:12 | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 05:57 | | 05:20 | | 20:10 (8) 05:28 | | 20:15 (8) 06:09 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | 20:21 | 21:12 | | 21:53 | 19 | 20:29 (8) 21:56 | 21 | 20:36 (8) 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | 05:56 | | 05:20 | | 20:10 (8) 05:29 | | 20:15 (8) 06:11 | 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 21:13 | | 21:53 | 18 | 20:28 (8) 21:55 | 21 | 20:36 (8) 21:14 | 20:08 | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | | 05:20 | | 20:11 (8) 05:30 | | 20:15 (8) 06:13 | 07:02 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | | 21:54 | 18 | 20:29 (8) 21:55 | 21 | 20:36 (8) 21:12 | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | | 05:19 | | 20:12 (8) 05:31 | | 20:15 (8) 06:14 | 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | 20:26 | 21:16 | | 21:55 | 17 | 20:29 (8) 21:54 | 22 | 20:37 (8) 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:40 | 07:59 | 07:00 | 06:50 | 05:50 | | 05:19 | | 20:12 (8) 05:32 | | 20:15 (8) 06:16 | 07:06 | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | | 21:56 | 17 | 20:29 (8) 21:53 | 22 | 20:37 (8) 21:08 | 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:47 | 05:49 | | 05:19 | | 20:12 (8) 05:33 | | 20:15 (8) 06:17 | 07:07 | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 21:20 | | 21:56 | 16 | 20:28 (8) 21:52 | 22 | 20:37 (8) 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 06:45 | 05:47 | | 05:18 | | 20:13 (8) 05:34 | | 20:15 (8) 06:19 | 07:09 | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 21:21 | | 21:57 | 15 | 20:28 (8) 21:51 | 22 | 20:37 (8) 21:04 | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | | 05:18 | | 20:13 (8) 05:35 | | 20:15 (8) 06:21 | 07:11 | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:41 | 20:33 | 21:23 | | 21:57 | 16 | 20:29 (8) 21:50 | 22 | 20:37 (8) 21:02 | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | 05:44 | | 20:12 (8) 05:18 | | 20:14 (8) 05:37 | | 20:15 (8) 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 9 | 20:21 (8) 21:58 | 15 | 20:29 (8) 21:49 | 22 | 20:37 (8) 21:00 | 19:52 | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | | 20:11 (8) 05:18 | | 20:14 (8) 05:38 | | 20:16 (8) 06:24 | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:59 | 17:54 | 18:44 | 20:37 | 21:26 | 12 | 20:23 (8) 21:58 | 15 | 20:29 (8) 21:48 | 22 | 20:38 (8) 20:58 | 19:49 | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 | | 20:10 (8) 05:18 | | 20:14 (8) 05:39 | | 20:16 (8) 06:25 | 07:15 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 14 | 20:24 (8) 21:59 | 15 | 20:29 (8) 21:47 | 22 | 20:38 (8) 20:56 | 19:47 | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | 06:34 | 05:40 | | 20:09 (8) 05:18 | | 20:15 (8) 05:40 | | 20:16 (8) 06:27 | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | 21:29 | 17 | 20:26 (8) 21:59 | 14 | 20:29 (8) 21:46 | 22 | 20:38 (8) 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 05:39 | | 20:08 (8) 05:18 | | 20:15 (8) 05:42 | | 20:16 (8) 06:29 | 07:19 | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | 21:30 | 18 | 20:26 (8) 21:59 | 14 | 20:29 (8) 21:45 | 21 | 20:37 (8) 20:52 | 19:42 | 18:35 | 16:42 | 16:28 |
| 21 | 08:32 | 07:42 | 06:40 | 06:30 | 05:37 | | 20:07 (8) 05:18 | | 20:16 (8) 05:43 | | 20:17 (8) 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | 21:31 | 19 | 20:26 (8) 22:00 | 14 | 20:30 (8) 21:44 | 20 | 20:37 (8) 20:50 | 19:40 | 18:33 | 16:40 | 16:29 |
| 22 | 08:31 | 07:40 | 06:38 | 06:28 | 05:36 | | 20:07 (8) 05:18 | | 20:16 (8) 05:44 | | 20:18 (8) 06:32 | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | 21:33 | 20 | 20:27 (8) 22:00 | 14 | 20:30 (8) 21:42 | 19 | 20:37 (8) 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 05:35 | | 20:07 (8) 05:19 | | 20:16 (8) 05:46 | | 20:18 (8) 06:33 | 07:24 | 08:14 | 08:08 | 08:43 |
| | 17:09 | 18:05 | 18:54 | 20:47 | 21:34 | 21 | 20:28 (8) 22:00 | 14 | 20:30 (8) 21:41 | 19 | 20:37 (8) 20:46 | 19:35 | 18:29 | 16:38 | 16:30 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | 05:33 | | 20:07 (8) 05:19 | | 20:15 (8) 05:47 | | 20:18 (8) 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 21:36 | 21 | 20:28 (8) 22:00 | 15 | 20:30 (8) 21:40 | 18 | 20:36 (8) 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | | 20:07 (8) 05:19 | | 20:16 (8) 05:48 | | 20:20 (8) 06:37 | 07:27 | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 21 | 20:28 (8) 22:00 | 15 | 20:31 (8) 21:38 | 16 | 20:36 (8) 20:41 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 06:20 | 05:31 | | 20:07 (8) 05:20 | | 20:16 (8) 05:50 | | 20:21 (8) 06:38 | 07:28 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | 20:52 | 21:38 | 22 | 20:29 (8) 22:00 | 15 | 20:31 (8) 21:37 | 13 | 20:34 (8) 20:39 | 19:28 | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | | 20:07 (8) 05:20 | | 20:16 (8) 05:51 | | 20:22 (8) 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:12 | 19:01 | 20:53 | 21:40 | 22 | 20:29 (8) 22:00 | 16 | 20:32 (8) 21:36 | 10 | 20:32 (8) 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | | 20:07 (8) 05:21 | | 20:16 (8) 05:53 | | 20:25 (8) 06:42 | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22 | 20:29 (8) 22:00 | 15 | 20:31 (8) 21:34 | 6 | 20:31 (8) 20:35 | 19:24 | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 06:14 | 05:28 | | 20:07 (8) 05:21 | | 20:16 (8) 05:54 | | 06:43 | 07:33 | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 20:57 | 21:42 | 22 | 20:29 (8) 22:00 | 16 | 20:32 (8) 21:33 | | 20:33 | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | | 20:07 (8) 05:22 | | 20:16 (8) 05:56 | | 06:45 | 07:35 | 07:26 | 08:19 | 08:44 |
| | 17:21 | | 20:06 | 20:58 | 21:43 | 22 | 20:29 (8) 22:00 | 16 | 20:32 (8) 21:31 | | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | 05:26 | | 20:07 (8) | | | | 06:46 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:44 | 22 | 20:29 (8) | | | | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | | 498 | | 501 | | 453 | 381 | 332 | 267 | 244 |
| Total, worst case | | | | | | 304 | | 500 | | 532 | | | | | |
| Sun reduction | | | | | | 0.37 | | 0.30 | | 0.27 | | | | | |
| Oper. time red. | | | | | | 1.00 | | 1.00 | | 1.00 | | | | | |
| Wind dir. red. | | | | | | 0.57 | | 0.57 | | 0.57 | | | | | |
| Total reduction | | | | | | 0.21 | | 0.17 | | 0.15 | | | | | |
| Total, real | | | | | | 64 | | 85 | | 81 | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** AF - H34

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:15 | 06:10 | 05:25 | 05:22 | 05:59 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | 07:12 | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:31 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | 06:06 | 05:24 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 | 21:03 | 21:48 | 21:59 | 21:24 | 20:22 | 19:12 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:04 | 05:23 | 05:25 | 06:03 | 06:53 | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | 06:03 | 05:22 | 05:25 | 06:05 | 06:54 | 07:43 | 07:37 | 08:26 |
| | 16:42 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:22 | 05:26 | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 19:06 | 17:02 | 16:28 |
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| | 16:45 | 17:38 | 18:28 | 20:21 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | 05:56 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 21:13 | 21:53 | 21:55 | 21:14 | 20:08 | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:20 | 05:30 | 06:13 | 07:03 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | 20:26 | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:40 | 07:59 | 07:00 | 06:50 | 05:51 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:48 | 05:49 | 05:19 | 05:33 | 06:17 | 07:07 | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 06:45 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:59 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:35 | 06:21 | 07:11 | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:41 | 20:33 | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | 05:44 | 05:18 | 05:37 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:59 | 17:54 | 18:44 | 20:37 | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 | 05:18 | 05:39 | 06:25 | 07:15 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:28 |
| 19 | 08:35 | 07:46 | 06:44 | 06:35 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 05:39 | 05:18 | 05:42 | 06:29 | 07:19 | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | 21:30 | 21:59 | 21:45 | 20:52 | 19:42 | 18:35 | 16:42 | 16:28 |
| 21 | 08:32 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | 21:31 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:41 | 16:29 |
| 22 | 08:31 | 07:40 | 06:38 | 06:28 | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | 21:33 | 22:00 | 21:42 | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 05:35 | 05:19 | 05:46 | 06:33 | 07:24 | 08:14 | 08:08 | 08:43 |
| | 17:09 | 18:05 | 18:54 | 20:47 | 21:34 | 22:00 | 21:41 | 20:46 | 19:35 | 18:29 | 16:38 | 16:30 |
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| 26 | 08:26 | 07:31 | 06:28 | 06:20 | 05:31 | 05:20 | 05:50 | 06:38 | 07:28 | 07:19 | 08:13 | 08:44 |
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| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
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| 29 | 08:22 | | 07:21 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:56 | 06:45 | 07:35 | 07:27 | 08:19 | 08:44 |
| | 17:21 | | 20:06 | 20:58 | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | 05:26 | | 05:57 | 06:46 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:44 | | 21:29 | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 245 |
| Total, worst case | | | | | | | | | | | | |
| Sun reduction | | | | | | | | | | | | |
| Oper. time red. | | | | | | | | | | | | |
| Wind dir. red. | | | | | | | | | | | | |
| Total reduction | | | | | | | | | | | | |
| Total, real | | | | | | | | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
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kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** AG - H35

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:15 | 06:10 | 05:25 | 05:22 | 05:59 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | 07:12 | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:31 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | 06:06 | 05:24 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 | 21:03 | 21:48 | 21:59 | 21:24 | 20:22 | 19:12 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:04 | 05:23 | 05:24 | 06:03 | 06:53 | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | 06:03 | 05:22 | 05:25 | 06:05 | 06:54 | 07:43 | 07:37 | 08:26 |
| | 16:42 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:22 | 05:26 | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 19:06 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 21:10 | 21:52 | 21:57 | 21:17 | 20:13 | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 05:57 | 05:20 | 05:28 | 06:09 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:38 | 18:28 | 20:21 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | 05:56 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 21:13 | 21:53 | 21:55 | 21:14 | 20:08 | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:20 | 05:30 | 06:13 | 07:03 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | 20:26 | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:40 | 07:59 | 07:00 | 06:50 | 05:51 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:48 | 05:49 | 05:19 | 05:33 | 06:17 | 07:07 | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 06:45 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:35 | 06:21 | 07:11 | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:41 | 20:33 | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | 05:44 | 05:18 | 05:37 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:59 | 17:54 | 18:44 | 20:37 | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 | 05:18 | 05:39 | 06:25 | 07:15 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:28 |
| 19 | 08:35 | 07:46 | 06:44 | 06:34 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 05:39 | 05:18 | 05:42 | 06:29 | 07:19 | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | 21:30 | 21:59 | 21:45 | 20:52 | 19:42 | 18:35 | 16:42 | 16:28 |
| 21 | 08:32 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | 21:31 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:40 | 16:29 |
| 22 | 08:31 | 07:40 | 06:38 | 06:28 | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | 21:33 | 22:00 | 21:42 | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 05:35 | 05:19 | 05:46 | 06:33 | 07:24 | 08:14 | 08:08 | 08:43 |
| | 17:09 | 18:05 | 18:54 | 20:47 | 21:34 | 22:00 | 21:41 | 20:46 | 19:35 | 18:29 | 16:38 | 16:30 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | 05:33 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:38 | 20:41 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 06:20 | 05:31 | 05:20 | 05:50 | 06:38 | 07:28 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:11 | 18:59 | 20:52 | 21:38 | 22:00 | 21:37 | 20:39 | 19:28 | 17:23 | 16:35 | 16:32 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:12 | 19:01 | 20:53 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:21 | 05:53 | 06:42 | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:56 | 06:45 | 07:35 | 07:27 | 08:19 | 08:44 |
| | 17:21 | | 20:06 | 20:58 | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | 05:26 | | 05:57 | 06:46 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:44 | | 21:29 | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 245 |
| Total, worst case | | | | | | | | | | | | |
| Sun reduction | | | | | | | | | | | | |
| Oper. time red. | | | | | | | | | | | | |
| Wind dir. red. | | | | | | | | | | | | |
| Total reduction | | | | | | | | | | | | |
| Total, real | | | | | | | | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
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+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** AH - H36

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:15 | 06:10 | 05:25 | 05:22 | 05:59 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | 07:12 | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:31 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | 06:06 | 05:24 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 | 21:03 | 21:48 | 21:59 | 21:24 | 20:22 | 19:12 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:04 | 05:23 | 05:25 | 06:03 | 06:53 | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | 06:03 | 05:22 | 05:25 | 06:05 | 06:54 | 07:43 | 07:37 | 08:26 |
| | 16:42 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:22 | 05:26 | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 19:06 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 21:10 | 21:52 | 21:57 | 21:17 | 20:13 | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 05:57 | 05:20 | 05:28 | 06:09 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:38 | 18:28 | 20:21 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | 05:56 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 21:13 | 21:53 | 21:55 | 21:14 | 20:08 | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:20 | 05:30 | 06:13 | 07:03 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | 20:26 | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:40 | 07:59 | 07:00 | 06:50 | 05:51 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:48 | 05:49 | 05:19 | 05:33 | 06:17 | 07:07 | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 06:45 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:59 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:35 | 06:21 | 07:11 | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:41 | 20:33 | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | 05:44 | 05:18 | 05:37 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:59 | 17:54 | 18:44 | 20:37 | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | 18:41 | 16:46 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 | 05:18 | 05:39 | 06:25 | 07:15 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:28 |
| 19 | 08:35 | 07:46 | 06:44 | 06:35 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 05:39 | 05:18 | 05:42 | 06:29 | 07:19 | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | 21:30 | 21:59 | 21:45 | 20:52 | 19:42 | 18:35 | 16:42 | 16:28 |
| 21 | 08:32 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | 21:31 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:41 | 16:29 |
| 22 | 08:31 | 07:40 | 06:38 | 06:28 | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | 21:33 | 22:00 | 21:42 | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 05:35 | 05:19 | 05:46 | 06:33 | 07:24 | 08:14 | 08:08 | 08:43 |
| | 17:09 | 18:05 | 18:54 | 20:47 | 21:34 | 22:00 | 21:41 | 20:46 | 19:35 | 18:29 | 16:38 | 16:30 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | 05:33 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:38 | 20:41 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 06:20 | 05:31 | 05:20 | 05:50 | 06:38 | 07:28 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:11 | 18:59 | 20:52 | 21:38 | 22:00 | 21:37 | 20:39 | 19:28 | 17:23 | 16:35 | 16:32 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:12 | 19:01 | 20:53 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:21 | 05:53 | 06:42 | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:56 | 06:45 | 07:35 | 07:27 | 08:19 | 08:44 |
| | 17:21 | | 20:06 | 20:58 | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | 05:26 | | 05:57 | 06:46 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:44 | | 21:29 | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 245 |
| Total, worst case | | | | | | | | | | | | |
| Sun reduction | | | | | | | | | | | | |
| Oper. time red. | | | | | | | | | | | | |
| Wind dir. red. | | | | | | | | | | | | |
| Total reduction | | | | | | | | | | | | |
| Total, real | | | | | | | | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

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Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** AI - H37

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:15 | 06:10 | 05:25 | 05:22 | 05:59 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | 07:12 | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:31 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | 06:06 | 05:24 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:20 | 20:13 | 21:03 | 21:48 | 21:59 | 21:25 | 20:22 | 19:12 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:05 | 05:23 | 05:25 | 06:03 | 06:53 | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | 06:03 | 05:22 | 05:25 | 06:05 | 06:55 | 07:43 | 07:37 | 08:26 |
| | 16:42 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:22 | 05:26 | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 19:06 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 21:10 | 21:52 | 21:57 | 21:18 | 20:13 | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 05:57 | 05:21 | 05:28 | 06:09 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:38 | 18:28 | 20:21 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | 05:56 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 21:13 | 21:53 | 21:55 | 21:14 | 20:08 | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:20 | 05:30 | 06:13 | 07:03 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:50 | 17:43 | 18:34 | 20:27 | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | 06:50 | 05:51 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:48 | 05:49 | 05:19 | 05:33 | 06:17 | 07:07 | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 06:45 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:59 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:35 | 06:21 | 07:11 | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:41 | 20:33 | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | 05:44 | 05:18 | 05:37 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:59 | 17:54 | 18:44 | 20:37 | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | 18:41 | 16:46 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 | 05:18 | 05:39 | 06:25 | 07:15 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:28 |
| 19 | 08:35 | 07:46 | 06:44 | 06:35 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 05:39 | 05:18 | 05:42 | 06:29 | 07:19 | 08:09 | 08:03 | 08:41 |
| | 17:04 | 18:00 | 18:49 | 20:42 | 21:30 | 21:59 | 21:45 | 20:52 | 19:42 | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:41 | 16:29 |
| 22 | 08:31 | 07:40 | 06:38 | 06:28 | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | 21:33 | 22:00 | 21:42 | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 05:35 | 05:19 | 05:46 | 06:33 | 07:24 | 08:14 | 08:08 | 08:43 |
| | 17:09 | 18:05 | 18:54 | 20:47 | 21:34 | 22:00 | 21:41 | 20:46 | 19:35 | 18:29 | 16:38 | 16:30 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | 05:33 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:38 | 20:42 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 06:20 | 05:31 | 05:20 | 05:50 | 06:38 | 07:28 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:11 | 18:59 | 20:52 | 21:38 | 22:00 | 21:37 | 20:39 | 19:29 | 17:23 | 16:35 | 16:32 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:12 | 19:01 | 20:53 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:21 | 05:53 | 06:42 | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:34 | 16:33 |
| 29 | 08:22 | | 07:21 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:56 | 06:45 | 07:35 | 07:27 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:58 | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | 05:26 | | 05:57 | 06:46 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:44 | | 21:29 | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 245 |
| Total, worst case | | | | | | | | | | | | |
| Sun reduction | | | | | | | | | | | | |
| Oper. time red. | | | | | | | | | | | | |
| Wind dir. red. | | | | | | | | | | | | |
| Total reduction | | | | | | | | | | | | |
| Total, real | | | | | | | | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

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Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** AJ - H38

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | | May | | June | July | August | | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:15 | | 06:10 | 07:04 (6) | 05:25 | 05:23 | 05:59 | | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | | 21:00 18 | 07:22 (6) | 21:46 | 22:00 | 21:28 | | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:45 | 08:17 | 07:23 | 07:12 | | 06:08 | 07:05 (6) | 05:25 | 05:23 | 06:00 | | 06:50 | 07:39 | 07:32 | 08:22 |
| | 16:38 | 17:27 | 18:18 | 20:11 | | 21:02 15 | 07:20 (6) | 21:47 | 21:59 | 21:26 | | 20:24 | 19:15 | 17:10 | 16:31 |
| 3 | 08:45 | 08:15 | 07:21 | 07:10 | | 06:07 | 07:06 (6) | 05:24 | 05:24 | 06:02 | | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:20 | 20:13 | | 21:04 12 | 07:18 (6) | 21:48 | 21:59 | 21:25 | | 20:22 | 19:13 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | | 06:05 | 07:08 (6) | 05:23 | 05:25 | 06:03 | | 06:53 | 07:42 | 07:36 | 08:25 |
| | 16:41 | 17:30 | 18:21 | 20:15 | | 21:05 7 | 07:15 (6) | 21:49 | 21:59 | 21:23 | | 20:20 | 19:10 | 17:06 | 16:30 |
| 5 | 08:44 | 08:12 | 07:16 | 07:06 | | 06:03 | | 05:22 | 05:25 | 06:05 | | 06:55 | 07:44 | 07:37 | 08:26 |
| | 16:42 | 17:32 | 18:23 | 20:17 | | 21:07 | | 21:50 | 21:58 | 21:21 | | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | | 06:01 | | 05:22 | 05:26 | 06:07 | | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | | 21:09 | | 21:51 | 21:58 | 21:19 | | 20:15 | 19:06 | 17:03 | 16:29 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | | 05:59 | | 05:21 | 05:27 | 06:08 | | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | | 21:10 | | 21:52 | 21:57 | 21:18 | | 20:13 | 19:04 | 17:01 | 16:28 |
| 8 | 08:43 | 08:07 | 07:10 | 06:59 | | 05:57 | | 05:21 | 05:28 | 06:10 | | 07:00 | 07:49 | 07:43 | 08:30 |
| | 16:46 | 17:38 | 18:29 | 20:22 | | 21:12 | | 21:53 | 21:56 | 21:16 | | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:57 | | 05:56 | | 05:20 | 05:29 | 06:11 | 07:17 (6) | 07:01 | 07:50 | 07:45 | 08:31 |
| | 16:47 | 17:40 | 18:30 | 20:23 | | 21:13 | | 21:54 | 21:56 | 21:14 9 | 07:26 (6) | 20:08 | 18:59 | 16:58 | 16:28 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | | 05:54 | | 05:20 | 05:30 | 06:13 | 07:15 (6) | 07:03 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | | 21:15 | | 21:54 | 21:55 | 21:12 13 | 07:28 (6) | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | | 05:52 | | 05:19 | 05:31 | 06:14 | 07:13 (6) | 07:04 | 07:54 | 07:48 | 08:34 |
| | 16:50 | 17:43 | 18:34 | 20:27 | | 21:17 | | 21:55 | 21:54 | 21:10 16 | 07:29 (6) | 20:04 | 18:55 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:01 | 06:50 | | 05:51 | | 05:19 | 05:32 | 06:16 | 07:12 (6) | 07:06 | 07:55 | 07:50 | 08:35 |
| | 16:51 | 17:45 | 18:36 | 20:28 | | 21:18 | | 21:56 | 21:53 | 21:08 19 | 07:31 (6) | 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:58 | 06:58 | 06:48 | | 05:49 | | 05:19 | 05:33 | 06:18 | 07:11 (6) | 07:08 | 07:57 | 07:52 | 08:36 |
| | 16:53 | 17:47 | 18:37 | 20:30 | | 21:20 | | 21:56 | 21:52 | 21:06 20 | 07:31 (6) | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:56 | 06:56 | 06:46 | | 05:48 | | 05:19 | 05:34 | 06:19 | 07:10 (6) | 07:09 | 07:59 | 07:53 | 08:37 |
| | 16:54 | 17:49 | 18:39 | 20:32 | | 21:21 | | 21:57 | 21:52 | 21:04 22 | 07:32 (6) | 19:57 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | | 05:46 | | 05:18 | 05:36 | 06:21 | 07:09 (6) | 07:11 | 08:00 | 07:55 | 08:37 |
| | 16:56 | 17:51 | 18:41 | 20:33 | | 21:23 | | 21:58 | 21:51 | 21:02 23 | 07:32 (6) | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 08:38 | 07:52 | 06:52 | 06:41 | | 05:44 | | 05:18 | 05:37 | 06:22 | 07:09 (6) | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:53 | 18:42 | 20:35 | | 21:24 | | 21:58 | 21:50 | 21:00 23 | 07:32 (6) | 19:52 | 18:44 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | | 05:43 | | 05:18 | 05:38 | 06:24 | 07:08 (6) | 07:14 | 08:04 | 07:59 | 08:39 |
| | 16:59 | 17:54 | 18:44 | 20:37 | | 21:26 | | 21:59 | 21:49 | 20:58 24 | 07:32 (6) | 19:50 | 18:41 | 16:46 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 07:10 (6) | 05:42 | | 05:18 | 05:39 | 06:26 | 07:09 (6) | 07:16 | 08:06 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:39 10 | 07:20 (6) | 21:27 | | 21:59 | 21:47 | 20:56 23 | 07:32 (6) | 19:47 | 18:39 | 16:44 | 16:28 |
| 19 | 08:35 | 07:46 | 06:45 | 06:35 | 07:08 (6) | 05:40 | | 05:18 | 05:40 | 06:27 | 07:08 (6) | 07:17 | 08:07 | 08:02 | 08:41 |
| | 17:02 | 17:58 | 18:48 | 20:40 14 | 07:22 (6) | 21:29 | | 21:59 | 21:46 | 20:54 23 | 07:31 (6) | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:33 | 07:06 (6) | 05:39 | | 05:18 | 05:42 | 06:29 | 07:09 (6) | 07:19 | 08:09 | 08:04 | 08:41 |
| | 17:04 | 18:00 | 18:49 | 20:42 18 | 07:24 (6) | 21:30 | | 22:00 | 21:45 | 20:52 22 | 07:31 (6) | 19:43 | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | 07:05 (6) | 05:37 | | 05:18 | 05:43 | 06:30 | 07:09 (6) | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:02 | 18:51 | 20:44 19 | 07:24 (6) | 21:32 | | 22:00 | 21:44 | 20:50 20 | 07:29 (6) | 19:40 | 18:33 | 16:41 | 16:29 |
| 22 | 08:32 | 07:40 | 06:38 | 06:28 | 07:04 (6) | 05:36 | | 05:19 | 05:44 | 06:32 | 07:10 (6) | 07:22 | 08:13 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 21 | 07:25 (6) | 21:33 | | 22:00 | 21:43 | 20:48 19 | 07:29 (6) | 19:38 | 18:31 | 16:40 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 07:03 (6) | 05:35 | | 05:19 | 05:46 | 06:34 | 07:10 (6) | 07:24 | 08:14 | 08:09 | 08:43 |
| | 17:09 | 18:05 | 18:54 | 20:47 22 | 07:25 (6) | 21:35 | | 22:00 | 21:41 | 20:46 17 | 07:27 (6) | 19:36 | 18:29 | 16:38 | 16:30 |
| 24 | 08:29 | 07:36 | 06:33 | 06:24 | 07:03 (6) | 05:34 | | 05:19 | 05:47 | 06:35 | 07:12 (6) | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:11 | 18:07 | 18:56 | 20:49 22 | 07:25 (6) | 21:36 | | 22:00 | 21:40 | 20:44 14 | 07:26 (6) | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:34 | 06:31 | 06:22 | 07:02 (6) | 05:32 | | 05:19 | 05:49 | 06:37 | 07:13 (6) | 07:27 | 07:18 | 08:12 | 08:44 |
| | 17:12 | 18:09 | 18:58 | 20:50 23 | 07:25 (6) | 21:37 | | 22:00 | 21:39 | 20:42 10 | 07:23 (6) | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:27 | 07:31 | 06:29 | 06:20 | 07:02 (6) | 05:31 | | 05:20 | 05:50 | 06:39 | | 07:29 | 07:20 | 08:13 | 08:44 |
| | 17:14 | 18:11 | 19:00 | 20:52 23 | 07:25 (6) | 21:39 | | 22:00 | 21:37 | 20:40 | | 19:29 | 17:23 | 16:35 | 16:32 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 07:02 (6) | 05:30 | | 05:20 | 05:51 | 06:40 | | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:13 | 19:01 | 20:54 22 | 07:24 (6) | 21:40 | | 22:00 | 21:36 | 20:37 | | 19:26 | 17:21 | 16:35 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 07:02 (6) | 05:29 | | 05:21 | 05:53 | 06:42 | | 07:32 | 07:23 | 08:17 | 08:44 |
| | 17:18 | 18:14 | 19:03 | 20:55 22 | 07:24 (6) | 21:41 | | 22:00 | 21:34 | 20:35 | | 19:24 | 17:19 | 16:34 | 16:33 |
| 29 | 08:23 | | 07:22 | 06:14 | 07:02 (6) | 05:28 | | 05:21 | 05:54 | 06:43 | | 07:34 | 07:25 | 08:18 | 08:45 |
| | 17:19 | | 20:05 | 20:57 21 | 07:23 (6) | 21:42 | | 22:00 | 21:33 | 20:33 | | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 07:02 (6) | 05:27 | | 05:22 | 05:56 | 06:45 | | 07:35 | 07:27 | 08:20 | 08:45 |
| | 17:21 | | 20:06 | 20:59 20 | 07:22 (6) | 21:44 | | 22:00 | 21:31 | 20:31 | | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:20 | | 07:17 | | | 05:26 | | | 05:57 | 06:47 | | | 07:29 | | 08:45 |
| | 17:23 | | 20:08 | | | 21:45 | | | 21:30 | 20:29 | | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | | 485 | | 498 | 501 | 453 | | 381 | 332 | 267 | 244 |
| Total, worst case | | | | | 257 | | 52 | | | | 317 | | | | |
| Sun reduction | | | | | 0.35 | | 0.37 | | | | 0.30 | | | | |
| Oper. time red. | | | | | 1.00 | | 1.00 | | | | 1.00 | | | | |
| Wind dir. red. | | | | | 0.68 | | 0.68 | | | | 0.68 | | | | |
| Total reduction | | | | | 0.24 | | 0.25 | | | | 0.20 | | | | |
| Total, real | | | | | 62 | | 13 | | | | 64 | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
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+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** AK - H39

## Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45<br>16:37 | 08:18<br>17:25 | 07:25<br>18:16 | 07:15<br>20:10 | 06:10<br>21:00 28 | 06:51 (6)<br>07:19 (6)<br>21:46 8 | 05:25<br>06:09 (3)<br>05:23 | 06:09 (3)<br>06:28 (3)<br>21:28 19 | 05:59<br>07:01 (6)<br>25 | 06:48<br>07:26 (6)<br>20:26 | 07:37<br>19:17 | 07:30<br>17:11 | 08:21<br>16:31 |
| 2 | 08:45<br>16:38 | 08:17<br>17:27 | 07:23<br>18:18 | 07:12<br>20:11 | 06:08<br>21:02 29 | 06:50 (6)<br>07:19 (6)<br>21:47 10 | 05:25<br>06:08 (3)<br>05:23 | 06:10 (3)<br>06:28 (3)<br>21:26 18 | 06:00<br>07:01 (6)<br>26 | 06:50<br>07:27 (6)<br>20:24 | 07:39<br>19:15 | 07:32<br>17:10 | 08:22<br>16:31 |
| 3 | 08:45<br>16:39 | 08:15<br>17:28 | 07:21<br>18:20 | 07:10<br>20:13 | 06:07<br>21:04 30 | 06:49 (6)<br>07:19 (6)<br>21:48 12 | 05:24<br>06:08 (3)<br>05:24 | 06:10 (3)<br>06:28 (3)<br>21:59 18 | 06:02<br>07:00 (6)<br>27 | 06:51<br>07:27 (6)<br>20:22 | 07:40<br>19:13 | 07:34<br>17:08 | 08:24<br>16:30 |
| 4 | 08:44<br>16:41 | 08:13<br>17:30 | 07:18<br>18:21 | 07:08<br>20:15 | 06:05<br>21:05 29 | 06:49 (6)<br>07:18 (6)<br>21:49 13 | 05:23<br>06:07 (3)<br>05:25<br>06:20 (3)<br>21:59 17 | 06:11 (3)<br>06:28 (3)<br>21:23 28 | 06:03<br>07:00 (6)<br>07:28 (6)<br>20:20 | 06:53<br>06:59 (6)<br>19:10 | 07:42<br>17:06 | 07:36<br>17:06 | 08:25<br>16:30 |
| 5 | 08:44<br>16:42 | 08:12<br>17:32 | 07:16<br>18:23 | 07:06<br>20:17 | 06:03<br>21:07 29 | 06:50 (6)<br>07:19 (6)<br>21:50 14 | 05:22<br>06:06 (3)<br>05:25<br>06:20 (3)<br>21:58 17 | 06:11 (3)<br>06:28 (3)<br>21:21 29 | 06:05<br>06:59 (6)<br>07:28 (6)<br>20:17 | 06:55<br>07:43<br>19:08 | 07:37<br>17:04 | 07:37<br>17:04 | 08:26<br>16:29 |
| 6 | 08:44<br>16:43 | 08:10<br>17:34 | 07:14<br>18:25 | 07:03<br>20:18 | 06:01<br>21:09 29 | 06:49 (6)<br>07:18 (6)<br>21:51 16 | 05:22<br>06:06 (3)<br>05:26<br>06:22 (3)<br>21:58 16 | 06:12 (3)<br>06:28 (3)<br>21:19 29 | 06:06<br>06:59 (6)<br>07:28 (6)<br>20:15 | 06:56<br>07:45<br>19:06 | 07:39<br>17:02 | 07:39<br>17:02 | 08:28<br>16:29 |
| 7 | 08:43<br>16:44 | 08:08<br>17:36 | 07:12<br>18:27 | 07:01<br>20:20 | 05:59<br>21:10 29 | 06:49 (6)<br>07:18 (6)<br>21:52 17 | 05:21<br>06:05 (3)<br>05:27<br>06:22 (3)<br>21:57 15 | 06:13 (3)<br>06:28 (3)<br>21:18 29 | 06:08<br>06:59 (6)<br>07:28 (6)<br>20:13 | 06:58<br>07:47<br>19:03 | 07:41<br>17:01 | 07:41<br>17:01 | 08:29<br>16:28 |
| 8 | 08:43<br>16:45 | 08:07<br>17:38 | 07:10<br>18:29 | 06:59<br>20:22 | 05:57<br>21:12 28 | 06:50 (6)<br>07:18 (6)<br>21:53 18 | 05:21<br>06:05 (3)<br>05:28<br>06:23 (3)<br>21:56 14 | 06:13 (3)<br>06:27 (3)<br>21:16 29 | 06:10<br>06:59 (6)<br>07:28 (6)<br>20:10 | 06:59<br>07:49<br>19:01 | 07:43<br>16:59 | 07:43<br>16:59 | 08:30<br>16:28 |
| 9 | 08:42<br>16:47 | 08:05<br>17:40 | 07:07<br>18:30 | 06:57<br>20:23 | 05:56<br>21:13 27 | 06:50 (6)<br>07:17 (6)<br>21:54 17 | 05:20<br>06:06 (3)<br>05:29<br>06:23 (3)<br>21:56 12 | 06:14 (3)<br>06:26 (3)<br>21:14 29 | 06:11<br>06:59 (6)<br>07:28 (6)<br>20:08 | 07:01<br>07:50<br>18:59 | 07:45<br>16:57 | 07:45<br>16:57 | 08:31<br>16:28 |
| 10 | 08:42<br>16:48 | 08:03<br>17:41 | 07:05<br>18:32 | 06:54<br>20:25 | 05:54<br>21:15 26 | 06:50 (6)<br>07:16 (6)<br>21:54 18 | 05:20<br>06:05 (3)<br>05:30<br>06:23 (3)<br>21:55 11 | 06:15 (3)<br>06:26 (3)<br>21:12 29 | 06:13<br>06:59 (6)<br>07:28 (6)<br>20:06 | 07:03<br>07:52<br>18:57 | 07:46<br>16:56 | 07:46<br>16:56 | 08:32<br>16:27 |
| 11 | 08:41<br>16:50 | 08:01<br>17:43 | 07:03<br>18:34 | 06:52<br>20:27 | 05:52<br>21:17 25 | 06:51 (6)<br>07:16 (6)<br>21:55 19 | 05:19<br>06:05 (3)<br>05:31<br>06:24 (3)<br>21:54 9 | 06:16 (3)<br>06:25 (3)<br>21:10 28 | 06:14<br>06:59 (6)<br>07:27 (6)<br>20:04 | 07:04<br>07:54<br>18:55 | 07:48<br>16:54 | 07:48<br>16:54 | 08:34<br>16:27 |
| 12 | 08:41<br>16:51 | 07:59<br>17:45 | 07:01<br>18:36 | 06:50<br>20:28 | 05:51<br>21:18 24 | 06:51 (6)<br>07:15 (6)<br>21:56 19 | 05:19<br>06:05 (3)<br>05:32<br>06:24 (3)<br>21:53 5 | 06:18 (3)<br>06:23 (3)<br>21:08 28 | 06:59 (6)<br>07:27 (6)<br>20:01 | 07:06<br>07:55<br>18:52 | 07:50<br>16:53 | 07:50<br>16:53 | 08:35<br>16:27 |
| 13 | 08:40<br>16:53 | 07:58<br>17:47 | 06:58<br>18:37 | 06:48<br>20:30 | 05:49<br>21:20 22 | 06:52 (6)<br>07:14 (6)<br>21:56 19 | 05:19<br>06:06 (3)<br>05:33<br>06:25 (3)<br>21:52 | 06:18<br>21:06 28 | 06:59 (6)<br>07:27 (7)<br>19:59 | 07:08<br>07:57<br>18:50 | 07:52<br>16:51 | 07:52<br>16:51 | 08:36<br>16:27 |
| 14 | 08:39<br>16:54 | 07:56<br>17:49 | 06:56<br>18:39 | 06:46<br>20:32 | 05:48<br>21:21 20 | 06:53 (6)<br>07:13 (6)<br>21:57 20 | 05:19<br>06:05 (3)<br>05:34<br>06:25 (3)<br>21:52 | 06:19<br>21:04 30 | 07:00 (6)<br>07:30 (7)<br>19:57 | 07:09<br>07:59<br>18:48 | 07:53<br>16:50 | 07:53<br>16:50 | 08:37<br>16:27 |
| 15 | 08:38<br>16:56 | 07:54<br>17:51 | 06:54<br>18:41 | 06:43<br>20:33 | 05:46<br>21:23 18 | 06:54 (6)<br>07:12 (6)<br>21:58 20 | 05:18<br>06:05 (3)<br>05:36<br>06:25 (3)<br>21:51 | 06:21<br>21:02 31 | 07:00 (6)<br>07:31 (7)<br>19:54 | 07:11<br>08:00<br>18:46 | 07:55<br>16:48 | 07:55<br>16:48 | 08:37<br>16:27 |
| 16 | 08:38<br>16:57 | 07:52<br>17:52 | 06:52<br>18:42 | 06:41<br>20:35 | 05:44<br>21:24 15 | 06:56 (6)<br>07:11 (6)<br>21:58 20 | 05:18<br>06:05 (3)<br>05:37<br>06:25 (3)<br>21:50 | 06:22<br>21:00 30 | 07:02 (6)<br>07:32 (7)<br>19:52 | 07:12<br>08:02<br>18:44 | 07:57<br>16:47 | 07:57<br>16:47 | 08:38<br>16:27 |
| 17 | 08:37<br>16:59 | 07:50<br>17:54 | 06:49<br>18:44 | 06:39<br>20:37 10 | 07:13 (7)<br>05:43<br>07:23 (7)<br>21:26 11 | 06:57 (6)<br>07:08 (6)<br>21:59 21 | 05:18<br>06:05 (3)<br>05:38<br>06:26 (3)<br>21:49 | 06:24<br>20:58 30 | 07:02 (6)<br>07:32 (7)<br>19:50 | 07:14<br>08:04<br>18:41 | 07:59<br>16:46 | 07:59<br>16:46 | 08:39<br>16:27 |
| 18 | 08:36<br>17:00 | 07:48<br>17:56 | 06:47<br>18:46 | 06:37<br>20:39 14 | 07:11 (7)<br>05:42<br>07:25 (7)<br>21:27 4 | 07:01 (6)<br>07:05 (6)<br>21:59 20 | 05:18<br>06:06 (3)<br>05:39<br>06:26 (3)<br>21:47 | 06:26<br>20:56 29 | 07:04 (6)<br>07:33 (7)<br>19:47 | 07:16<br>08:06<br>18:39 | 08:00<br>16:44 | 08:00<br>16:44 | 08:40<br>16:28 |
| 19 | 08:35<br>17:02 | 07:46<br>17:58 | 06:45<br>18:48 | 06:35<br>20:40 16 | 07:10 (7)<br>05:40<br>07:26 (7)<br>21:29 | 05:18<br>21:59 20 | 06:06 (3)<br>05:40<br>06:26 (3)<br>21:46 | 06:27<br>20:54 26 | 07:06 (6)<br>07:32 (7)<br>19:45 | 07:17<br>08:07<br>18:37 | 08:02<br>16:43 | 08:02<br>16:43 | 08:41<br>16:28 |
| 20 | 08:34<br>17:04 | 07:44<br>18:00 | 06:42<br>18:49 | 06:33<br>20:42 17 | 07:09 (7)<br>05:39<br>07:26 (7)<br>21:30 | 05:18<br>22:00 20 | 06:07 (3)<br>05:42<br>06:27 (3)<br>21:45 | 06:29<br>20:52 19 | 07:13 (7)<br>07:32 (7)<br>19:43 | 07:19<br>08:09<br>18:35 | 08:04<br>16:42 | 08:04<br>16:42 | 08:41<br>16:28 |
| 21 | 08:33<br>17:05 | 07:42<br>18:02 | 06:40<br>18:51 | 06:30<br>20:44 19 | 07:08 (7)<br>05:37<br>07:27 (7)<br>21:32 | 05:18<br>22:00 20 | 06:07 (3)<br>05:43<br>06:27 (3)<br>21:44 | 06:30<br>20:50 20 | 07:12 (7)<br>07:32 (7)<br>19:40 | 07:20<br>08:11<br>18:33 | 08:05<br>16:41 | 08:05<br>16:41 | 08:42<br>16:29 |
| 22 | 08:32<br>17:07 | 07:40<br>18:03 | 06:38<br>18:53 | 06:28<br>20:45 19 | 07:08 (7)<br>05:36<br>07:27 (7)<br>21:33 | 05:19<br>22:00 20 | 06:07 (3)<br>05:44<br>06:27 (3)<br>21:43 | 06:32<br>20:48 18 | 07:13 (7)<br>07:31 (7)<br>19:38 | 07:22<br>08:13<br>18:31 | 08:07<br>16:40 | 08:07<br>16:40 | 08:42<br>16:29 |
| 23 | 08:30<br>17:09 | 07:38<br>18:05 | 06:35<br>18:54 | 06:26<br>20:47 20 | 07:07 (7)<br>05:35<br>07:27 (7)<br>21:34 | 05:19<br>22:00 20 | 06:07 (3)<br>05:46<br>06:27 (3)<br>21:41 | 06:34<br>20:46 17 | 07:13 (7)<br>07:30 (7)<br>19:36 | 07:24<br>08:14<br>18:29 | 08:09<br>16:38 | 08:09<br>16:38 | 08:43<br>16:30 |
| 24 | 08:29<br>17:10 | 07:36<br>18:07 | 06:33<br>18:56 | 06:24<br>20:49 26 | 07:00 (6)<br>05:34<br>07:26 (7)<br>21:36 | 05:19<br>22:00 20 | 06:08 (3)<br>05:47<br>06:28 (3)<br>21:40 | 06:35<br>20:44 15 | 07:14 (7)<br>07:29 (7)<br>19:33 | 07:25<br>08:16<br>18:27 | 08:10<br>16:37 | 08:10<br>16:37 | 08:43<br>16:30 |
| 25 | 08:28<br>17:12 | 07:34<br>18:09 | 06:31<br>18:58 | 06:22<br>20:50 29 | 06:57 (6)<br>05:32<br>07:26 (7)<br>21:37 | 05:19<br>22:00 21 | 06:07 (3)<br>05:49<br>06:28 (3)<br>21:39 | 06:37<br>20:42 13 | 07:14 (7)<br>07:27 (7)<br>19:31 | 07:27<br>08:18<br>17:25 | 08:12<br>16:36 | 08:12<br>16:36 | 08:44<br>16:31 |
| 26 | 08:27<br>17:14 | 07:31<br>18:11 | 06:29<br>19:00 | 06:20<br>20:52 30 | 06:55 (6)<br>05:31<br>07:25 (7)<br>21:39 | 05:20<br>22:00 20 | 06:07 (3)<br>05:50<br>06:27 (3)<br>21:37 8 | 07:10 (6)<br>07:18 (6)<br>20:40 9 | 06:38<br>07:17 (7)<br>07:26 (7)<br>19:29 | 07:29<br>08:20<br>17:23 | 08:13<br>16:35 | 08:13<br>16:35 | 08:44<br>16:32 |
| 27 | 08:25<br>17:16 | 07:29<br>18:13 | 06:26<br>19:01 | 06:18<br>20:54 30 | 06:54 (6)<br>05:30<br>07:24 (7)<br>21:40 | 05:20<br>22:00 20 | 06:08 (3)<br>05:51<br>06:28 (3)<br>21:36 13 | 07:07 (6)<br>07:20 (6)<br>20:37 | 06:40<br>19:26 | 07:30<br>17:21 | 08:15<br>16:35 | 08:15<br>16:35 | 08:44<br>16:32 |
| 28 | 08:24<br>17:18 | 07:27<br>18:14 | 06:24<br>19:03 | 06:16<br>20:55 31 | 06:52 (6)<br>05:29<br>07:23 (7)<br>21:41 | 05:21<br>22:00 20 | 06:08 (3)<br>05:53<br>06:28 (3)<br>21:34 16 | 07:06 (6)<br>07:22 (6)<br>20:35 | 06:42<br>07:32<br>19:24 | 07:23<br>17:19 | 08:17<br>16:34 | 08:17<br>16:34 | 08:44<br>16:33 |
| 29 | 08:23<br>17:19 | | 07:22<br>20:05 | 06:14<br>20:57 30 | 06:51 (6)<br>05:28<br>07:21 (7)<br>21:42 | 05:21<br>22:00 19 | 06:09 (3)<br>05:54<br>06:28 (3)<br>21:33 19 | 07:04 (6)<br>07:23 (6)<br>20:33 | 06:43<br>07:34<br>19:22 | 07:25<br>17:17 | 08:18<br>16:33 | 08:18<br>16:33 | 08:45<br>16:34 |
| 30 | 08:21<br>17:21 | | 07:19<br>20:06 | 06:12<br>20:59 28 | 06:50 (6)<br>05:27<br>07:18 (7)<br>21:43 | 05:22<br>22:00 19 | 06:09 (3)<br>05:56<br>06:28 (3)<br>21:31 21 | 07:04 (6)<br>07:25 (6)<br>20:31 | 06:45<br>07:35<br>19:19 | 07:27<br>17:15 | 08:20<br>16:32 | 08:20<br>16:32 | 08:45<br>16:35 |
| 31 | 08:20<br>17:23 | | 07:17<br>20:08 | | 05:26<br>06:12 (3)<br>21:45 2<br>06:14 (3) | | 05:57<br>21:30 23 | 07:02 (6)<br>07:25 (6)<br>20:29 | 06:47 | 07:29<br>17:13 | | 08:45<br>16:36 | |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 244 | |
| Total, worst case | | | | 319 | 425 | 540 | 271 | 651 | | | | | |
| Sun reduction | | | | 0.35 | 0.37 | 0.30 | 0.27 | 0.30 | | | | | |
| Oper. time red. | | | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | | |
| Wind dir. red. | | | | 0.68 | 0.68 | 0.69 | 0.69 | 0.68 | | | | | |
| Total reduction | | | | 0.24 | 0.25 | 0.21 | 0.18 | 0.20 | | | | | |
| Total, real | | | | 77 | 108 | 113 | 50 | 132 | | | | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** AL - H40

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | | June | | July | | August | | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:15 | 06:10 | | 05:25 | 06:32 (6) | 05:23 | | 05:59 | 06:34 (6) | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | 21:00 | | 21:46 | 3 06:35 (6) | 22:00 | | 21:28 | 16 06:50 (6) | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:45 | 08:17 | 07:23 | 07:12 | 06:08 | | 05:25 | | 05:23 | | 06:00 | 06:36 (6) | 06:50 | 07:39 | 07:32 | 08:22 |
| | 16:38 | 17:27 | 18:18 | 20:11 | 21:02 | | 21:47 | | 21:59 | | 21:26 | 14 06:50 (6) | 20:24 | 19:15 | 17:10 | 16:31 |
| 3 | 08:45 | 08:15 | 07:21 | 07:10 | 06:07 | | 05:24 | | 05:24 | | 06:02 | 06:37 (6) | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:20 | 20:13 | 21:04 | | 21:48 | | 21:59 | | 21:25 | 11 06:48 (6) | 20:22 | 19:13 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:05 | | 05:23 | | 05:25 | | 06:03 | 06:40 (6) | 06:53 | 07:42 | 07:36 | 08:25 |
| | 16:41 | 17:30 | 18:21 | 20:15 | 21:05 | | 21:49 | | 21:59 | | 21:23 | 6 06:46 (6) | 20:20 | 19:10 | 17:06 | 16:30 |
| 5 | 08:44 | 08:12 | 07:16 | 07:06 | 06:03 | | 05:22 | | 05:26 | | 06:05 | | 06:55 | 07:44 | 07:37 | 08:26 |
| | 16:42 | 17:32 | 18:23 | 20:17 | 21:07 | | 21:50 | | 21:58 | | 21:21 | | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | | 05:22 | | 05:26 | | 06:07 | | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:09 | | 21:51 | | 21:58 | | 21:19 | | 20:15 | 19:06 | 17:03 | 16:29 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | | 05:21 | | 05:27 | | 06:08 | | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 21:10 | | 21:52 | | 21:57 | | 21:18 | | 20:13 | 19:04 | 17:01 | 16:28 |
| 8 | 08:43 | 08:07 | 07:10 | 06:59 | 05:58 | | 05:21 | | 05:28 | | 06:10 | | 07:00 | 07:49 | 07:43 | 08:30 |
| | 16:46 | 17:38 | 18:29 | 20:22 | 21:12 | | 21:53 | | 21:56 | | 21:16 | | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:57 | 05:56 | 06:28 (6) | 05:20 | | 05:29 | | 06:11 | | 07:01 | 07:50 | 07:45 | 08:31 |
| | 16:47 | 17:40 | 18:30 | 20:23 | 21:13 | 8 06:36 (6) | 21:54 | | 21:56 | | 21:14 | | 20:08 | 18:59 | 16:58 | 16:28 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 06:26 (6) | 05:20 | | 05:30 | | 06:13 | | 07:03 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 12 06:38 (6) | 21:54 | | 21:55 | | 21:12 | | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 06:25 (6) | 05:19 | | 05:31 | | 06:14 | | 07:04 | 07:54 | 07:48 | 08:34 |
| | 16:50 | 17:43 | 18:34 | 20:27 | 21:17 | 15 06:40 (6) | 21:55 | | 21:54 | | 21:10 | | 20:04 | 18:55 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:01 | 06:50 | 05:51 | 06:24 (6) | 05:19 | | 05:32 | 06:38 (6) | 06:16 | | 07:06 | 07:55 | 07:50 | 08:35 |
| | 16:51 | 17:45 | 18:36 | 20:28 | 21:18 | 16 06:40 (6) | 21:56 | | 21:53 | 6 06:44 (6) | 21:08 | | 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:58 | 06:58 | 06:48 | 05:49 | 06:23 (6) | 05:19 | | 05:33 | 06:37 (6) | 06:18 | | 07:08 | 07:57 | 07:52 | 08:36 |
| | 16:53 | 17:47 | 18:37 | 20:30 | 21:20 | 18 06:41 (6) | 21:56 | | 21:52 | 9 06:46 (6) | 21:06 | | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:56 | 06:56 | 06:46 | 05:48 | 06:22 (6) | 05:19 | | 05:34 | 06:36 (6) | 06:19 | | 07:09 | 07:59 | 07:53 | 08:37 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 21:21 | 19 06:41 (6) | 21:57 | | 21:52 | 11 06:47 (6) | 21:04 | | 19:57 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | 06:22 (6) | 05:18 | | 05:36 | 06:36 (6) | 06:21 | | 07:11 | 08:00 | 07:55 | 08:37 |
| | 16:56 | 17:51 | 18:41 | 20:33 | 21:23 | 20 06:42 (6) | 21:58 | | 21:51 | 13 06:49 (6) | 21:02 | | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 08:38 | 07:52 | 06:52 | 06:41 | 05:44 | 06:22 (6) | 05:18 | | 05:37 | 06:35 (6) | 06:22 | | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:53 | 18:42 | 20:35 | 21:24 | 21 06:43 (6) | 21:58 | | 21:50 | 15 06:50 (6) | 21:00 | | 19:52 | 18:44 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 06:21 (6) | 05:18 | | 05:38 | 06:34 (6) | 06:24 | | 07:14 | 08:04 | 07:59 | 08:39 |
| | 16:59 | 17:54 | 18:44 | 20:37 | 21:26 | 21 06:42 (6) | 21:59 | | 21:49 | 16 06:50 (6) | 20:58 | | 19:50 | 18:41 | 16:46 | 16:28 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:42 | 06:22 (6) | 05:18 | | 05:39 | 06:34 (6) | 06:26 | | 07:16 | 08:06 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:39 | 21:27 | 21 06:43 (6) | 21:59 | | 21:47 | 17 06:51 (6) | 20:56 | | 19:47 | 18:39 | 16:44 | 16:28 |
| 19 | 08:35 | 07:46 | 06:45 | 06:35 | 05:40 | 06:22 (6) | 05:18 | | 05:40 | 06:33 (6) | 06:27 | | 07:17 | 08:07 | 08:02 | 08:41 |
| | 17:02 | 17:58 | 18:48 | 20:40 | 21:29 | 21 06:43 (6) | 21:59 | | 21:46 | 18 06:51 (6) | 20:54 | | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:33 | 05:39 | 06:22 (6) | 05:18 | | 05:42 | 06:33 (6) | 06:29 | | 07:19 | 08:09 | 08:04 | 08:41 |
| | 17:04 | 18:00 | 18:49 | 20:42 | 21:30 | 21 06:43 (6) | 22:00 | | 21:45 | 18 06:51 (6) | 20:52 | | 19:43 | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | 05:37 | 06:22 (6) | 05:18 | | 05:43 | 06:33 (6) | 06:30 | | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:02 | 18:51 | 20:44 | 21:32 | 20 06:42 (6) | 22:00 | | 21:44 | 20 06:53 (6) | 20:50 | | 19:40 | 18:33 | 16:41 | 16:29 |
| 22 | 08:32 | 07:40 | 06:38 | 06:28 | 05:36 | 06:22 (6) | 05:19 | | 05:44 | 06:33 (6) | 06:32 | | 07:22 | 08:13 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | 21:33 | 20 06:42 (6) | 22:00 | | 21:43 | 20 06:53 (6) | 20:48 | | 19:38 | 18:31 | 16:40 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 05:35 | 06:23 (6) | 05:19 | | 05:46 | 06:32 (6) | 06:34 | | 07:24 | 08:14 | 08:09 | 08:43 |
| | 17:09 | 18:05 | 18:54 | 20:47 | 21:35 | 19 06:42 (6) | 22:00 | | 21:41 | 21 06:53 (6) | 20:46 | | 19:36 | 18:29 | 16:38 | 16:30 |
| 24 | 08:29 | 07:36 | 06:33 | 06:24 | 05:34 | 06:23 (6) | 05:19 | | 05:47 | 06:32 (6) | 06:35 | | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:11 | 18:07 | 18:56 | 20:49 | 21:36 | 19 06:42 (6) | 22:00 | | 21:40 | 21 06:53 (6) | 20:44 | | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:34 | 06:31 | 06:22 | 05:32 | 06:24 (6) | 05:20 | | 05:49 | 06:32 (6) | 06:37 | | 07:27 | 07:18 | 08:12 | 08:44 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 17 06:41 (6) | 22:00 | | 21:39 | 21 06:53 (6) | 20:42 | | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:27 | 07:31 | 06:29 | 06:20 | 05:31 | 06:25 (6) | 05:20 | | 05:50 | 06:32 (6) | 06:39 | | 07:29 | 07:20 | 08:13 | 08:44 |
| | 17:14 | 18:11 | 19:00 | 20:52 | 21:39 | 16 06:41 (6) | 22:00 | | 21:37 | 21 06:53 (6) | 20:40 | | 19:29 | 17:23 | 16:35 | 16:32 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 06:25 (6) | 05:20 | | 05:51 | 06:32 (6) | 06:40 | | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:13 | 19:01 | 20:54 | 21:40 | 15 06:40 (6) | 22:00 | | 21:36 | 21 06:53 (6) | 20:37 | | 19:26 | 17:21 | 16:35 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 06:26 (6) | 05:21 | | 05:53 | 06:33 (6) | 06:42 | | 07:32 | 07:23 | 08:17 | 08:44 |
| | 17:18 | 18:14 | 19:03 | 20:55 | 21:41 | 14 06:40 (6) | 22:00 | | 21:34 | 20 06:53 (6) | 20:35 | | 19:24 | 17:19 | 16:34 | 16:33 |
| 29 | 08:23 | | 07:22 | 06:14 | 05:28 | 06:27 (6) | 05:21 | | 05:54 | 06:33 (6) | 06:43 | | 07:34 | 07:25 | 08:18 | 08:45 |
| | 17:19 | | 20:05 | 20:57 | 21:42 | 12 06:39 (6) | 22:00 | | 21:33 | 19 06:52 (6) | 20:33 | | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 06:28 (6) | 05:22 | | 05:56 | 06:34 (6) | 06:45 | | 07:35 | 07:27 | 08:20 | 08:45 |
| | 17:21 | | 20:06 | 20:59 | 21:43 | 10 06:38 (6) | 22:00 | | 21:31 | 18 06:52 (6) | 20:31 | | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:20 | | 07:17 | | 05:26 | 06:30 (6) | | | 05:57 | 06:34 (6) | 06:47 | | | 07:29 | | 08:45 |
| | 17:23 | | 20:08 | | 21:45 | 7 06:37 (6) | | | 21:30 | 17 06:51 (6) | 20:29 | | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | | 498 | | 501 | | 453 | | 381 | 332 | 267 | 245 |
| Total, worst case | | | | | | 382 | | 3 | | 342 | | 47 | | | | |
| Sun reduction | | | | | | 0.37 | | 0.30 | | 0.27 | | 0.30 | | | | |
| Oper. time red. | | | | | | 1.00 | | 1.00 | | 1.00 | | 1.00 | | | | |
| Wind dir. red. | | | | | | 0.69 | | 0.69 | | 0.69 | | 0.69 | | | | |
| Total reduction | | | | | | 0.26 | | 0.21 | | 0.19 | | 0.21 | | | | |
| Total, real | | | | | | 98 | | 1 | | 64 | | 10 | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** AM - H41

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:15 | 06:10 | 05:25 | 05:22 | 05:59 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | 21:00 | 21:46 | 22:00 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:45 | 08:16 | 07:23 | 07:12 | 06:08 | 05:25 | 05:23 | 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:27 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:31 |
| 3 | 08:44 | 08:15 | 07:21 | 07:10 | 06:06 | 05:24 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:20 | 20:13 | 21:04 | 21:48 | 21:59 | 21:25 | 20:22 | 19:13 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:05 | 05:23 | 05:25 | 06:03 | 06:53 | 07:42 | 07:36 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 19:10 | 17:06 | 16:30 |
| 5 | 08:44 | 08:12 | 07:16 | 07:06 | 06:03 | 05:22 | 05:25 | 06:05 | 06:55 | 07:43 | 07:37 | 08:26 |
| | 16:42 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:22 | 05:26 | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 19:06 | 17:02 | 16:29 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 21:10 | 21:52 | 21:57 | 21:18 | 20:13 | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:07 | 07:10 | 06:59 | 05:57 | 05:21 | 05:28 | 06:10 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:38 | 18:28 | 20:22 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:57 | 05:56 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:45 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 21:13 | 21:53 | 21:56 | 21:14 | 20:08 | 18:59 | 16:57 | 16:28 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:20 | 05:30 | 06:13 | 07:03 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:54 | 07:48 | 08:33 |
| | 16:50 | 17:43 | 18:34 | 20:27 | 21:17 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:01 | 06:50 | 05:51 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:35 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:48 | 05:49 | 05:19 | 05:33 | 06:18 | 07:07 | 07:57 | 07:52 | 08:36 |
| | 16:53 | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:56 | 06:56 | 06:45 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:59 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 21:21 | 21:57 | 21:51 | 21:04 | 19:57 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:35 | 06:21 | 07:11 | 08:00 | 07:55 | 08:37 |
| | 16:56 | 17:51 | 18:41 | 20:33 | 21:23 | 21:58 | 21:51 | 21:02 | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 08:38 | 07:52 | 06:51 | 06:41 | 05:44 | 05:18 | 05:37 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:50 | 21:00 | 19:52 | 18:44 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:59 | 08:39 |
| | 16:59 | 17:54 | 18:44 | 20:37 | 21:26 | 21:59 | 21:48 | 20:58 | 19:50 | 18:41 | 16:46 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 | 05:18 | 05:39 | 06:26 | 07:16 | 08:06 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:28 |
| 19 | 08:35 | 07:46 | 06:45 | 06:35 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:48 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:33 | 05:39 | 05:18 | 05:42 | 06:29 | 07:19 | 08:09 | 08:04 | 08:41 |
| | 17:04 | 18:00 | 18:49 | 20:42 | 21:30 | 22:00 | 21:45 | 20:52 | 19:43 | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:02 | 18:51 | 20:43 | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:41 | 16:29 |
| 22 | 08:32 | 07:40 | 06:38 | 06:28 | 05:36 | 05:19 | 05:44 | 06:32 | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | 21:33 | 22:00 | 21:43 | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 05:35 | 05:19 | 05:46 | 06:34 | 07:24 | 08:14 | 08:09 | 08:43 |
| | 17:09 | 18:05 | 18:54 | 20:47 | 21:34 | 22:00 | 21:41 | 20:46 | 19:36 | 18:29 | 16:38 | 16:30 |
| 24 | 08:29 | 07:36 | 06:33 | 06:24 | 05:34 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:49 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | 07:18 | 08:12 | 08:44 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:39 | 20:42 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:27 | 07:31 | 06:28 | 06:20 | 05:31 | 05:20 | 05:50 | 06:38 | 07:29 | 07:20 | 08:13 | 08:44 |
| | 17:14 | 18:11 | 18:59 | 20:52 | 21:38 | 22:00 | 21:37 | 20:39 | 19:29 | 17:23 | 16:35 | 16:32 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:12 | 19:01 | 20:54 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:21 | 05:53 | 06:42 | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:18 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:34 | 16:33 |
| 29 | 08:22 | | 07:22 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | 07:25 | 08:18 | 08:45 |
| | 17:19 | | 20:05 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:56 | 06:45 | 07:35 | 07:27 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:59 | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:20 | | 07:17 | | 05:26 | | 05:57 | 06:47 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:45 | | 21:30 | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 245 |
| Total, worst case | | | | | | | | | | | | |
| Sun reduction | | | | | | | | | | | | |
| Oper. time red. | | | | | | | | | | | | |
| Wind dir. red. | | | | | | | | | | | | |
| Total reduction | | | | | | | | | | | | |
| Total, real | | | | | | | | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** AN - H42

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:15 | 06:10 | 05:25 | 05:22 | 05:59 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | 21:00 | 21:46 | 22:00 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:45 | 08:16 | 07:23 | 07:12 | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:27 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:31 |
| 3 | 08:44 | 08:15 | 07:21 | 07:10 | 06:06 | 05:24 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:20 | 20:13 | 21:04 | 21:48 | 21:59 | 21:25 | 20:22 | 19:12 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:05 | 05:23 | 05:25 | 06:03 | 06:53 | 07:42 | 07:36 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:06 | 06:03 | 05:22 | 05:25 | 06:05 | 06:55 | 07:43 | 07:37 | 08:26 |
| | 16:42 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:22 | 05:26 | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 19:06 | 17:02 | 16:29 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 21:10 | 21:52 | 21:57 | 21:18 | 20:13 | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:07 | 07:10 | 06:59 | 05:57 | 05:21 | 05:28 | 06:10 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:38 | 18:28 | 20:22 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:57 | 05:56 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 21:13 | 21:53 | 21:56 | 21:14 | 20:08 | 18:59 | 16:57 | 16:28 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:20 | 05:30 | 06:13 | 07:03 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:50 | 17:43 | 18:34 | 20:27 | 21:17 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:01 | 06:50 | 05:51 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:48 | 05:49 | 05:19 | 05:33 | 06:17 | 07:07 | 07:57 | 07:52 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:56 | 06:56 | 06:45 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:59 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:35 | 06:21 | 07:11 | 08:00 | 07:55 | 08:37 |
| | 16:56 | 17:51 | 18:41 | 20:33 | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 08:38 | 07:52 | 06:51 | 06:41 | 05:44 | 05:18 | 05:37 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | 18:44 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:59 | 17:54 | 18:44 | 20:37 | 21:26 | 21:58 | 21:48 | 20:58 | 19:50 | 18:41 | 16:46 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 | 05:18 | 05:39 | 06:26 | 07:16 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:28 |
| 19 | 08:35 | 07:46 | 06:45 | 06:35 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:48 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 05:39 | 05:18 | 05:42 | 06:29 | 07:19 | 08:09 | 08:04 | 08:41 |
| | 17:04 | 18:00 | 18:49 | 20:42 | 21:30 | 22:00 | 21:45 | 20:52 | 19:43 | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:02 | 18:51 | 20:43 | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:41 | 16:29 |
| 22 | 08:31 | 07:40 | 06:38 | 06:28 | 05:36 | 05:19 | 05:44 | 06:32 | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | 21:33 | 22:00 | 21:43 | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 05:35 | 05:19 | 05:46 | 06:34 | 07:24 | 08:14 | 08:09 | 08:43 |
| | 17:09 | 18:05 | 18:54 | 20:47 | 21:34 | 22:00 | 21:41 | 20:46 | 19:36 | 18:29 | 16:38 | 16:30 |
| 24 | 08:29 | 07:36 | 06:33 | 06:24 | 05:34 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:49 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | 07:18 | 08:12 | 08:44 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:39 | 20:42 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:27 | 07:31 | 06:28 | 06:20 | 05:31 | 05:20 | 05:50 | 06:38 | 07:29 | 07:20 | 08:13 | 08:44 |
| | 17:14 | 18:11 | 18:59 | 20:52 | 21:38 | 22:00 | 21:37 | 20:39 | 19:29 | 17:23 | 16:35 | 16:32 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:12 | 19:01 | 20:54 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:21 | 05:53 | 06:42 | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:34 | 16:33 |
| 29 | 08:22 | | 07:22 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:05 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:56 | 06:45 | 07:35 | 07:27 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:59 | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:20 | | 07:17 | | 05:26 | | 05:57 | 06:46 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:45 | | 21:30 | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 245 |
| Total, worst case | | | | | | | | | | | | |
| Sun reduction | | | | | | | | | | | | |
| Oper. time red. | | | | | | | | | | | | |
| Wind dir. red. | | | | | | | | | | | | |
| Total reduction | | | | | | | | | | | | |
| Total, real | | | | | | | | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** AO - H44

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:15 | 06:10 | 05:25 | 05:22 | 05:59 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:45 | 08:16 | 07:23 | 07:12 | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:27 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:31 |
| 3 | 08:44 | 08:15 | 07:21 | 07:10 | 06:06 | 05:24 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:20 | 20:13 | 21:04 | 21:48 | 21:59 | 21:25 | 20:22 | 19:12 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:05 | 05:23 | 05:25 | 06:03 | 06:53 | 07:42 | 07:36 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:06 | 06:03 | 05:22 | 05:25 | 06:05 | 06:55 | 07:43 | 07:37 | 08:26 |
| | 16:42 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:22 | 05:26 | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 19:06 | 17:02 | 16:29 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 21:10 | 21:52 | 21:57 | 21:18 | 20:13 | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 05:57 | 05:21 | 05:28 | 06:10 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:38 | 18:28 | 20:21 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:57 | 05:56 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 21:13 | 21:53 | 21:56 | 21:14 | 20:08 | 18:59 | 16:57 | 16:28 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:20 | 05:30 | 06:13 | 07:03 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:50 | 17:43 | 18:34 | 20:27 | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | 06:50 | 05:51 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:48 | 05:49 | 05:19 | 05:33 | 06:17 | 07:07 | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:56 | 06:56 | 06:45 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:59 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:35 | 06:21 | 07:11 | 08:00 | 07:55 | 08:37 |
| | 16:56 | 17:51 | 18:41 | 20:33 | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | 05:44 | 05:18 | 05:37 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | 18:44 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:59 | 17:54 | 18:44 | 20:37 | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | 18:41 | 16:46 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 | 05:18 | 05:39 | 06:25 | 07:16 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:28 |
| 19 | 08:35 | 07:46 | 06:45 | 06:35 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:48 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 05:39 | 05:18 | 05:42 | 06:29 | 07:19 | 08:09 | 08:04 | 08:41 |
| | 17:04 | 18:00 | 18:49 | 20:42 | 21:30 | 22:00 | 21:45 | 20:52 | 19:43 | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:02 | 18:51 | 20:43 | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:41 | 16:29 |
| 22 | 08:31 | 07:40 | 06:38 | 06:28 | 05:36 | 05:19 | 05:44 | 06:32 | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | 21:33 | 22:00 | 21:43 | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 05:35 | 05:19 | 05:46 | 06:34 | 07:24 | 08:14 | 08:09 | 08:43 |
| | 17:09 | 18:05 | 18:54 | 20:47 | 21:34 | 22:00 | 21:41 | 20:46 | 19:36 | 18:29 | 16:38 | 16:30 |
| 24 | 08:29 | 07:36 | 06:33 | 06:24 | 05:34 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | 07:18 | 08:12 | 08:44 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:38 | 20:42 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:27 | 07:31 | 06:28 | 06:20 | 05:31 | 05:20 | 05:50 | 06:38 | 07:29 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:11 | 18:59 | 20:52 | 21:38 | 22:00 | 21:37 | 20:39 | 19:29 | 17:23 | 16:35 | 16:32 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:12 | 19:01 | 20:54 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:21 | 05:53 | 06:42 | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:34 | 16:33 |
| 29 | 08:22 | | 07:22 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:05 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:56 | 06:45 | 07:35 | 07:27 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:59 | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | 05:26 | | 05:57 | 06:46 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:45 | | 21:29 | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 245 |
| Total, worst case | | | | | | | | | | | | |
| Sun reduction | | | | | | | | | | | | |
| Oper. time red. | | | | | | | | | | | | |
| Wind dir. red. | | | | | | | | | | | | |
| Total reduction | | | | | | | | | | | | |
| Total, real | | | | | | | | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** AP - H45

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:15 | 06:10 | 05:25 | 05:22 | 05:59 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:45 | 08:16 | 07:23 | 07:12 | 06:08 | 05:25 | 05:23 | 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:27 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:31 |
| 3 | 08:44 | 08:15 | 07:21 | 07:10 | 06:06 | 05:24 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:20 | 20:13 | 21:04 | 21:48 | 21:59 | 21:25 | 20:22 | 19:12 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:05 | 05:23 | 05:25 | 06:03 | 06:53 | 07:42 | 07:36 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 19:10 | 17:06 | 16:30 |
| 5 | 08:44 | 08:12 | 07:16 | 07:06 | 06:03 | 05:22 | 05:25 | 06:05 | 06:55 | 07:43 | 07:37 | 08:26 |
| | 16:42 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:22 | 05:26 | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 19:06 | 17:02 | 16:29 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 21:10 | 21:52 | 21:57 | 21:18 | 20:13 | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:06 | 07:10 | 06:59 | 05:57 | 05:21 | 05:28 | 06:10 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:38 | 18:28 | 20:21 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:57 | 05:56 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 21:13 | 21:53 | 21:56 | 21:14 | 20:08 | 18:59 | 16:57 | 16:28 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:20 | 05:30 | 06:13 | 07:03 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:50 | 17:43 | 18:34 | 20:27 | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:01 | 06:50 | 05:51 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:48 | 05:49 | 05:19 | 05:33 | 06:18 | 07:07 | 07:57 | 07:52 | 08:35 |
| | 16:53 | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:56 | 06:56 | 06:45 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:59 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:36 | 06:21 | 07:11 | 08:00 | 07:55 | 08:37 |
| | 16:56 | 17:51 | 18:41 | 20:33 | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | 05:44 | 05:18 | 05:37 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | 18:44 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:59 | 17:54 | 18:44 | 20:37 | 21:26 | 21:58 | 21:48 | 20:58 | 19:50 | 18:41 | 16:46 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 | 05:18 | 05:39 | 06:26 | 07:16 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:28 |
| 19 | 08:35 | 07:46 | 06:45 | 06:35 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:48 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 05:39 | 05:18 | 05:42 | 06:29 | 07:19 | 08:09 | 08:04 | 08:41 |
| | 17:04 | 18:00 | 18:49 | 20:42 | 21:30 | 22:00 | 21:45 | 20:52 | 19:43 | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:02 | 18:51 | 20:43 | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:41 | 16:29 |
| 22 | 08:31 | 07:40 | 06:38 | 06:28 | 05:36 | 05:19 | 05:44 | 06:32 | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | 21:33 | 22:00 | 21:43 | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 05:35 | 05:19 | 05:46 | 06:34 | 07:24 | 08:14 | 08:09 | 08:43 |
| | 17:09 | 18:05 | 18:54 | 20:47 | 21:34 | 22:00 | 21:41 | 20:46 | 19:36 | 18:29 | 16:38 | 16:30 |
| 24 | 08:29 | 07:36 | 06:33 | 06:24 | 05:34 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:38 | 20:42 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:27 | 07:31 | 06:28 | 06:20 | 05:31 | 05:20 | 05:50 | 06:38 | 07:29 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:11 | 18:59 | 20:52 | 21:38 | 22:00 | 21:37 | 20:39 | 19:29 | 17:23 | 16:35 | 16:32 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:12 | 19:01 | 20:54 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:21 | 05:53 | 06:42 | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:34 | 16:33 |
| 29 | 08:22 | | 07:22 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:05 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:56 | 06:45 | 07:35 | 07:27 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:59 | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | 05:26 | | 05:57 | 06:47 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:45 | | 21:29 | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 245 |
| Total, worst case | | | | | | | | | | | | |
| Sun reduction | | | | | | | | | | | | |
| Oper. time red. | | | | | | | | | | | | |
| Wind dir. red. | | | | | | | | | | | | |
| Total reduction | | | | | | | | | | | | |
| Total, real | | | | | | | | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** AQ - H46

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:15 | 06:10 | 05:25 | 05:22 | 05:59 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:45 | 08:16 | 07:23 | 07:12 | 06:08 | 05:25 | 05:23 | 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:27 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:31 |
| 3 | 08:44 | 08:15 | 07:21 | 07:10 | 06:06 | 05:24 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:20 | 20:13 | 21:03 | 21:48 | 21:59 | 21:25 | 20:22 | 19:12 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:05 | 05:23 | 05:25 | 06:03 | 06:53 | 07:42 | 07:36 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 19:10 | 17:06 | 16:30 |
| 5 | 08:44 | 08:12 | 07:16 | 07:06 | 06:03 | 05:22 | 05:25 | 06:05 | 06:55 | 07:43 | 07:37 | 08:26 |
| | 16:42 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:22 | 05:26 | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 19:06 | 17:02 | 16:29 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 21:10 | 21:52 | 21:57 | 21:18 | 20:13 | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 05:57 | 05:21 | 05:28 | 06:10 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:38 | 18:28 | 20:21 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:57 | 05:56 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 21:13 | 21:53 | 21:56 | 21:14 | 20:08 | 18:59 | 16:57 | 16:28 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:20 | 05:30 | 06:13 | 07:03 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:50 | 17:43 | 18:34 | 20:27 | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:01 | 06:50 | 05:51 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:48 | 05:49 | 05:19 | 05:33 | 06:18 | 07:07 | 07:57 | 07:51 | 08:35 |
| | 16:53 | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:56 | 06:56 | 06:45 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:59 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:35 | 06:21 | 07:11 | 08:00 | 07:55 | 08:37 |
| | 16:56 | 17:51 | 18:41 | 20:33 | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | 05:44 | 05:18 | 05:37 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | 18:44 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:59 | 17:54 | 18:44 | 20:37 | 21:26 | 21:58 | 21:48 | 20:58 | 19:50 | 18:41 | 16:46 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 | 05:18 | 05:39 | 06:26 | 07:16 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:28 |
| 19 | 08:35 | 07:46 | 06:45 | 06:35 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:48 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 05:39 | 05:18 | 05:42 | 06:29 | 07:19 | 08:09 | 08:04 | 08:41 |
| | 17:04 | 18:00 | 18:49 | 20:42 | 21:30 | 21:59 | 21:45 | 20:52 | 19:43 | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:02 | 18:51 | 20:43 | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:41 | 16:29 |
| 22 | 08:31 | 07:40 | 06:38 | 06:28 | 05:36 | 05:19 | 05:44 | 06:32 | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | 21:33 | 22:00 | 21:42 | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 05:35 | 05:19 | 05:46 | 06:34 | 07:24 | 08:14 | 08:08 | 08:43 |
| | 17:09 | 18:05 | 18:54 | 20:47 | 21:34 | 22:00 | 21:41 | 20:46 | 19:36 | 18:29 | 16:38 | 16:30 |
| 24 | 08:29 | 07:36 | 06:33 | 06:24 | 05:34 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:38 | 20:42 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:27 | 07:31 | 06:28 | 06:20 | 05:31 | 05:20 | 05:50 | 06:38 | 07:29 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:11 | 18:59 | 20:52 | 21:38 | 22:00 | 21:37 | 20:39 | 19:29 | 17:23 | 16:35 | 16:32 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:12 | 19:01 | 20:54 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:21 | 05:53 | 06:42 | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:34 | 16:33 |
| 29 | 08:22 | | 07:22 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:05 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:56 | 06:45 | 07:35 | 07:27 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:59 | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | 05:26 | | 05:57 | 06:47 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:44 | | 21:29 | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 245 |
| Total, worst case | | | | | | | | | | | | |
| Sun reduction | | | | | | | | | | | | |
| Oper. time red. | | | | | | | | | | | | |
| Wind dir. red. | | | | | | | | | | | | |
| Total reduction | | | | | | | | | | | | |
| Total, real | | | | | | | | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** AR - H47

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:15 | 06:10 | 05:25 | 05:22 | 05:59 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:45 | 08:16 | 07:23 | 07:12 | 06:08 | 05:25 | 05:23 | 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:27 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:31 |
| 3 | 08:44 | 08:15 | 07:21 | 07:10 | 06:06 | 05:24 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:20 | 20:13 | 21:04 | 21:48 | 21:59 | 21:25 | 20:22 | 19:12 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:05 | 05:23 | 05:25 | 06:03 | 06:53 | 07:42 | 07:36 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:06 | 06:03 | 05:22 | 05:25 | 06:05 | 06:55 | 07:43 | 07:37 | 08:26 |
| | 16:42 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:22 | 05:26 | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 19:06 | 17:02 | 16:29 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 21:10 | 21:52 | 21:57 | 21:18 | 20:13 | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 05:57 | 05:21 | 05:28 | 06:10 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:38 | 18:28 | 20:21 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:57 | 05:56 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 21:13 | 21:53 | 21:56 | 21:14 | 20:08 | 18:59 | 16:57 | 16:28 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:20 | 05:30 | 06:13 | 07:03 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:50 | 17:43 | 18:34 | 20:27 | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | 06:50 | 05:51 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:48 | 05:49 | 05:19 | 05:33 | 06:17 | 07:07 | 07:57 | 07:51 | 08:35 |
| | 16:53 | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:56 | 06:56 | 06:45 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:59 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:35 | 06:21 | 07:11 | 08:00 | 07:55 | 08:37 |
| | 16:56 | 17:51 | 18:41 | 20:33 | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | 05:44 | 05:18 | 05:37 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | 18:44 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:59 | 17:54 | 18:44 | 20:37 | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | 18:41 | 16:46 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 | 05:18 | 05:39 | 06:26 | 07:16 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:28 |
| 19 | 08:35 | 07:46 | 06:45 | 06:35 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:48 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 05:39 | 05:18 | 05:42 | 06:29 | 07:19 | 08:09 | 08:04 | 08:41 |
| | 17:04 | 18:00 | 18:49 | 20:42 | 21:30 | 22:00 | 21:45 | 20:52 | 19:43 | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:02 | 18:51 | 20:43 | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:41 | 16:29 |
| 22 | 08:31 | 07:40 | 06:38 | 06:28 | 05:36 | 05:19 | 05:44 | 06:32 | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | 21:33 | 22:00 | 21:42 | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 05:35 | 05:19 | 05:46 | 06:34 | 07:24 | 08:14 | 08:08 | 08:43 |
| | 17:09 | 18:05 | 18:54 | 20:47 | 21:34 | 22:00 | 21:41 | 20:46 | 19:36 | 18:29 | 16:38 | 16:30 |
| 24 | 08:29 | 07:36 | 06:33 | 06:24 | 05:34 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:38 | 20:42 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:27 | 07:31 | 06:28 | 06:20 | 05:31 | 05:20 | 05:50 | 06:38 | 07:29 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:11 | 18:59 | 20:52 | 21:38 | 22:00 | 21:37 | 20:39 | 19:29 | 17:23 | 16:35 | 16:32 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:12 | 19:01 | 20:54 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:21 | 05:53 | 06:42 | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:34 | 16:33 |
| 29 | 08:22 | | 07:22 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:05 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:56 | 06:45 | 07:35 | 07:27 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:59 | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | 05:26 | | 05:57 | 06:46 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:45 | | 21:29 | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 245 |
| Total, worst case | | | | | | | | | | | | |
| Sun reduction | | | | | | | | | | | | |
| Oper. time red. | | | | | | | | | | | | |
| Wind dir. red. | | | | | | | | | | | | |
| Total reduction | | | | | | | | | | | | |
| Total, real | | | | | | | | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** AS - H48

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:15 | 06:10 | 05:25 | 05:22 | 05:59 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:45 | 08:16 | 07:23 | 07:12 | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:27 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:31 |
| 3 | 08:44 | 08:15 | 07:21 | 07:10 | 06:06 | 05:24 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:20 | 20:13 | 21:04 | 21:48 | 21:59 | 21:25 | 20:22 | 19:12 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:05 | 05:23 | 05:25 | 06:03 | 06:53 | 07:42 | 07:36 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:06 | 06:03 | 05:22 | 05:25 | 06:05 | 06:55 | 07:43 | 07:37 | 08:26 |
| | 16:42 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:22 | 05:26 | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 19:06 | 17:02 | 16:29 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 21:10 | 21:52 | 21:57 | 21:18 | 20:13 | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 05:57 | 05:21 | 05:28 | 06:10 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:38 | 18:28 | 20:21 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:57 | 05:56 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 21:13 | 21:53 | 21:56 | 21:14 | 20:08 | 18:59 | 16:57 | 16:28 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:20 | 05:30 | 06:13 | 07:03 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:50 | 17:43 | 18:34 | 20:27 | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | 06:50 | 05:51 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:48 | 05:49 | 05:19 | 05:33 | 06:17 | 07:07 | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:56 | 06:56 | 06:45 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:59 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:35 | 06:21 | 07:11 | 08:00 | 07:55 | 08:37 |
| | 16:56 | 17:51 | 18:41 | 20:33 | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | 05:44 | 05:18 | 05:37 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | 18:44 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:59 | 17:54 | 18:44 | 20:37 | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | 18:41 | 16:46 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 | 05:18 | 05:39 | 06:25 | 07:16 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:28 |
| 19 | 08:35 | 07:46 | 06:45 | 06:35 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:48 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 05:39 | 05:18 | 05:42 | 06:29 | 07:19 | 08:09 | 08:04 | 08:41 |
| | 17:04 | 18:00 | 18:49 | 20:42 | 21:30 | 22:00 | 21:45 | 20:52 | 19:43 | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:02 | 18:51 | 20:43 | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:41 | 16:29 |
| 22 | 08:31 | 07:40 | 06:38 | 06:28 | 05:36 | 05:19 | 05:44 | 06:32 | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | 21:33 | 22:00 | 21:43 | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 05:35 | 05:19 | 05:46 | 06:34 | 07:24 | 08:14 | 08:08 | 08:43 |
| | 17:09 | 18:05 | 18:54 | 20:47 | 21:34 | 22:00 | 21:41 | 20:46 | 19:36 | 18:29 | 16:38 | 16:30 |
| 24 | 08:29 | 07:36 | 06:33 | 06:24 | 05:34 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:38 | 20:42 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:27 | 07:31 | 06:28 | 06:20 | 05:31 | 05:20 | 05:50 | 06:38 | 07:29 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:11 | 18:59 | 20:52 | 21:38 | 22:00 | 21:37 | 20:39 | 19:29 | 17:23 | 16:35 | 16:32 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:12 | 19:01 | 20:54 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:21 | 05:53 | 06:42 | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:34 | 16:33 |
| 29 | 08:22 | | 07:22 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:05 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:56 | 06:45 | 07:35 | 07:27 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:59 | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | 05:26 | | 05:57 | 06:46 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:45 | | 21:29 | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 245 |
| Total, worst case | | | | | | | | | | | | |
| Sun reduction | | | | | | | | | | | | |
| Oper. time red. | | | | | | | | | | | | |
| Wind dir. red. | | | | | | | | | | | | |
| Total reduction | | | | | | | | | | | | |
| Total, real | | | | | | | | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** AT - H49

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:15 | 06:10 | 05:25 | 05:22 | 05:59 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:45 | 08:16 | 07:23 | 07:12 | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:27 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:31 |
| 3 | 08:44 | 08:15 | 07:21 | 07:10 | 06:06 | 05:24 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:20 | 20:13 | 21:03 | 21:48 | 21:59 | 21:25 | 20:22 | 19:12 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:05 | 05:23 | 05:25 | 06:03 | 06:53 | 07:42 | 07:36 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:06 | 06:03 | 05:22 | 05:25 | 06:05 | 06:55 | 07:43 | 07:37 | 08:26 |
| | 16:42 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:22 | 05:26 | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 19:06 | 17:02 | 16:29 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 21:10 | 21:52 | 21:57 | 21:18 | 20:13 | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 05:57 | 05:21 | 05:28 | 06:10 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:38 | 18:28 | 20:21 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | 05:56 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 21:13 | 21:53 | 21:56 | 21:14 | 20:08 | 18:59 | 16:57 | 16:28 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:20 | 05:30 | 06:13 | 07:03 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:50 | 17:43 | 18:34 | 20:27 | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | 06:50 | 05:51 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:48 | 05:49 | 05:19 | 05:33 | 06:17 | 07:07 | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:56 | 06:56 | 06:45 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:59 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:35 | 06:21 | 07:11 | 08:00 | 07:55 | 08:37 |
| | 16:56 | 17:51 | 18:41 | 20:33 | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | 05:44 | 05:18 | 05:37 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | 18:44 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:59 | 17:54 | 18:44 | 20:37 | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | 18:41 | 16:46 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 | 05:18 | 05:39 | 06:25 | 07:16 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:28 |
| 19 | 08:35 | 07:46 | 06:45 | 06:35 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 05:39 | 05:18 | 05:42 | 06:29 | 07:19 | 08:09 | 08:04 | 08:41 |
| | 17:04 | 18:00 | 18:49 | 20:42 | 21:30 | 21:59 | 21:45 | 20:52 | 19:43 | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:02 | 18:51 | 20:43 | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:41 | 16:29 |
| 22 | 08:31 | 07:40 | 06:38 | 06:28 | 05:36 | 05:19 | 05:44 | 06:32 | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | 21:33 | 22:00 | 21:42 | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 05:35 | 05:19 | 05:46 | 06:34 | 07:24 | 08:14 | 08:08 | 08:43 |
| | 17:09 | 18:05 | 18:54 | 20:47 | 21:34 | 22:00 | 21:41 | 20:46 | 19:36 | 18:29 | 16:38 | 16:30 |
| 24 | 08:29 | 07:36 | 06:33 | 06:24 | 05:34 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:38 | 20:42 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:27 | 07:31 | 06:28 | 06:20 | 05:31 | 05:20 | 05:50 | 06:38 | 07:29 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:11 | 18:59 | 20:52 | 21:38 | 22:00 | 21:37 | 20:39 | 19:29 | 17:23 | 16:35 | 16:32 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:12 | 19:01 | 20:54 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:21 | 05:53 | 06:42 | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:34 | 16:33 |
| 29 | 08:22 | | 07:22 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:05 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:56 | 06:45 | 07:35 | 07:27 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:59 | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | 05:26 | | 05:57 | 06:46 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:44 | | 21:29 | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 245 |
| Total, worst case | | | | | | | | | | | | |
| Sun reduction | | | | | | | | | | | | |
| Oper. time red. | | | | | | | | | | | | |
| Wind dir. red. | | | | | | | | | | | | |
| Total reduction | | | | | | | | | | | | |
| Total, real | | | | | | | | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
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kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** AU - H50

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:15 | 06:10 | 05:25 | 05:22 | 05:59 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | 07:12 | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:31 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | 06:06 | 05:24 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 | 21:03 | 21:48 | 21:59 | 21:24 | 20:22 | 19:12 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:04 | 05:23 | 05:25 | 06:03 | 06:53 | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | 06:03 | 05:22 | 05:25 | 06:05 | 06:54 | 07:43 | 07:37 | 08:26 |
| | 16:42 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:22 | 05:26 | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 19:06 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 21:10 | 21:52 | 21:57 | 21:17 | 20:13 | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 05:57 | 05:20 | 05:28 | 06:09 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:38 | 18:28 | 20:21 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | 05:56 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 21:13 | 21:53 | 21:55 | 21:14 | 20:08 | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:20 | 05:30 | 06:13 | 07:03 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | 20:26 | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:40 | 07:59 | 07:00 | 06:50 | 05:51 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:48 | 05:49 | 05:19 | 05:33 | 06:17 | 07:07 | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 06:45 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:59 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:35 | 06:21 | 07:11 | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:41 | 20:33 | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | 05:44 | 05:18 | 05:37 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:59 | 17:54 | 18:44 | 20:37 | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | 18:41 | 16:46 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 | 05:18 | 05:39 | 06:25 | 07:15 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:28 |
| 19 | 08:35 | 07:46 | 06:44 | 06:35 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 05:39 | 05:18 | 05:42 | 06:29 | 07:19 | 08:09 | 08:03 | 08:41 |
| | 17:04 | 18:00 | 18:49 | 20:42 | 21:30 | 21:59 | 21:45 | 20:52 | 19:42 | 18:35 | 16:42 | 16:28 |
| 21 | 08:32 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | 21:31 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:41 | 16:29 |
| 22 | 08:31 | 07:40 | 06:38 | 06:28 | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | 21:33 | 22:00 | 21:42 | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 05:35 | 05:19 | 05:46 | 06:33 | 07:24 | 08:14 | 08:08 | 08:43 |
| | 17:09 | 18:05 | 18:54 | 20:47 | 21:34 | 22:00 | 21:41 | 20:46 | 19:35 | 18:29 | 16:38 | 16:30 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | 05:33 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:38 | 20:41 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 06:20 | 05:31 | 05:20 | 05:50 | 06:38 | 07:28 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:11 | 18:59 | 20:52 | 21:38 | 22:00 | 21:37 | 20:39 | 19:29 | 17:23 | 16:35 | 16:32 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:12 | 19:01 | 20:53 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:21 | 05:53 | 06:42 | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:34 | 16:33 |
| 29 | 08:22 | | 07:21 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:56 | 06:45 | 07:35 | 07:27 | 08:19 | 08:44 |
| | 17:21 | | 20:06 | 20:58 | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | 05:26 | | 05:57 | 06:46 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:44 | | 21:29 | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 245 |
| Total, worst case | | | | | | | | | | | | |
| Sun reduction | | | | | | | | | | | | |
| Oper. time red. | | | | | | | | | | | | |
| Wind dir. red. | | | | | | | | | | | | |
| Total reduction | | | | | | | | | | | | |
| Total, real | | | | | | | | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** AV - H60

## Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | | April | May | June | July | August | September | | October | | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | | 07:15 | 06:10 | 05:25 | 05:22 | 05:59 | 06:48 | | 07:37 | | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | | 20:10 | 21:00 | 21:46 | 22:00 | 21:28 | 20:26 | | 19:17 | 9 | 17:11 | 16:31 |
| 2 | 08:45 | 08:17 | 07:23 | | 07:12 | 06:08 | 05:25 | 05:23 | 06:00 | 06:50 | | 07:39 | | 07:32 | 08:23 |
| | 16:38 | 17:27 | 18:18 | | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | | 19:15 | | 17:10 | 16:31 |
| 3 | 08:45 | 08:15 | 07:21 | | 07:10 | 06:06 | 05:24 | 05:24 | 06:02 | 06:51 | | 07:40 | | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:20 | | 20:13 | 21:04 | 21:48 | 21:59 | 21:25 | 20:22 | | 19:13 | | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:19 | | 07:08 | 06:05 | 05:23 | 05:25 | 06:03 | 06:53 | | 07:42 | | 07:36 | 08:25 |
| | 16:40 | 17:30 | 18:21 | | 20:15 | 21:05 | 21:49 | 21:59 | 21:23 | 20:20 | | 19:10 | | 17:06 | 16:30 |
| 5 | 08:44 | 08:12 | 07:16 | | 07:06 | 06:03 | 05:22 | 05:25 | 06:05 | 06:55 | | 07:44 | | 07:38 | 08:27 |
| | 16:42 | 17:32 | 18:23 | | 20:17 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | | 19:08 | | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | | 07:03 | 06:01 | 05:22 | 05:26 | 06:06 | 06:56 | | 07:45 | | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | | 20:18 | 21:09 | 21:51 | 21:58 | 21:20 | 20:15 | | 19:06 | | 17:02 | 16:29 |
| 7 | 08:43 | 08:08 | 07:12 | | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | | 07:47 | | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | | 20:20 | 21:10 | 21:52 | 21:57 | 21:18 | 20:13 | | 19:04 | | 17:01 | 16:28 |
| 8 | 08:43 | 08:07 | 07:10 | | 06:59 | 05:57 | 05:21 | 05:28 | 06:10 | 07:00 | | 07:49 | | 07:43 | 08:30 |
| | 16:45 | 17:38 | 18:29 | | 20:22 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | | 19:01 | | 16:59 | 16:28 |
| 9 | 08:43 | 08:05 | 07:07 | | 06:57 | 05:56 | 05:20 | 05:29 | 06:11 | 07:01 | | 07:50 | | 07:45 | 08:31 |
| | 16:47 | 17:40 | 18:30 | | 20:23 | 21:14 | 21:54 | 21:56 | 21:14 | 20:08 | | 18:59 | | 16:57 | 16:28 |
| 10 | 08:42 | 08:03 | 07:05 | | 06:54 | 05:54 | 05:20 | 05:30 | 06:13 | 07:03 | | 07:52 | | 07:46 | 08:33 |
| | 16:48 | 17:41 | 18:32 | | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | | 18:57 | | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | | 07:54 | | 07:48 | 08:34 |
| | 16:50 | 17:43 | 18:34 | | 20:27 | 21:17 | 21:55 | 21:54 | 21:10 | 20:04 | | 18:55 | | 16:54 | 16:27 |
| 12 | 08:41 | 08:00 | 07:01 | 07:53 (1) | 06:50 | 05:51 | 05:19 | 05:32 | 06:16 | 07:06 | | 07:55 | | 07:50 | 08:35 |
| | 16:51 | 17:45 | 18:36 | 5 07:58 (1) | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | | 18:52 | | 16:53 | 16:27 |
| 13 | 08:40 | 07:58 | 06:58 | 07:49 (1) | 06:48 | 05:49 | 05:19 | 05:33 | 06:18 | 07:08 | | 07:57 | | 07:52 | 08:36 |
| | 16:53 | 17:47 | 18:37 | 11 08:00 (1) | 20:30 | 21:20 | 21:57 | 21:53 | 21:07 | 19:59 | | 18:50 | | 16:51 | 16:27 |
| 14 | 08:39 | 07:56 | 06:56 | 07:47 (1) | 06:46 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | | 07:59 | | 07:53 | 08:37 |
| | 16:54 | 17:49 | 18:39 | 15 08:02 (1) | 20:32 | 21:21 | 21:57 | 21:52 | 21:05 | 19:57 | | 18:48 | | 16:50 | 16:27 |
| 15 | 08:39 | 07:54 | 06:54 | 07:46 (1) | 06:43 | 05:46 | 05:18 | 05:35 | 06:21 | 07:11 | | 08:00 | | 07:55 | 08:38 |
| | 16:56 | 17:51 | 18:41 | 17 08:03 (1) | 20:34 | 21:23 | 21:58 | 21:51 | 21:03 | 19:54 | | 18:46 | | 16:48 | 16:27 |
| 16 | 08:38 | 07:52 | 06:52 | 07:44 (1) | 06:41 | 05:44 | 05:18 | 05:37 | 06:22 | 07:12 | | 08:02 | | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 19 08:03 (1) | 20:35 | 21:24 | 21:58 | 21:50 | 21:01 | 19:52 | | 18:44 | | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 07:44 (1) | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | | 08:04 | | 07:59 | 08:39 |
| | 16:59 | 17:54 | 18:44 | 19 08:03 (1) | 20:37 | 21:26 | 21:59 | 21:49 | 20:59 | 19:50 | | 18:41 | | 16:46 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 07:43 (1) | 06:37 | 05:41 | 05:18 | 05:39 | 06:26 | 07:16 | | 08:06 | | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20 08:03 (1) | 20:39 | 21:27 | 21:59 | 21:48 | 20:57 | 19:47 | | 18:39 | | 16:44 | 16:28 |
| 19 | 08:35 | 07:46 | 06:45 | 07:43 (1) | 06:35 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:36 (1) | 08:07 | | 08:02 | 08:41 |
| | 17:02 | 17:58 | 18:48 | 19 08:02 (1) | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 3 08:39 (1) | 18:37 | | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 07:43 (1) | 06:33 | 05:39 | 05:18 | 05:42 | 06:29 | 07:19 | 08:32 (1) | 08:09 | | 08:04 | 08:41 |
| | 17:04 | 18:00 | 18:49 | 19 08:02 (1) | 20:42 | 21:30 | 22:00 | 21:45 | 20:52 | 19:43 | 11 08:43 (1) | 18:35 | | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 07:44 (1) | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:21 | 08:30 (1) | 08:11 | | 08:05 | 08:42 |
| | 17:05 | 18:02 | 18:51 | 17 08:01 (1) | 20:44 | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | 14 08:44 (1) | 18:33 | | 16:41 | 16:29 |
| 22 | 08:32 | 07:40 | 06:38 | 07:44 (1) | 06:28 | 05:36 | 05:19 | 05:44 | 06:32 | 07:22 | 08:28 (1) | 08:13 | | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 15 07:59 (1) | 20:45 | 21:33 | 22:00 | 21:43 | 20:48 | 19:38 | 17 08:45 (1) | 18:31 | | 16:40 | 16:29 |
| 23 | 08:31 | 07:38 | 06:35 | 07:45 (1) | 06:26 | 05:35 | 05:19 | 05:46 | 06:34 | 07:24 | 08:28 (1) | 08:14 | | 08:09 | 08:43 |
| | 17:09 | 18:05 | 18:54 | 12 07:57 (1) | 20:47 | 21:35 | 22:00 | 21:41 | 20:46 | 19:36 | 18 08:46 (1) | 18:29 | | 16:38 | 16:30 |
| 24 | 08:29 | 07:36 | 06:33 | 07:48 (1) | 06:24 | 05:34 | 05:19 | 05:47 | 06:35 | 07:25 | 08:26 (1) | 08:16 | | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 6 07:54 (1) | 20:49 | 21:36 | 22:01 | 21:40 | 20:44 | 19:33 | 20 08:46 (1) | 18:27 | | 16:37 | 16:30 |
| 25 | 08:28 | 07:34 | 06:31 | | 06:22 | 05:32 | 05:19 | 05:49 | 06:37 | 07:27 | 08:26 (1) | 07:18 | | 08:12 | 08:44 |
| | 17:12 | 18:09 | 18:58 | | 20:50 | 21:37 | 22:01 | 21:39 | 20:42 | 19:31 | 20 08:46 (1) | 17:25 | | 16:36 | 16:31 |
| 26 | 08:27 | 07:32 | 06:29 | | 06:20 | 05:31 | 05:20 | 05:50 | 06:38 | 07:29 | 08:26 (1) | 07:20 | | 08:14 | 08:44 |
| | 17:14 | 18:11 | 19:00 | | 20:52 | 21:39 | 22:01 | 21:37 | 20:40 | 19:29 | 20 08:46 (1) | 17:23 | | 16:35 | 16:32 |
| 27 | 08:25 | 07:29 | 06:26 | | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 08:26 (1) | 07:21 | | 08:15 | 08:44 |
| | 17:16 | 18:13 | 19:01 | | 20:54 | 21:40 | 22:01 | 21:36 | 20:37 | 19:26 | 19 08:45 (1) | 17:21 | | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | | 06:16 | 05:29 | 05:21 | 05:53 | 06:42 | 07:32 | 08:26 (1) | 07:23 | | 08:17 | 08:45 |
| | 17:18 | 18:14 | 19:03 | | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 18 08:44 (1) | 17:19 | | 16:34 | 16:33 |
| 29 | 08:23 | | 07:22 | | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:34 | 08:27 (1) | 07:25 | | 08:18 | 08:45 |
| | 17:19 | | 20:05 | | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:22 | 16 08:43 (1) | 17:17 | | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | | 06:12 | 05:27 | 05:22 | 05:56 | 06:45 | 07:35 | 08:28 (1) | 07:27 | | 08:20 | 08:45 |
| | 17:21 | | 20:06 | | 20:59 | 21:44 | 22:00 | 21:31 | 20:31 | 19:19 | 13 08:41 (1) | 17:15 | | 16:32 | 16:35 |
| 31 | 08:20 | | 07:17 | | | 05:26 | | 05:57 | 06:47 | | | 07:29 | | | 08:45 |
| | 17:23 | | 20:08 | | | 21:45 | | 21:30 | 20:29 | | | 17:13 | | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | | 416 | 485 | 498 | 501 | 453 | 381 | | 332 | | 267 | 244 |
| Total, worst case | | | | 194 | | | | | | | 189 | | 9 | | |
| Sun reduction | | | | 0.24 | | | | | | | 0.28 | | 0.24 | | |
| Oper. time red. | | | | 1.00 | | | | | | | 1.00 | | 1.00 | | |
| Wind dir. red. | | | | 0.59 | | | | | | | 0.59 | | 0.59 | | |
| Total reduction | | | | 0.14 | | | | | | | 0.17 | | 0.14 | | |
| Total, real | | | | 28 | | | | | | | 32 | | 1 | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** AW - H61

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:15 | 06:10 | 05:25 | 05:23 | 05:59 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | 21:00 | 21:46 | 22:00 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:45 | 08:17 | 07:23 | 07:12 | 06:08 | 05:25 | 05:23 | 06:00 | 06:50 | 07:39 | 07:32 | 08:22 |
| | 16:38 | 17:27 | 18:18 | 20:12 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:10 | 16:31 |
| 3 | 08:45 | 08:15 | 07:21 | 07:10 | 06:07 | 05:24 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:20 | 20:13 | 21:04 | 21:48 | 21:59 | 21:25 | 20:22 | 19:13 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:19 | 07:08 | 06:05 | 05:23 | 05:25 | 06:03 | 06:53 | 07:42 | 07:36 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:59 | 21:23 | 20:20 | 19:10 | 17:06 | 16:30 |
| 5 | 08:44 | 08:12 | 07:16 | 07:06 | 06:03 | 05:22 | 05:25 | 06:05 | 06:55 | 07:44 | 07:38 | 08:27 |
| | 16:42 | 17:32 | 18:23 | 20:17 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:22 | 05:26 | 06:07 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:09 | 21:51 | 21:58 | 21:20 | 20:15 | 19:06 | 17:03 | 16:29 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 21:10 | 21:52 | 21:57 | 21:18 | 20:13 | 19:04 | 17:01 | 16:28 |
| 8 | 08:43 | 08:07 | 07:10 | 06:59 | 05:57 | 05:21 | 05:28 | 06:10 | 07:00 | 07:49 | 07:43 | 08:30 |
| | 16:45 | 17:38 | 18:29 | 20:22 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:43 | 08:05 | 07:07 | 06:57 | 05:56 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:45 | 08:31 |
| | 16:47 | 17:40 | 18:30 | 20:23 | 21:14 | 21:54 | 21:56 | 21:14 | 20:08 | 18:59 | 16:58 | 16:28 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:20 | 05:30 | 06:13 | 07:03 | 07:52 | 07:46 | 08:33 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:54 | 07:48 | 08:34 |
| | 16:50 | 17:43 | 18:34 | 20:27 | 21:17 | 21:55 | 21:54 | 21:10 | 20:04 | 18:55 | 16:54 | 16:27 |
| 12 | 08:41 | 08:00 | 07:01 | 06:50 | 05:51 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:35 |
| | 16:51 | 17:45 | 18:36 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:58 | 06:58 | 06:48 | 05:49 | 05:19 | 05:33 | 06:18 | 07:08 | 07:57 | 07:52 | 08:36 |
| | 16:53 | 17:47 | 18:37 | 20:30 | 21:20 | 21:57 | 21:53 | 21:07 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:56 | 06:56 | 06:46 | 05:48 | 05:18 | 05:34 | 06:19 | 07:09 | 07:59 | 07:53 | 08:37 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 21:21 | 21:57 | 21:52 | 21:05 | 19:57 | 18:48 | 16:50 | 16:27 |
| 15 | 08:39 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:36 | 06:21 | 07:11 | 08:00 | 07:55 | 08:38 |
| | 16:56 | 17:51 | 18:41 | 20:34 | 21:23 | 21:58 | 21:51 | 21:03 | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 08:38 | 07:52 | 06:52 | 06:41 | 05:44 | 05:18 | 05:37 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:53 | 18:43 | 20:35 | 21:24 | 21:58 | 21:50 | 21:01 | 19:52 | 18:44 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:59 | 08:39 |
| | 16:59 | 17:54 | 18:44 | 20:37 | 21:26 | 21:59 | 21:49 | 20:59 | 19:50 | 18:41 | 16:46 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:42 | 05:18 | 05:39 | 06:26 | 07:16 | 08:06 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:39 | 21:27 | 21:59 | 21:48 | 20:57 | 19:47 | 18:39 | 16:44 | 16:28 |
| 19 | 08:35 | 07:46 | 06:45 | 06:35 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:41 |
| | 17:02 | 17:58 | 18:48 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:33 | 05:39 | 05:18 | 05:42 | 06:29 | 07:19 | 08:09 | 08:04 | 08:41 |
| | 17:04 | 18:00 | 18:49 | 20:42 | 21:30 | 22:00 | 21:45 | 20:52 | 19:43 | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:21 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:02 | 18:51 | 20:44 | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:41 | 16:29 |
| 22 | 08:32 | 07:40 | 06:38 | 06:28 | 05:36 | 05:19 | 05:44 | 06:32 | 07:22 | 08:13 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | 21:33 | 22:00 | 21:43 | 20:48 | 19:38 | 18:31 | 16:40 | 16:29 |
| 23 | 08:31 | 07:38 | 06:35 | 06:26 | 05:35 | 05:19 | 05:46 | 06:34 | 07:24 | 08:14 | 08:09 | 08:43 |
| | 17:09 | 18:05 | 18:55 | 20:47 | 21:35 | 22:00 | 21:41 | 20:46 | 19:36 | 18:29 | 16:38 | 16:30 |
| 24 | 08:29 | 07:36 | 06:33 | 06:24 | 05:34 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:49 | 21:36 | 22:01 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:34 | 06:31 | 06:22 | 05:32 | 05:19 | 05:49 | 06:37 | 07:27 | 07:18 | 08:12 | 08:44 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:01 | 21:39 | 20:42 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:27 | 07:32 | 06:29 | 06:20 | 05:31 | 05:20 | 05:50 | 06:39 | 07:29 | 07:20 | 08:14 | 08:44 |
| | 17:14 | 18:11 | 19:00 | 20:52 | 21:39 | 22:01 | 21:37 | 20:40 | 19:29 | 17:23 | 16:35 | 16:32 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:13 | 19:01 | 20:54 | 21:40 | 22:01 | 21:36 | 20:37 | 19:26 | 17:21 | 16:35 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:21 | 05:53 | 06:42 | 07:32 | 07:23 | 08:17 | 08:45 |
| | 17:18 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:34 | 16:33 |
| 29 | 08:23 | | 07:22 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:34 | 07:25 | 08:18 | 08:45 |
| | 17:19 | | 20:05 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:56 | 06:45 | 07:35 | 07:27 | 08:20 | 08:45 |
| | 17:21 | | 20:06 | 20:59 | 21:44 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:20 | | 07:17 | | 05:26 | | 05:57 | 06:47 | | 07:29 | | 08:45 |
| | 17:23 | | 20:08 | | 21:45 | | 21:30 | 20:29 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 244 |
| Total, worst case | | | | | | | | | | | | |
| Sun reduction | | | | | | | | | | | | |
| Oper. time red. | | | | | | | | | | | | |
| Wind dir. red. | | | | | | | | | | | | |
| Total reduction | | | | | | | | | | | | |
| Total, real | | | | | | | | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** AX - H62

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:15 | 06:10 | 05:25 | 05:23 | 05:59 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | 21:00 | 21:46 | 22:00 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:45 | 08:17 | 07:23 | 07:13 | 06:08 | 05:25 | 05:23 | 06:00 | 06:50 | 07:39 | 07:32 | 08:23 |
| | 16:38 | 17:27 | 18:18 | 20:12 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:10 | 16:31 |
| 3 | 08:45 | 08:15 | 07:21 | 07:10 | 06:07 | 05:24 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:20 | 20:13 | 21:04 | 21:48 | 21:59 | 21:25 | 20:22 | 19:13 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:19 | 07:08 | 06:05 | 05:23 | 05:25 | 06:03 | 06:53 | 07:42 | 07:36 | 08:25 |
| | 16:41 | 17:30 | 18:22 | 20:15 | 21:05 | 21:49 | 21:59 | 21:23 | 20:20 | 19:10 | 17:06 | 16:30 |
| 5 | 08:44 | 08:12 | 07:16 | 07:06 | 06:03 | 05:22 | 05:25 | 06:05 | 06:55 | 07:44 | 07:38 | 08:27 |
| | 16:42 | 17:32 | 18:23 | 20:17 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:22 | 05:26 | 06:07 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:09 | 21:51 | 21:58 | 21:20 | 20:15 | 19:06 | 17:03 | 16:29 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 21:10 | 21:52 | 21:57 | 21:18 | 20:13 | 19:04 | 17:01 | 16:28 |
| 8 | 08:43 | 08:07 | 07:10 | 06:59 | 05:57 | 05:21 | 05:28 | 06:10 | 07:00 | 07:49 | 07:43 | 08:30 |
| | 16:46 | 17:38 | 18:29 | 20:22 | 21:12 | 21:53 | 21:56 | 21:16 | 20:11 | 19:01 | 16:59 | 16:28 |
| 9 | 08:43 | 08:05 | 07:07 | 06:57 | 05:56 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:45 | 08:31 |
| | 16:47 | 17:40 | 18:30 | 20:23 | 21:14 | 21:54 | 21:56 | 21:14 | 20:08 | 18:59 | 16:58 | 16:28 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:20 | 05:30 | 06:13 | 07:03 | 07:52 | 07:46 | 08:33 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:54 | 07:48 | 08:34 |
| | 16:50 | 17:43 | 18:34 | 20:27 | 21:17 | 21:55 | 21:54 | 21:10 | 20:04 | 18:55 | 16:54 | 16:27 |
| 12 | 08:41 | 08:00 | 07:01 | 06:50 | 05:51 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:35 |
| | 16:51 | 17:45 | 18:36 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:58 | 06:58 | 06:48 | 05:49 | 05:19 | 05:33 | 06:18 | 07:08 | 07:57 | 07:52 | 08:36 |
| | 16:53 | 17:47 | 18:37 | 20:30 | 21:20 | 21:57 | 21:53 | 21:07 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:56 | 06:56 | 06:46 | 05:48 | 05:19 | 05:34 | 06:19 | 07:09 | 07:59 | 07:53 | 08:37 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 21:21 | 21:57 | 21:52 | 21:05 | 19:57 | 18:48 | 16:50 | 16:27 |
| 15 | 08:39 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:36 | 06:21 | 07:11 | 08:01 | 07:55 | 08:38 |
| | 16:56 | 17:51 | 18:41 | 20:34 | 21:23 | 21:58 | 21:51 | 21:03 | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 08:38 | 07:52 | 06:52 | 06:41 | 05:44 | 05:18 | 05:37 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:53 | 18:43 | 20:35 | 21:24 | 21:58 | 21:50 | 21:01 | 19:52 | 18:44 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:59 | 08:39 |
| | 16:59 | 17:54 | 18:44 | 20:37 | 21:26 | 21:59 | 21:49 | 20:59 | 19:50 | 18:42 | 16:46 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:42 | 05:18 | 05:39 | 06:26 | 07:16 | 08:06 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:39 | 21:27 | 21:59 | 21:48 | 20:57 | 19:47 | 18:39 | 16:44 | 16:28 |
| 19 | 08:35 | 07:46 | 06:45 | 06:35 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:41 |
| | 17:02 | 17:58 | 18:48 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:33 | 05:39 | 05:18 | 05:42 | 06:29 | 07:19 | 08:09 | 08:04 | 08:41 |
| | 17:04 | 18:00 | 18:49 | 20:42 | 21:30 | 22:00 | 21:45 | 20:52 | 19:43 | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:21 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:02 | 18:51 | 20:44 | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:41 | 16:29 |
| 22 | 08:32 | 07:40 | 06:38 | 06:28 | 05:36 | 05:19 | 05:44 | 06:32 | 07:22 | 08:13 | 08:07 | 08:42 |
| | 17:07 | 18:04 | 18:53 | 20:45 | 21:33 | 22:00 | 21:43 | 20:48 | 19:38 | 18:31 | 16:40 | 16:29 |
| 23 | 08:31 | 07:38 | 06:35 | 06:26 | 05:35 | 05:19 | 05:46 | 06:34 | 07:24 | 08:14 | 08:09 | 08:43 |
| | 17:09 | 18:05 | 18:55 | 20:47 | 21:35 | 22:00 | 21:41 | 20:46 | 19:36 | 18:29 | 16:38 | 16:30 |
| 24 | 08:29 | 07:36 | 06:33 | 06:24 | 05:34 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:11 | 18:07 | 18:56 | 20:49 | 21:36 | 22:01 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:34 | 06:31 | 06:22 | 05:32 | 05:19 | 05:49 | 06:37 | 07:27 | 07:18 | 08:12 | 08:44 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:01 | 21:39 | 20:42 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:27 | 07:32 | 06:29 | 06:20 | 05:31 | 05:20 | 05:50 | 06:39 | 07:29 | 07:20 | 08:14 | 08:44 |
| | 17:14 | 18:11 | 19:00 | 20:52 | 21:39 | 22:01 | 21:37 | 20:40 | 19:29 | 17:23 | 16:35 | 16:32 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:13 | 19:01 | 20:54 | 21:40 | 22:01 | 21:36 | 20:37 | 19:26 | 17:21 | 16:35 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:21 | 05:53 | 06:42 | 07:32 | 07:23 | 08:17 | 08:45 |
| | 17:18 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:34 | 16:33 |
| 29 | 08:23 | | 07:22 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:34 | 07:25 | 08:18 | 08:45 |
| | 17:19 | | 20:05 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:56 | 06:45 | 07:35 | 07:27 | 08:20 | 08:45 |
| | 17:21 | | 20:06 | 20:59 | 21:44 | 22:00 | 21:31 | 20:31 | 19:20 | 17:15 | 16:32 | 16:35 |
| 31 | 08:20 | | 07:17 | | 05:26 | | 05:57 | 06:47 | | 07:29 | | 08:45 |
| | 17:23 | | 20:08 | | 21:45 | | 21:30 | 20:29 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 244 |
| Total, worst case | | | | | | | | | | | | |
| Sun reduction | | | | | | | | | | | | |
| Oper. time red. | | | | | | | | | | | | |
| Wind dir. red. | | | | | | | | | | | | |
| Total reduction | | | | | | | | | | | | |
| Total, real | | | | | | | | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
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kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** AY - H63

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:15 | 06:10 | 05:25 | 05:22 | 05:59 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | 21:00 | 21:46 | 22:00 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:45 | 08:17 | 07:23 | 07:12 | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:30 |
| 3 | 08:45 | 08:15 | 07:21 | 07:10 | 06:06 | 05:23 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:20 | 20:13 | 21:04 | 21:48 | 21:59 | 21:25 | 20:22 | 19:12 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:04 | 05:23 | 05:24 | 06:03 | 06:53 | 07:42 | 07:36 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:59 | 21:23 | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | 06:03 | 05:22 | 05:25 | 06:05 | 06:54 | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:21 | 05:26 | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:09 | 21:51 | 21:58 | 21:19 | 20:15 | 19:06 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 21:10 | 21:52 | 21:57 | 21:18 | 20:13 | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:07 | 07:10 | 06:59 | 05:57 | 05:20 | 05:28 | 06:09 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | 20:22 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:43 | 08:05 | 07:07 | 06:56 | 05:55 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:45 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 21:13 | 21:54 | 21:56 | 21:14 | 20:08 | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:19 | 05:30 | 06:13 | 07:03 | 07:52 | 07:46 | 08:33 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:54 | 07:48 | 08:34 |
| | 16:49 | 17:43 | 18:34 | 20:27 | 21:17 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:01 | 06:50 | 05:50 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:35 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:58 | 06:58 | 06:48 | 05:49 | 05:18 | 05:33 | 06:17 | 07:07 | 07:57 | 07:52 | 08:36 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 21:20 | 21:57 | 21:53 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:56 | 06:56 | 06:45 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:59 | 07:53 | 08:37 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 21:21 | 21:57 | 21:52 | 21:04 | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 08:39 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:35 | 06:21 | 07:11 | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:41 | 20:33 | 21:23 | 21:58 | 21:51 | 21:02 | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 08:38 | 07:52 | 06:51 | 06:41 | 05:44 | 05:18 | 05:36 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:50 | 21:00 | 19:52 | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:59 | 08:39 |
| | 16:58 | 17:54 | 18:44 | 20:37 | 21:26 | 21:59 | 21:49 | 20:58 | 19:50 | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 | 05:18 | 05:39 | 06:25 | 07:15 | 08:06 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:45 | 06:34 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:41 |
| | 17:02 | 17:58 | 18:47 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 05:38 | 05:18 | 05:41 | 06:29 | 07:19 | 08:09 | 08:04 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | 21:30 | 22:00 | 21:45 | 20:52 | 19:43 | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:44 | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:40 | 16:28 |
| 22 | 08:32 | 07:40 | 06:38 | 06:28 | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 | 08:13 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | 21:33 | 22:00 | 21:43 | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 05:35 | 05:19 | 05:45 | 06:33 | 07:24 | 08:14 | 08:09 | 08:43 |
| | 17:09 | 18:05 | 18:54 | 20:47 | 21:35 | 22:00 | 21:41 | 20:46 | 19:36 | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:36 | 06:33 | 06:24 | 05:33 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:49 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | 07:18 | 08:12 | 08:44 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:01 | 21:39 | 20:42 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:27 | 07:31 | 06:28 | 06:20 | 05:31 | 05:20 | 05:50 | 06:38 | 07:29 | 07:20 | 08:13 | 08:44 |
| | 17:14 | 18:11 | 18:59 | 20:52 | 21:39 | 22:01 | 21:37 | 20:39 | 19:29 | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:12 | 19:01 | 20:54 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:20 | 05:53 | 06:42 | 07:32 | 07:23 | 08:17 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:33 | 16:33 |
| 29 | 08:23 | | 07:21 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | 07:25 | 08:18 | 08:45 |
| | 17:19 | | 20:05 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:56 | 06:45 | 07:35 | 07:27 | 08:20 | 08:45 |
| | 17:21 | | 20:06 | 20:59 | 21:44 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:20 | | 07:17 | | 05:26 | | 05:57 | 06:46 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:45 | | 21:30 | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 259 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 244 |
| Total, worst case | | | | | | | | | | | | |
| Sun reduction | | | | | | | | | | | | |
| Oper. time red. | | | | | | | | | | | | |
| Wind dir. red. | | | | | | | | | | | | |
| Total reduction | | | | | | | | | | | | |
| Total, real | | | | | | | | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** AZ - H64

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:15 | 06:10 | 05:25 | 05:23 | 05:59 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | 21:00 | 21:46 | 22:00 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:45 | 08:17 | 07:23 | 07:13 | 06:08 | 05:25 | 05:23 | 06:00 | 06:50 | 07:39 | 07:32 | 08:23 |
| | 16:38 | 17:27 | 18:18 | 20:12 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:10 | 16:31 |
| 3 | 08:45 | 08:15 | 07:21 | 07:10 | 06:07 | 05:24 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:20 | 20:13 | 21:04 | 21:48 | 21:59 | 21:25 | 20:22 | 19:13 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:19 | 07:08 | 06:05 | 05:23 | 05:25 | 06:03 | 06:53 | 07:42 | 07:36 | 08:25 |
| | 16:41 | 17:30 | 18:22 | 20:15 | 21:05 | 21:49 | 21:59 | 21:23 | 20:20 | 19:10 | 17:06 | 16:30 |
| 5 | 08:44 | 08:12 | 07:16 | 07:06 | 06:03 | 05:22 | 05:25 | 06:05 | 06:55 | 07:44 | 07:38 | 08:27 |
| | 16:42 | 17:32 | 18:23 | 20:17 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:22 | 05:26 | 06:07 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:09 | 21:51 | 21:58 | 21:20 | 20:15 | 19:06 | 17:03 | 16:29 |
| 7 | 08:44 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 21:10 | 21:52 | 21:57 | 21:18 | 20:13 | 19:04 | 17:01 | 16:28 |
| 8 | 08:43 | 08:07 | 07:10 | 06:59 | 05:58 | 05:21 | 05:28 | 06:10 | 07:00 | 07:49 | 07:43 | 08:30 |
| | 16:46 | 17:38 | 18:29 | 20:22 | 21:12 | 21:53 | 21:56 | 21:16 | 20:11 | 19:01 | 16:59 | 16:28 |
| 9 | 08:43 | 08:05 | 07:07 | 06:57 | 05:56 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:45 | 08:31 |
| | 16:47 | 17:40 | 18:30 | 20:23 | 21:14 | 21:54 | 21:56 | 21:14 | 20:08 | 18:59 | 16:58 | 16:28 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:20 | 05:30 | 06:13 | 07:03 | 07:52 | 07:46 | 08:33 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:54 | 07:48 | 08:34 |
| | 16:50 | 17:43 | 18:34 | 20:27 | 21:17 | 21:55 | 21:54 | 21:10 | 20:04 | 18:55 | 16:54 | 16:27 |
| 12 | 08:41 | 08:00 | 07:01 | 06:50 | 05:51 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:35 |
| | 16:51 | 17:45 | 18:36 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:58 | 06:58 | 06:48 | 05:49 | 05:19 | 05:33 | 06:18 | 07:08 | 07:57 | 07:52 | 08:36 |
| | 16:53 | 17:47 | 18:37 | 20:30 | 21:20 | 21:57 | 21:53 | 21:07 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:56 | 06:56 | 06:46 | 05:48 | 05:19 | 05:34 | 06:19 | 07:09 | 07:59 | 07:53 | 08:37 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 21:21 | 21:57 | 21:52 | 21:05 | 19:57 | 18:48 | 16:50 | 16:27 |
| 15 | 08:39 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:36 | 06:21 | 07:11 | 08:01 | 07:55 | 08:38 |
| | 16:56 | 17:51 | 18:41 | 20:34 | 21:23 | 21:58 | 21:51 | 21:03 | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 08:38 | 07:52 | 06:52 | 06:41 | 05:44 | 05:18 | 05:37 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:53 | 18:43 | 20:35 | 21:24 | 21:58 | 21:50 | 21:01 | 19:52 | 18:44 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:59 | 08:39 |
| | 16:59 | 17:54 | 18:44 | 20:37 | 21:26 | 21:59 | 21:49 | 20:59 | 19:50 | 18:42 | 16:46 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:42 | 05:18 | 05:39 | 06:26 | 07:16 | 08:06 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:39 | 21:27 | 21:59 | 21:48 | 20:57 | 19:47 | 18:39 | 16:44 | 16:28 |
| 19 | 08:35 | 07:46 | 06:45 | 06:35 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:41 |
| | 17:02 | 17:58 | 18:48 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:33 | 05:39 | 05:18 | 05:42 | 06:29 | 07:19 | 08:09 | 08:04 | 08:41 |
| | 17:04 | 18:00 | 18:49 | 20:42 | 21:30 | 22:00 | 21:45 | 20:52 | 19:43 | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:31 | 05:37 | 05:18 | 05:43 | 06:30 | 07:21 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:02 | 18:51 | 20:44 | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:41 | 16:29 |
| 22 | 08:32 | 07:40 | 06:38 | 06:28 | 05:36 | 05:19 | 05:44 | 06:32 | 07:22 | 08:13 | 08:07 | 08:42 |
| | 17:07 | 18:04 | 18:53 | 20:45 | 21:33 | 22:00 | 21:43 | 20:48 | 19:38 | 18:31 | 16:40 | 16:29 |
| 23 | 08:31 | 07:38 | 06:36 | 06:26 | 05:35 | 05:19 | 05:46 | 06:34 | 07:24 | 08:14 | 08:09 | 08:43 |
| | 17:09 | 18:05 | 18:55 | 20:47 | 21:35 | 22:00 | 21:41 | 20:46 | 19:36 | 18:29 | 16:38 | 16:30 |
| 24 | 08:29 | 07:36 | 06:33 | 06:24 | 05:34 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:11 | 18:07 | 18:56 | 20:49 | 21:36 | 22:01 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:34 | 06:31 | 06:22 | 05:32 | 05:19 | 05:49 | 06:37 | 07:27 | 07:18 | 08:12 | 08:44 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:01 | 21:39 | 20:42 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:27 | 07:32 | 06:29 | 06:20 | 05:31 | 05:20 | 05:50 | 06:39 | 07:29 | 07:20 | 08:14 | 08:44 |
| | 17:14 | 18:11 | 19:00 | 20:52 | 21:39 | 22:01 | 21:37 | 20:40 | 19:29 | 17:23 | 16:35 | 16:32 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:13 | 19:01 | 20:54 | 21:40 | 22:01 | 21:36 | 20:37 | 19:26 | 17:21 | 16:35 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:21 | 05:53 | 06:42 | 07:32 | 07:23 | 08:17 | 08:45 |
| | 17:18 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:34 | 16:33 |
| 29 | 08:23 | | 07:22 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:34 | 07:25 | 08:18 | 08:45 |
| | 17:19 | | 20:05 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:56 | 06:45 | 07:35 | 07:27 | 08:20 | 08:45 |
| | 17:21 | | 20:06 | 20:59 | 21:44 | 22:00 | 21:31 | 20:31 | 19:20 | 17:15 | 16:32 | 16:35 |
| 31 | 08:20 | | 07:17 | | 05:26 | | 05:57 | 06:47 | | 07:29 | | 08:45 |
| | 17:23 | | 20:08 | | 21:45 | | 21:30 | 20:29 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 244 |
| Total, worst case | | | | | | | | | | | | |
| Sun reduction | | | | | | | | | | | | |
| Oper. time red. | | | | | | | | | | | | |
| Wind dir. red. | | | | | | | | | | | | |
| Total reduction | | | | | | | | | | | | |
| Total, real | | | | | | | | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
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+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** BA - H67

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:15 | 06:10 | 05:25 | 05:22 | 05:59 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | 21:00 | 21:46 | 22:00 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:45 | 08:17 | 07:23 | 07:12 | 06:08 | 05:25 | 05:23 | 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:27 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:31 |
| 3 | 08:44 | 08:15 | 07:21 | 07:10 | 06:06 | 05:24 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:20 | 20:13 | 21:04 | 21:48 | 21:59 | 21:25 | 20:22 | 19:13 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:05 | 05:23 | 05:25 | 06:03 | 06:53 | 07:42 | 07:36 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 19:10 | 17:06 | 16:30 |
| 5 | 08:44 | 08:12 | 07:16 | 07:06 | 06:03 | 05:22 | 05:25 | 06:05 | 06:55 | 07:43 | 07:37 | 08:26 |
| | 16:42 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:22 | 05:26 | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:09 | 21:51 | 21:57 | 21:19 | 20:15 | 19:06 | 17:02 | 16:29 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 21:10 | 21:52 | 21:57 | 21:18 | 20:13 | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:07 | 07:10 | 06:59 | 05:57 | 05:21 | 05:28 | 06:10 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:38 | 18:28 | 20:22 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:57 | 05:56 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:45 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 21:13 | 21:53 | 21:56 | 21:14 | 20:08 | 18:59 | 16:57 | 16:28 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:20 | 05:30 | 06:13 | 07:03 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:54 | 07:48 | 08:33 |
| | 16:50 | 17:43 | 18:34 | 20:27 | 21:17 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:01 | 06:50 | 05:51 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:35 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:48 | 05:49 | 05:19 | 05:33 | 06:18 | 07:07 | 07:57 | 07:52 | 08:36 |
| | 16:53 | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:56 | 06:56 | 06:45 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:59 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 21:21 | 21:57 | 21:51 | 21:04 | 19:57 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:35 | 06:21 | 07:11 | 08:00 | 07:55 | 08:37 |
| | 16:56 | 17:51 | 18:41 | 20:33 | 21:23 | 21:58 | 21:51 | 21:02 | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 08:38 | 07:52 | 06:51 | 06:41 | 05:44 | 05:18 | 05:37 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:50 | 21:00 | 19:52 | 18:44 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:59 | 08:39 |
| | 16:59 | 17:54 | 18:44 | 20:37 | 21:26 | 21:59 | 21:48 | 20:58 | 19:50 | 18:41 | 16:46 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 | 05:18 | 05:39 | 06:26 | 07:16 | 08:06 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:28 |
| 19 | 08:35 | 07:46 | 06:45 | 06:35 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:48 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:33 | 05:39 | 05:18 | 05:42 | 06:29 | 07:19 | 08:09 | 08:04 | 08:41 |
| | 17:04 | 18:00 | 18:49 | 20:42 | 21:30 | 22:00 | 21:45 | 20:52 | 19:43 | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:02 | 18:51 | 20:44 | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:41 | 16:29 |
| 22 | 08:32 | 07:40 | 06:38 | 06:28 | 05:36 | 05:19 | 05:44 | 06:32 | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | 21:33 | 22:00 | 21:43 | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 05:35 | 05:19 | 05:46 | 06:34 | 07:24 | 08:14 | 08:09 | 08:43 |
| | 17:09 | 18:05 | 18:54 | 20:47 | 21:34 | 22:00 | 21:41 | 20:46 | 19:36 | 18:29 | 16:38 | 16:30 |
| 24 | 08:29 | 07:36 | 06:33 | 06:24 | 05:34 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:49 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | 07:18 | 08:12 | 08:44 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:39 | 20:42 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:27 | 07:31 | 06:28 | 06:20 | 05:31 | 05:20 | 05:50 | 06:38 | 07:29 | 07:20 | 08:13 | 08:44 |
| | 17:14 | 18:11 | 18:59 | 20:52 | 21:38 | 22:00 | 21:37 | 20:39 | 19:29 | 17:23 | 16:35 | 16:32 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:12 | 19:01 | 20:54 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:21 | 05:53 | 06:42 | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:34 | 16:33 |
| 29 | 08:22 | | 07:22 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | 07:25 | 08:18 | 08:45 |
| | 17:19 | | 20:05 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:56 | 06:45 | 07:35 | 07:27 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:59 | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:20 | | 07:17 | | 05:26 | | 05:57 | 06:47 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:45 | | 21:30 | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 245 |
| Total, worst case | | | | | | | | | | | | |
| Sun reduction | | | | | | | | | | | | |
| Oper. time red. | | | | | | | | | | | | |
| Wind dir. red. | | | | | | | | | | | | |
| Total reduction | | | | | | | | | | | | |
| Total, real | | | | | | | | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** BB - H68

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | | April | | May | June | July | August | | September | | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | | 07:14 | | 06:10 | 05:25 | 05:22 | 05:59 | | 06:48 | | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | | 20:10 | | 21:00 | 21:46 | 21:59 | 21:28 | | 20:26 | | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | | 07:12 | | 06:08 | 05:24 | 05:23 | 06:00 | | 06:50 | | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | | 20:11 | | 21:02 | 21:47 | 21:59 | 21:26 | | 20:24 | | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | | 07:10 | | 06:06 | 05:23 | 05:24 | 06:02 | | 06:51 | | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | | 20:13 | | 21:03 | 21:48 | 21:59 | 21:24 | | 20:22 | | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | | 07:08 | | 06:04 | 05:23 | 05:24 | 06:03 | | 06:53 | | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | | 20:15 | | 21:05 | 21:49 | 21:58 | 21:23 | | 20:19 | | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | | 07:05 | | 06:03 | 05:22 | 05:25 | 06:05 | | 06:54 | | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | | 20:16 | | 21:07 | 21:50 | 21:58 | 21:21 | | 20:17 | | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | | 07:03 | | 06:01 | 05:21 | 05:26 | 06:06 | | 06:56 | | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | | 20:18 | | 21:08 | 21:51 | 21:57 | 21:19 | | 20:15 | | 19:05 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | | 07:01 | | 05:59 | 05:21 | 05:27 | 06:08 | | 06:58 | | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | | 20:20 | | 21:10 | 21:52 | 21:57 | 21:17 | | 20:12 | | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | | 06:59 | | 05:57 | 05:20 | 05:28 | 06:09 | | 06:59 | | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | | 20:21 | | 21:12 | 21:53 | 21:56 | 21:16 | | 20:10 | | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | | 06:56 | | 05:55 | 05:20 | 05:29 | 06:11 | | 07:01 | | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | | 20:23 | | 21:13 | 21:53 | 21:55 | 21:14 | | 20:08 | | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | | 06:54 | | 05:54 | 05:19 | 05:30 | 06:13 | | 07:02 | | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | | 20:25 | | 21:15 | 21:54 | 21:55 | 21:12 | | 20:06 | | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | | 06:52 | | 05:52 | 05:19 | 05:31 | 06:14 | | 07:04 | | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | | 20:26 | | 21:16 | 21:55 | 21:54 | 21:10 | | 20:03 | | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | | 06:50 | | 05:50 | 05:19 | 05:32 | 06:16 | 19:29 (5) | 07:06 | | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | | 20:28 | | 21:18 | 21:56 | 21:53 | 21:08 | 3 19:32 (5) | 20:01 | | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | | 06:47 | 19:21 (5) | 05:49 | 05:18 | 05:33 | 06:17 | 19:25 (5) | 07:07 | 18:40 (4) | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | | 20:30 | 9 19:30 (5) | 21:20 | 21:56 | 21:52 | 21:06 | 12 19:37 (5) | 19:59 | 7 18:47 (4) | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | | 06:45 | 19:18 (5) | 05:47 | 05:18 | 05:34 | 06:19 | 19:23 (5) | 07:09 | 18:37 (4) | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | | 20:32 | 14 19:32 (5) | 21:21 | 21:57 | 21:51 | 21:04 | 15 19:38 (5) | 19:56 | 12 18:49 (4) | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | | 06:43 | 19:16 (5) | 05:46 | 05:18 | 05:35 | 06:20 | 19:21 (5) | 07:11 | 18:35 (4) | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | | 20:33 | 18 19:34 (5) | 21:23 | 21:57 | 21:50 | 21:02 | 18 19:39 (5) | 19:54 | 15 18:50 (4) | 18:46 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | | 06:41 | 19:15 (5) | 05:44 | 05:18 | 05:36 | 06:22 | 19:20 (5) | 07:12 | 18:34 (4) | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | | 20:35 | 20 19:35 (5) | 21:24 | 21:58 | 21:49 | 21:00 | 20 19:40 (5) | 19:52 | 16 18:50 (4) | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | | 06:39 | 19:14 (5) | 05:43 | 05:18 | 05:38 | 06:24 | 19:19 (5) | 07:14 | 18:33 (4) | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | | 20:37 | 22 19:36 (5) | 21:26 | 21:58 | 21:48 | 20:58 | 22 19:41 (5) | 19:49 | 18 18:51 (4) | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | | 06:37 | 19:13 (5) | 05:41 | 05:18 | 05:39 | 06:25 | 19:18 (5) | 07:15 | 18:32 (4) | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | | 20:38 | 23 19:36 (5) | 21:27 | 21:59 | 21:47 | 20:56 | 23 19:41 (5) | 19:47 | 18 18:50 (4) | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | 17:54 (4) | 06:34 | 19:12 (5) | 05:40 | 05:18 | 05:40 | 06:27 | 19:17 (5) | 07:17 | 18:32 (4) | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 3 17:57 (4) | 20:40 | 25 19:37 (5) | 21:29 | 21:59 | 21:46 | 20:54 | 25 19:42 (5) | 19:45 | 18 18:50 (4) | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 17:50 (4) | 06:32 | 19:12 (5) | 05:38 | 05:18 | 05:41 | 06:29 | 19:16 (5) | 07:19 | 18:32 (4) | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 11 18:01 (4) | 20:42 | 25 19:37 (5) | 21:30 | 21:59 | 21:45 | 20:52 | 25 19:41 (5) | 19:42 | 18 18:50 (4) | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 17:47 (4) | 06:30 | 19:12 (5) | 05:37 | 05:18 | 05:43 | 06:30 | 19:16 (5) | 07:20 | 18:32 (4) | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 14 18:01 (4) | 20:43 | 25 19:37 (5) | 21:32 | 22:00 | 21:44 | 20:50 | 25 19:41 (5) | 19:40 | 16 18:48 (4) | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | 17:46 (4) | 06:28 | 19:12 (5) | 05:36 | 05:18 | 05:44 | 06:32 | 19:15 (5) | 07:22 | 18:33 (4) | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 16 18:02 (4) | 20:45 | 25 19:37 (5) | 21:33 | 22:00 | 21:42 | 20:48 | 26 19:41 (5) | 19:38 | 14 18:47 (4) | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 17:46 (4) | 06:26 | 19:12 (5) | 05:35 | 05:19 | 05:45 | 06:33 | 19:16 (5) | 07:23 | 18:33 (4) | 08:14 | 08:08 | 08:43 |
| | 17:08 | 18:05 | 18:54 | 17 18:03 (4) | 20:47 | 24 19:36 (5) | 21:34 | 22:00 | 21:41 | 20:46 | 25 19:41 (5) | 19:35 | 12 18:45 (4) | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | 17:45 (4) | 06:24 | 19:12 (5) | 05:33 | 05:19 | 05:47 | 06:35 | 19:16 (5) | 07:25 | 18:36 (4) | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 19 18:04 (4) | 20:48 | 24 19:36 (5) | 21:36 | 22:00 | 21:40 | 20:44 | 25 19:41 (5) | 19:33 | 6 18:42 (4) | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 17:44 (4) | 06:22 | 19:12 (5) | 05:32 | 05:19 | 05:48 | 06:37 | 19:16 (5) | 07:27 | | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 19 18:03 (4) | 20:50 | 23 19:35 (5) | 21:37 | 22:00 | 21:38 | 20:41 | 23 19:39 (5) | 19:31 | | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 17:44 (4) | 06:20 | 19:12 (5) | 05:31 | 05:20 | 05:50 | 06:38 | 19:17 (5) | 07:28 | | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | 18 18:02 (4) | 20:52 | 22 19:34 (5) | 21:38 | 22:00 | 21:37 | 20:39 | 22 19:39 (5) | 19:28 | | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 17:45 (4) | 06:18 | 19:13 (5) | 05:30 | 05:20 | 05:51 | 06:40 | 19:17 (5) | 07:30 | | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 | 17 18:02 (4) | 20:53 | 20 19:33 (5) | 21:40 | 22:00 | 21:36 | 20:37 | 20 19:37 (5) | 19:26 | | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 17:45 (4) | 06:16 | 19:14 (5) | 05:29 | 05:20 | 05:53 | 06:41 | 19:18 (5) | 07:32 | | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 15 18:00 (4) | 20:55 | 18 19:32 (5) | 21:41 | 22:00 | 21:34 | 20:35 | 18 19:36 (5) | 19:24 | | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 18:46 (4) | 06:14 | 19:15 (5) | 05:28 | 05:21 | 05:54 | 06:43 | 19:19 (5) | 07:33 | | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 13 18:59 (4) | 20:57 | 15 19:30 (5) | 21:42 | 22:00 | 21:33 | 20:33 | 14 19:33 (5) | 19:22 | | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 18:48 (4) | 06:12 | 19:17 (5) | 05:27 | 05:22 | 05:56 | 06:45 | 19:22 (5) | 07:35 | | 07:27 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 9 18:57 (4) | 20:58 | 10 19:27 (5) | 21:43 | 22:00 | 21:31 | 20:31 | 8 19:30 (5) | 19:19 | | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | | | 05:26 | | 05:57 | 06:46 | | | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | | | 21:44 | | 21:29 | 20:28 | | | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | | 416 | | 485 | 498 | 501 | 453 | | 381 | | 332 | 267 | 244 |
| Total, worst case | | | | 171 | | 362 | | | | | 369 | | 170 | | | |
| Sun reduction | | | | 0.24 | | 0.35 | | | | | 0.30 | | 0.28 | | | |
| Oper. time red. | | | | 1.00 | | 1.00 | | | | | 1.00 | | 1.00 | | | |
| Wind dir. red. | | | | 0.67 | | 0.63 | | | | | 0.63 | | 0.67 | | | |
| Total reduction | | | | 0.16 | | 0.22 | | | | | 0.19 | | 0.19 | | | |
| Total, real | | | | 28 | | 81 | | | | | 69 | | 32 | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
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Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** BC - H69

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | | April | | May | June | July | August | | September | | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | | 07:14 | | 19:03 (5) | 06:10 | 05:25 | 05:22 | 05:58 | | 06:48 | 19:03 (5) | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:24 | 18:16 | | 20:10 | 18 | 19:21 (5) | 21:00 | 21:46 | 21:59 | 21:28 | | 20:26 | 12 19:15 (5) | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | | 07:12 | | 19:02 (5) | 06:08 | 05:24 | 05:23 | 06:00 | | 06:50 | 19:00 (5) | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | | 20:11 | 20 | 19:22 (5) | 21:02 | 21:47 | 21:59 | 21:26 | | 20:24 | 16 19:16 (5) | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | | 07:10 | | 19:02 (5) | 06:06 | 05:23 | 05:24 | 06:02 | | 06:51 | 18:59 (5) | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | | 20:13 | 21 | 19:23 (5) | 21:03 | 21:48 | 21:59 | 21:24 | | 20:22 | 18 19:17 (5) | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | | 07:08 | | 19:00 (5) | 06:04 | 05:23 | 05:24 | 06:03 | | 06:53 | 18:57 (5) | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | | 20:15 | 22 | 19:22 (5) | 21:05 | 21:49 | 21:58 | 21:23 | | 20:19 | 20 19:17 (5) | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | | 07:05 | | 19:00 (5) | 06:03 | 05:22 | 05:25 | 06:05 | | 06:54 | 18:57 (5) | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | | 20:16 | 22 | 19:22 (5) | 21:07 | 21:50 | 21:58 | 21:21 | | 20:17 | 21 19:18 (5) | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | | 07:03 | | 19:00 (5) | 06:01 | 05:21 | 05:26 | 06:06 | | 06:56 | 18:56 (5) | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | | 20:18 | 22 | 19:22 (5) | 21:08 | 21:51 | 21:57 | 21:19 | | 20:15 | 22 19:18 (5) | 19:05 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | | 07:01 | | 19:01 (5) | 05:59 | 05:21 | 05:27 | 06:08 | | 06:58 | 18:55 (5) | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | | 20:20 | 21 | 19:22 (5) | 21:10 | 21:52 | 21:57 | 21:17 | | 20:12 | 22 19:17 (5) | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | | 06:59 | | 19:00 (5) | 05:57 | 05:20 | 05:28 | 06:09 | | 06:59 | 18:55 (5) | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | | 20:21 | 20 | 19:20 (5) | 21:12 | 21:53 | 21:56 | 21:16 | | 20:10 | 22 19:17 (5) | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | | 06:56 | | 19:01 (5) | 05:55 | 05:20 | 05:29 | 06:11 | | 07:01 | 18:55 (5) | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | | 20:23 | 18 | 19:19 (5) | 21:13 | 21:53 | 21:55 | 21:14 | | 20:08 | 21 19:16 (5) | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | | 06:54 | | 19:02 (5) | 05:54 | 05:19 | 05:30 | 06:12 | | 07:02 | 18:55 (5) | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | | 20:25 | 16 | 19:18 (5) | 21:15 | 21:54 | 21:55 | 21:12 | | 20:06 | 21 19:16 (5) | 18:56 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | | 06:52 | | 19:04 (5) | 05:52 | 05:19 | 05:31 | 06:14 | | 07:04 | 18:55 (5) | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | | 20:26 | 12 | 19:16 (5) | 21:16 | 21:55 | 21:54 | 21:10 | | 20:03 | 19 19:14 (5) | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | | 06:50 | | 19:07 (5) | 05:50 | 05:19 | 05:32 | 06:16 | | 07:06 | 18:56 (5) | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | | 20:28 | 5 | 19:12 (5) | 21:18 | 21:56 | 21:53 | 21:08 | | 20:01 | 17 19:13 (5) | 18:52 | 16:52 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | | 06:47 | | | 05:49 | 05:18 | 05:33 | 06:17 | | 07:07 | 18:58 (5) | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | | 20:30 | | | 21:20 | 21:56 | 21:52 | 21:06 | | 19:59 | 13 19:11 (5) | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | | 06:45 | | | 05:47 | 05:18 | 05:34 | 06:19 | | 07:09 | 19:00 (5) | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | | 20:32 | | | 21:21 | 21:57 | 21:51 | 21:04 | | 19:56 | 7 19:07 (5) | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | | 06:43 | | | 05:46 | 05:18 | 05:35 | 06:20 | | 07:11 | | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | | 20:33 | | | 21:23 | 21:57 | 21:50 | 21:02 | | 19:54 | | 18:45 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | | 06:41 | | | 05:44 | 05:18 | 05:36 | 06:22 | | 07:12 | | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | | 20:35 | | | 21:24 | 21:58 | 21:49 | 21:00 | | 19:52 | | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | | 06:39 | | | 05:43 | 05:18 | 05:38 | 06:24 | | 07:14 | | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | | 20:37 | | | 21:26 | 21:58 | 21:48 | 20:58 | | 19:49 | | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | | 06:37 | | | 05:41 | 05:18 | 05:39 | 06:25 | | 07:15 | | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | | 20:38 | | | 21:27 | 21:59 | 21:47 | 20:56 | | 19:47 | | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | | 06:34 | | | 05:40 | 05:18 | 05:40 | 06:27 | | 07:17 | | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | | 20:40 | | | 21:29 | 21:59 | 21:46 | 20:54 | | 19:45 | | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | | 06:32 | | | 05:38 | 05:18 | 05:41 | 06:29 | | 07:19 | | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | | 20:42 | | | 21:30 | 21:59 | 21:45 | 20:52 | | 19:42 | | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | | 06:30 | | | 05:37 | 05:18 | 05:43 | 06:30 | | 07:20 | | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | | 20:43 | | | 21:32 | 22:00 | 21:44 | 20:50 | | 19:40 | | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | | 06:28 | | | 05:36 | 05:18 | 05:44 | 06:32 | | 07:22 | | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:52 | | 20:45 | | | 21:33 | 22:00 | 21:42 | 20:48 | | 19:38 | | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | | 06:26 | | | 05:35 | 05:18 | 05:45 | 06:33 | | 07:23 | | 08:14 | 08:08 | 08:43 |
| | 17:08 | 18:05 | 18:54 | | 20:47 | | | 21:34 | 22:00 | 21:41 | 20:46 | | 19:35 | | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | | 06:24 | | | 05:33 | 05:19 | 05:47 | 06:35 | | 07:25 | | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | | 20:48 | | | 21:36 | 22:00 | 21:40 | 20:44 | | 19:33 | | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | | 06:22 | | | 05:32 | 05:19 | 05:48 | 06:37 | | 07:27 | | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | | 20:50 | | | 21:37 | 22:00 | 21:38 | 20:41 | | 19:31 | | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | | 06:20 | | | 05:31 | 05:20 | 05:50 | 06:38 | | 07:28 | | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | | 20:52 | | | 21:38 | 22:00 | 21:37 | 20:39 | | 19:28 | | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | | 06:18 | | | 05:30 | 05:20 | 05:51 | 06:40 | | 07:30 | | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 | | 20:53 | | | 21:40 | 22:00 | 21:36 | 20:37 | | 19:26 | | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | | 06:16 | | | 05:29 | 05:20 | 05:53 | 06:41 | | 07:32 | | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | | 20:55 | | | 21:41 | 22:00 | 21:34 | 20:35 | | 19:24 | | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 19:11 (5) | 06:14 | | | 05:28 | 05:21 | 05:54 | 06:43 | | 07:33 | | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 5 19:16 (5) | 20:57 | | | 21:42 | 22:00 | 21:33 | 20:33 | | 19:21 | | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 19:07 (5) | 06:12 | | | 05:27 | 05:22 | 05:55 | 06:45 | | 07:35 | | 07:27 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 12 19:19 (5) | 20:58 | | | 21:43 | 22:00 | 21:31 | 20:31 | | 19:19 | | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | 19:04 (5) | | | | 05:26 | | 05:57 | 06:46 | 19:06 (5) | | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | 16 19:20 (5) | | | | 21:44 | | 21:29 | 20:28 | 5 19:11 (5) | | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | | 416 | | | 485 | 498 | 501 | 453 | | 381 | | 332 | 267 | 244 |
| Total, worst case | | | | 33 | | 217 | | | | | | 5 | | 251 | | | |
| Sun reduction | | | | 0.24 | | 0.35 | | | | | | 0.30 | | 0.28 | | | |
| Oper. time red. | | | | 1.00 | | 1.00 | | | | | | 1.00 | | 1.00 | | | |
| Wind dir. red. | | | | 0.65 | | 0.65 | | | | | | 0.65 | | 0.65 | | | |
| Total reduction | | | | 0.16 | | 0.23 | | | | | | 0.19 | | 0.19 | | | |
| Total, real | | | | 5 | | 50 | | | | | | 1 | | 46 | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
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kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** BD - H70

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | | April | | May | June | July | August | September | | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | | 07:14 | 18:59 (5) | 06:10 | 05:25 | 05:22 | 05:58 | 06:48 | | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:24 | 18:16 | | 20:09 | 21 19:20 (5) | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | | 07:12 | 18:59 (5) | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | | 20:11 | 21 19:20 (5) | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | | 07:10 | 18:59 (5) | 06:06 | 05:23 | 05:24 | 06:02 | 06:51 | | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | | 20:13 | 21 19:20 (5) | 21:03 | 21:48 | 21:59 | 21:24 | 20:22 | | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | | 07:08 | 18:59 (5) | 06:04 | 05:23 | 05:24 | 06:03 | 06:53 | 19:00 (5) | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | | 20:15 | 19 19:18 (5) | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 8 19:08 (5) | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | | 07:05 | 18:59 (5) | 06:03 | 05:22 | 05:25 | 06:05 | 06:54 | 18:58 (5) | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | | 20:16 | 18 19:17 (5) | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 13 19:11 (5) | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | | 07:03 | 19:00 (5) | 06:01 | 05:21 | 05:26 | 06:06 | 06:56 | 18:56 (5) | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | | 20:18 | 16 19:16 (5) | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 16 19:12 (5) | 19:05 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | | 07:01 | 19:02 (5) | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 18:55 (5) | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:26 | | 20:20 | 13 19:15 (5) | 21:10 | 21:52 | 21:57 | 21:17 | 20:12 | 17 19:12 (5) | 19:03 | 17:00 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | | 06:59 | 19:03 (5) | 05:57 | 05:20 | 05:28 | 06:09 | 06:59 | 18:54 (5) | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | | 20:21 | 8 19:11 (5) | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19 19:13 (5) | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | | 06:56 | | 05:55 | 05:20 | 05:29 | 06:11 | 07:01 | 18:53 (5) | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | | 20:23 | | 21:13 | 21:53 | 21:55 | 21:14 | 20:08 | 20 19:13 (5) | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | | 06:54 | | 05:54 | 05:19 | 05:30 | 06:12 | 07:02 | 18:52 (5) | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | | 20:25 | | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 21 19:13 (5) | 18:56 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | | 06:52 | | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 18:52 (5) | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | | 20:26 | | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 20 19:12 (5) | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | | 06:50 | | 05:50 | 05:19 | 05:32 | 06:16 | 07:06 | 18:52 (5) | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | | 20:28 | | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 20 19:12 (5) | 18:52 | 16:52 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | | 06:47 | | 05:49 | 05:18 | 05:33 | 06:17 | 07:07 | 18:51 (5) | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | | 20:30 | | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 19 19:10 (5) | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | | 06:45 | | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 18:52 (5) | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | | 20:32 | | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 17 19:09 (5) | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | | 06:43 | | 05:46 | 05:18 | 05:35 | 06:20 | 07:11 | 18:54 (5) | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | | 20:33 | | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | 14 19:08 (5) | 18:45 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | | 06:41 | | 05:44 | 05:18 | 05:36 | 06:22 | 07:12 | 18:55 (5) | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | | 20:35 | | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | 10 19:05 (5) | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | | 06:39 | | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | | 20:37 | | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | | 06:37 | | 05:41 | 05:18 | 05:39 | 06:25 | 07:15 | | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | | 20:38 | | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | | 06:34 | | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | | 20:40 | | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | | 06:32 | | 05:38 | 05:18 | 05:41 | 06:29 | 07:19 | | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | | 20:42 | | 21:30 | 21:59 | 21:45 | 20:52 | 19:42 | | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | | 06:30 | | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | | 20:43 | | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | | 06:28 | | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 | | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:52 | | 20:45 | | 21:33 | 22:00 | 21:42 | 20:48 | 19:38 | | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | | 06:26 | | 05:35 | 05:18 | 05:45 | 06:33 | 07:23 | | 08:14 | 08:08 | 08:43 |
| | 17:08 | 18:05 | 18:54 | | 20:47 | | 21:34 | 22:00 | 21:41 | 20:46 | 19:35 | | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | | 06:24 | | 05:33 | 05:19 | 05:47 | 06:35 | 07:25 | | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | | 20:48 | | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | | 06:22 | | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | | 20:50 | | 21:37 | 22:00 | 21:38 | 20:41 | 19:31 | | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | | 06:20 | | 05:31 | 05:20 | 05:50 | 06:38 | 07:28 | | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | | 20:52 | | 21:38 | 22:00 | 21:37 | 20:39 | 19:28 | | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 18:07 (5) | 06:18 | | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 | 9 18:16 (5) | 20:53 | | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 18:04 (5) | 06:16 | | 05:29 | 05:20 | 05:53 | 06:41 | 07:32 | | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 13 18:17 (5) | 20:55 | | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 19:02 (5) | 06:14 | | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 17 19:19 (5) | 20:57 | | 21:42 | 22:00 | 21:33 | 20:33 | 19:21 | | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 19:01 (5) | 06:12 | | 05:27 | 05:22 | 05:55 | 06:45 | 07:35 | | 07:26 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 19 19:20 (5) | 20:58 | | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | 19:00 (5) | | | 05:26 | | 05:57 | 06:46 | | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | 19 19:19 (5) | | | 21:44 | | 21:29 | 20:28 | | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | | 416 | | 485 | 498 | 501 | 453 | 381 | | 332 | 267 | 244 |
| Total, worst case | | | | 77 | | 137 | | | | | | 214 | | | |
| Sun reduction | | | | 0.24 | | 0.35 | | | | | | 0.28 | | | |
| Oper. time red. | | | | 1.00 | | 1.00 | | | | | | 1.00 | | | |
| Wind dir. red. | | | | 0.66 | | 0.66 | | | | | | 0.66 | | | |
| Total reduction | | | | 0.16 | | 0.23 | | | | | | 0.19 | | | |
| Total, real | | | | 12 | | 32 | | | | | | 40 | | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** BE - H71

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | | | April | | | May | June | July | August | September | | | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | | | 07:14 | | 19:00 (5) | 06:10 | 05:25 | 05:22 | 05:58 | 06:48 | | | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:24 | 18:16 | | | 20:09 | 19 | 19:19 (5) | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | | | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | | | 07:12 | | 19:00 (5) | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | | | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | | | 20:11 | 19 | 19:19 (5) | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | | | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | | | 07:10 | | 19:00 (5) | 06:06 | 05:23 | 05:24 | 06:02 | 06:51 | | | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | | | 20:13 | 19 | 19:19 (5) | 21:03 | 21:48 | 21:59 | 21:24 | 20:22 | | | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | | | 07:08 | | 19:00 (5) | 06:04 | 05:23 | 05:24 | 06:03 | 06:53 | | | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | | | 20:15 | 17 | 19:17 (5) | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | | | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | | | 07:05 | | 19:01 (5) | 06:03 | 05:22 | 05:25 | 06:05 | 06:54 | | 19:02 (5) | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | | | 20:16 | 15 | 19:16 (5) | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 5 | 19:07 (5) | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | | | 07:03 | | 19:02 (5) | 06:01 | 05:21 | 05:26 | 06:06 | 06:56 | | 18:59 (5) | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | | | 20:18 | 12 | 19:14 (5) | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 11 | 19:10 (5) | 19:05 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | | | 07:01 | | 19:05 (5) | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | | 18:56 (5) | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:26 | | | 20:20 | 6 | 19:11 (5) | 21:10 | 21:52 | 21:57 | 21:17 | 20:12 | 15 | 19:11 (5) | 19:03 | 17:00 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | | | 06:59 | | | 05:57 | 05:20 | 05:28 | 06:09 | 06:59 | | 18:55 (5) | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | | | 20:21 | | | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 17 | 19:12 (5) | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | | | 06:56 | | | 05:55 | 05:20 | 05:29 | 06:11 | 07:01 | | 18:53 (5) | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | | | 20:23 | | | 21:13 | 21:53 | 21:55 | 21:14 | 20:08 | 19 | 19:12 (5) | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | | | 06:54 | | | 05:54 | 05:19 | 05:30 | 06:12 | 07:02 | | 18:53 (5) | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | | | 20:25 | | | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 19 | 19:12 (5) | 18:56 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | | | 06:52 | | | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | | 18:52 (5) | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | | | 20:26 | | | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 19 | 19:11 (5) | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | | | 06:50 | | | 05:50 | 05:19 | 05:32 | 06:16 | 07:06 | | 18:52 (5) | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | | | 20:28 | | | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 19 | 19:11 (5) | 18:52 | 16:52 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | | | 06:47 | | | 05:49 | 05:18 | 05:33 | 06:17 | 07:07 | | 18:51 (5) | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | | | 20:30 | | | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 19 | 19:10 (5) | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | | | 06:45 | | | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | | 18:52 (5) | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:48 | 18:39 | | | 20:32 | | | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 17 | 19:09 (5) | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | | | 06:43 | | | 05:46 | 05:18 | 05:35 | 06:20 | 07:10 | | 18:53 (5) | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | | | 20:33 | | | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | 16 | 19:09 (5) | 18:45 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | | | 06:41 | | | 05:44 | 05:18 | 05:36 | 06:22 | 07:12 | | 18:54 (5) | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | | | 20:35 | | | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | 12 | 19:06 (5) | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | | | 06:39 | | | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | | 18:56 (5) | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | | | 20:37 | | | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | 8 | 19:04 (5) | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | | | 06:37 | | | 05:41 | 05:18 | 05:39 | 06:25 | 07:15 | | | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | | | 20:38 | | | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | | | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | | | 06:34 | | | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | | | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | | | 20:40 | | | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | | | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | | | 06:32 | | | 05:38 | 05:18 | 05:41 | 06:29 | 07:19 | | | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | | | 20:42 | | | 21:30 | 21:59 | 21:45 | 20:52 | 19:42 | | | 18:35 | 16:42 | 16:28 |
| 21 | 08:32 | 07:42 | 06:40 | | | 06:30 | | | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | | | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | | | 20:43 | | | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | | | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | | | 06:28 | | | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 | | | 08:12 | 08:07 | 08:42 |
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| 23 | 08:30 | 07:37 | 06:35 | | | 06:26 | | | 05:34 | 05:18 | 05:45 | 06:33 | 07:23 | | | 08:14 | 08:08 | 08:43 |
| | 17:08 | 18:05 | 18:54 | | | 20:47 | | | 21:34 | 22:00 | 21:41 | 20:46 | 19:35 | | | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | | | 06:24 | | | 05:33 | 05:19 | 05:47 | 06:35 | 07:25 | | | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | | | 20:48 | | | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | | | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | | | 06:22 | | | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | | | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | | | 20:50 | | | 21:37 | 22:00 | 21:38 | 20:41 | 19:31 | | | 17:25 | 16:36 | 16:31 |
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| | 17:14 | 18:10 | 18:59 | 5 | 18:14 (5) | 20:52 | | | 21:38 | 22:00 | 21:37 | 20:39 | 19:28 | | | 17:23 | 16:35 | 16:31 |
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| | 17:15 | 18:12 | 19:01 | 11 | 18:17 (5) | 20:53 | | | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | | | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | | 18:03 (5) | 06:16 | | | 05:29 | 05:20 | 05:53 | 06:41 | 07:32 | | | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 15 | 18:18 (5) | 20:55 | | | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | | | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | | 19:02 (5) | 06:14 | | | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | | | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 17 | 19:19 (5) | 20:57 | | | 21:42 | 22:00 | 21:33 | 20:33 | 19:21 | | | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | | 19:01 (5) | 06:12 | | | 05:27 | 05:22 | 05:55 | 06:45 | 07:35 | | | 07:26 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 19 | 19:20 (5) | 20:58 | | | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | | | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | 19:00 (5) | | | | 05:26 | | 05:57 | 06:46 | | | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | 19 | 19:19 (5) | | | | 21:44 | | 21:29 | 20:28 | | | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | | | 416 | | | 485 | 498 | 501 | 453 | 381 | | | 332 | 267 | 244 |
| Total, worst case | | | | 86 | | | 107 | | | | | | | 196 | | | | |
| Sun reduction | | | | 0.24 | | | 0.35 | | | | | | | 0.28 | | | | |
| Oper. time red. | | | | 1.00 | | | 1.00 | | | | | | | 1.00 | | | | |
| Wind dir. red. | | | | 0.66 | | | 0.66 | | | | | | | 0.66 | | | | |
| Total reduction | | | | 0.16 | | | 0.23 | | | | | | | 0.19 | | | | |
| Total, real | | | | 14 | | | 25 | | | | | | | 37 | | | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** BF - H72

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | | April | | May | June | July | August | September | | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | | 07:14 | 18:58 (5) | 06:10 | 05:25 | 05:22 | 05:58 | 06:48 | | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:24 | 18:16 | | 20:09 | 19 19:17 (5) | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | | 07:12 | 18:58 (5) | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | | 20:11 | 19 19:17 (5) | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | | 07:10 | 18:59 (5) | 06:06 | 05:23 | 05:24 | 06:02 | 06:51 | | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | | 20:13 | 17 19:16 (5) | 21:03 | 21:48 | 21:59 | 21:24 | 20:22 | | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | | 07:08 | 18:59 (5) | 06:04 | 05:23 | 05:24 | 06:03 | 06:53 | | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | | 20:15 | 15 19:14 (5) | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | | 07:05 | 19:01 (5) | 06:03 | 05:22 | 05:25 | 06:05 | 06:54 | | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | | 20:16 | 11 19:12 (5) | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | | 07:03 | 19:04 (5) | 06:01 | 05:21 | 05:26 | 06:06 | 06:56 | 19:00 (5) | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | | 20:18 | 5 19:09 (5) | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 5 19:05 (5) | 19:05 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | | 07:01 | | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 18:56 (5) | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:26 | | 20:20 | | 21:10 | 21:52 | 21:57 | 21:17 | 20:12 | 11 19:07 (5) | 19:03 | 17:00 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | | 06:59 | | 05:57 | 05:20 | 05:28 | 06:09 | 06:59 | 18:54 (5) | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | | 20:21 | | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 15 19:09 (5) | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | | 06:56 | | 05:55 | 05:20 | 05:29 | 06:11 | 07:01 | 18:52 (5) | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | | 20:23 | | 21:13 | 21:53 | 21:55 | 21:14 | 20:08 | 17 19:09 (5) | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | | 06:54 | | 05:54 | 05:19 | 05:30 | 06:12 | 07:02 | 18:52 (5) | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | | 20:25 | | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18 19:10 (5) | 18:56 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | | 06:52 | | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 18:50 (5) | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | | 20:26 | | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 19 19:09 (5) | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | | 06:50 | | 05:50 | 05:19 | 05:32 | 06:16 | 07:06 | 18:50 (5) | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | | 20:28 | | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 20 19:10 (5) | 18:52 | 16:52 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | | 06:47 | | 05:49 | 05:18 | 05:33 | 06:17 | 07:07 | 18:49 (5) | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | | 20:30 | | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 20 19:09 (5) | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | | 06:45 | | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 18:49 (5) | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:48 | 18:39 | | 20:32 | | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 19 19:08 (5) | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | | 06:43 | | 05:46 | 05:18 | 05:35 | 06:20 | 07:10 | 18:50 (5) | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | | 20:33 | | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | 18 19:08 (5) | 18:45 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | | 06:41 | | 05:44 | 05:18 | 05:36 | 06:22 | 07:12 | 18:50 (5) | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | | 20:35 | | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | 16 19:06 (5) | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | | 06:39 | | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 18:51 (5) | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | | 20:37 | | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | 14 19:05 (5) | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | | 06:37 | | 05:41 | 05:18 | 05:39 | 06:25 | 07:15 | 18:53 (5) | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | | 20:38 | | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 8 19:01 (5) | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | | 06:34 | | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | | 20:40 | | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | | 06:32 | | 05:38 | 05:18 | 05:41 | 06:29 | 07:19 | | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | | 20:42 | | 21:30 | 21:59 | 21:45 | 20:52 | 19:42 | | 18:35 | 16:42 | 16:28 |
| 21 | 08:32 | 07:42 | 06:40 | | 06:30 | | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | | 20:43 | | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | | 06:28 | | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 | | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:52 | | 20:45 | | 21:33 | 22:00 | 21:42 | 20:48 | 19:38 | | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:37 | 06:35 | | 06:26 | | 05:34 | 05:18 | 05:45 | 06:33 | 07:23 | | 08:14 | 08:08 | 08:43 |
| | 17:08 | 18:05 | 18:54 | | 20:47 | | 21:34 | 22:00 | 21:41 | 20:46 | 19:35 | | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | | 06:24 | | 05:33 | 05:19 | 05:47 | 06:35 | 07:25 | | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | | 20:48 | | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 18:06 (5) | 06:22 | | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 7 18:13 (5) | 20:50 | | 21:37 | 22:00 | 21:38 | 20:41 | 19:31 | | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 18:03 (5) | 06:20 | | 05:31 | 05:19 | 05:50 | 06:38 | 07:28 | | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | 13 18:16 (5) | 20:52 | | 21:38 | 22:00 | 21:37 | 20:39 | 19:28 | | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 18:02 (5) | 06:18 | | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 | 15 18:17 (5) | 20:53 | | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 18:00 (5) | 06:16 | | 05:29 | 05:20 | 05:53 | 06:41 | 07:32 | | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 17 18:17 (5) | 20:55 | | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 18:59 (5) | 06:14 | | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 19 19:18 (5) | 20:57 | | 21:42 | 22:00 | 21:33 | 20:33 | 19:21 | | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 18:59 (5) | 06:12 | | 05:27 | 05:22 | 05:55 | 06:45 | 07:35 | | 07:26 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 19 19:18 (5) | 20:58 | | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | 18:58 (5) | | | 05:26 | | 05:57 | 06:46 | | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | 19 19:17 (5) | | | 21:44 | | 21:29 | 20:28 | | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | | 416 | | 485 | 498 | 501 | 453 | 381 | | 332 | 267 | 244 |
| Total, worst case | | | | 109 | | 86 | | | | | | 200 | | | |
| Sun reduction | | | | 0.24 | | 0.35 | | | | | | 0.28 | | | |
| Oper. time red. | | | | 1.00 | | 1.00 | | | | | | 1.00 | | | |
| Wind dir. red. | | | | 0.66 | | 0.66 | | | | | | 0.66 | | | |
| Total reduction | | | | 0.16 | | 0.23 | | | | | | 0.19 | | | |
| Total, real | | | | 18 | | 20 | | | | | | 37 | | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** BG - H73

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:14 | 18:58 (5) | 06:10 | 05:25 | 05:22 | 05:58 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:24 | 18:16 | 20:09 | 15 19:13 (5) | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | 07:12 | 19:00 (5) | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 12 19:12 (5) | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | 19:02 (5) | 06:06 | 05:23 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 | 7 19:09 (5) | 21:03 | 21:48 | 21:59 | 21:24 | 20:22 | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | | 06:04 | 05:23 | 05:24 | 06:03 | 06:53 | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | | 06:02 | 05:22 | 05:25 | 06:05 | 06:54 | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | 20:16 | | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | | 06:01 | 05:21 | 05:26 | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 19:05 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:26 | 20:20 | | 21:10 | 21:52 | 21:57 | 21:17 | 20:12 | 19:03 | 17:00 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | | 05:57 | 05:20 | 05:28 | 06:09 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | 20:21 | | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | | 05:55 | 05:20 | 05:29 | 06:11 | 07:01 | 18:55 (5) | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | | 21:13 | 21:53 | 21:55 | 21:14 | 20:08 | 7 19:02 (5) | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | | 05:54 | 05:19 | 05:30 | 06:12 | 07:02 | 18:53 (5) | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 12 19:05 (5) | 18:56 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 18:51 (5) | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | 20:26 | | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 14 19:05 (5) | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | 06:50 | | 05:50 | 05:19 | 05:32 | 06:16 | 07:06 | 18:50 (5) | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 16 19:06 (5) | 18:52 | 16:52 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:47 | | 05:49 | 05:18 | 05:33 | 06:17 | 07:07 | 18:48 (5) | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18 19:06 (5) | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 06:45 | | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 18:48 (5) | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:48 | 18:39 | 20:32 | | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 18 19:06 (5) | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | | 05:46 | 05:18 | 05:35 | 06:20 | 07:10 | 18:48 (5) | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | 20:33 | | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | 18 19:06 (5) | 18:45 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | | 05:44 | 05:18 | 05:36 | 06:22 | 07:12 | 18:47 (5) | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | 18 19:05 (5) | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 18:48 (5) | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | 20:37 | | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | 17 19:05 (5) | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | | 05:41 | 05:18 | 05:39 | 06:25 | 07:15 | 18:47 (5) | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 16 19:03 (5) | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | 06:34 | | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 18:49 (5) | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 12 19:01 (5) | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | | 05:38 | 05:18 | 05:41 | 06:28 | 07:19 | 18:51 (5) | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | | 21:30 | 21:59 | 21:45 | 20:52 | 19:42 | 8 18:59 (5) | 18:35 | 16:42 | 16:28 |
| 21 | 08:32 | 07:42 | 06:40 | 06:30 | | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | | 21:31 | 22:00 | 21:44 | 20:50 | 19:40 | | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | 06:28 | | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 | | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:52 | 20:45 | | 21:33 | 22:00 | 21:42 | 20:48 | 19:38 | | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:37 | 06:35 | 18:06 (5) | 06:26 | 05:34 | 05:18 | 05:45 | 06:33 | 07:23 | | 08:14 | 08:08 | 08:43 |
| | 17:08 | 18:05 | 18:54 | 6 18:12 (5) | 20:47 | 21:34 | 22:00 | 21:41 | 20:46 | 19:35 | | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | 18:02 (5) | 06:24 | 05:33 | 05:19 | 05:47 | 06:35 | 07:25 | | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 12 18:14 (5) | 20:48 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 18:00 (5) | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 15 18:15 (5) | 20:50 | 21:37 | 22:00 | 21:38 | 20:41 | 19:31 | | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 17:59 (5) | 06:20 | 05:31 | 05:19 | 05:50 | 06:38 | 07:28 | | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | 17 18:16 (5) | 20:52 | 21:38 | 22:00 | 21:37 | 20:39 | 19:28 | | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 17:59 (5) | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 | 18 18:17 (5) | 20:53 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 17:57 (5) | 06:16 | 05:29 | 05:20 | 05:53 | 06:41 | 07:32 | | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 19 18:16 (5) | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 18:57 (5) | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 19 19:16 (5) | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:21 | | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 18:58 (5) | 06:12 | 05:27 | 05:22 | 05:55 | 06:45 | 07:35 | | 07:26 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 18 19:16 (5) | 20:58 | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | 18:57 (5) | | 05:26 | | 05:57 | 06:46 | | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | 17 19:14 (5) | | 21:44 | | 21:29 | 20:28 | | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | | 485 | 498 | 501 | 453 | 381 | | 332 | 267 | 244 |
| Total, worst case | | | 141 | 34 | | | | | | 174 | | | | |
| Sun reduction | | | 0.24 | 0.35 | | | | | | 0.28 | | | | |
| Oper. time red. | | | 1.00 | 1.00 | | | | | | 1.00 | | | | |
| Wind dir. red. | | | 0.66 | 0.66 | | | | | | 0.66 | | | | |
| Total reduction | | | 0.16 | 0.23 | | | | | | 0.19 | | | | |
| Total, real | | | 23 | 8 | | | | | | 33 | | | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
**Jennings O'Donovan**
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+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** BH - H74

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:14 | 06:10 | 05:25 | 05:22 | 05:58 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:24 | 18:16 | 20:09 | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | 07:12 | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | 06:06 | 05:23 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 | 21:03 | 21:48 | 21:59 | 21:24 | 20:22 | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:04 | 05:23 | 05:24 | 06:03 | 06:53 | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | 06:02 | 05:22 | 05:25 | 06:05 | 06:54 | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:21 | 05:26 | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 19:05 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:26 | 20:20 | 21:10 | 21:52 | 21:57 | 21:17 | 20:12 | 19:03 | 17:00 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 05:57 | 05:20 | 05:28 | 06:09 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | 20:21 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | 05:55 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:46 | 17:39 | 18:30 | 20:23 | 21:13 | 21:53 | 21:55 | 21:14 | 20:08 | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:19 | 05:30 | 06:12 | 07:02 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:56 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | 20:26 | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | 06:50 | 05:50 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:52 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:47 | 05:49 | 05:18 | 05:33 | 06:17 | 07:07 | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 06:45 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:48 | 18:39 | 20:32 | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:35 | 06:20 | 07:10 | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | 20:33 | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | 18:45 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | 05:44 | 05:18 | 05:36 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | 20:37 | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 | 05:18 | 05:39 | 06:25 | 07:15 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | 06:34 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 05:38 | 05:18 | 05:41 | 06:28 | 07:19 | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | 21:30 | 21:59 | 21:45 | 20:52 | 19:42 | 18:35 | 16:42 | 16:28 |
| 21 | 08:32 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | 21:31 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | 06:28 | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:52 | 20:45 | 21:33 | 22:00 | 21:42 | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:37 | 06:35 | 06:26 | 05:34 | 05:18 | 05:45 | 06:33 | 07:23 | 08:14 | 08:08 | 08:43 |
| | 17:08 | 18:05 | 18:54 | 20:47 | 21:34 | 22:00 | 21:41 | 20:46 | 19:35 | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | 05:33 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:38 | 20:41 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 06:20 | 05:31 | 05:19 | 05:50 | 06:38 | 07:28 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | 20:52 | 21:38 | 22:00 | 21:37 | 20:39 | 19:28 | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 | 20:53 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:20 | 05:53 | 06:41 | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:21 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:55 | 06:45 | 07:35 | 07:26 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:58 | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | 05:26 | | 05:57 | 06:46 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:44 | | 21:29 | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 244 |
| Total, worst case | | | | | | | | | | | | |
| Sun reduction | | | | | | | | | | | | |
| Oper. time red. | | | | | | | | | | | | |
| Wind dir. red. | | | | | | | | | | | | |
| Total reduction | | | | | | | | | | | | |
| Total, real | | | | | | | | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
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+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** BI - H75

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:14 | 06:10 | 05:25 | 05:22 | 05:58 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:24 | 18:16 | 20:09 | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | 07:12 | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | 06:06 | 05:23 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 | 21:03 | 21:48 | 21:59 | 21:24 | 20:22 | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:04 | 05:23 | 05:24 | 06:03 | 06:53 | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | 06:02 | 05:22 | 05:25 | 06:05 | 06:54 | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:21 | 05:26 | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 19:05 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:26 | 20:20 | 21:10 | 21:52 | 21:57 | 21:17 | 20:12 | 19:03 | 17:00 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 05:57 | 05:20 | 05:28 | 06:09 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | 20:21 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | 05:55 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:46 | 17:39 | 18:30 | 20:23 | 21:13 | 21:53 | 21:55 | 21:14 | 20:08 | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:19 | 05:30 | 06:12 | 07:02 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:56 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:33 | 20:26 | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | 06:50 | 05:50 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:52 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:47 | 05:49 | 05:18 | 05:33 | 06:17 | 07:07 | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 06:45 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:48 | 18:39 | 20:32 | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:35 | 06:20 | 07:10 | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | 20:33 | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | 18:45 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | 05:44 | 05:18 | 05:36 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | 20:37 | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 | 05:18 | 05:39 | 06:25 | 07:15 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | 06:34 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 05:38 | 05:18 | 05:41 | 06:28 | 07:19 | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | 21:30 | 21:59 | 21:45 | 20:52 | 19:42 | 18:35 | 16:42 | 16:28 |
| 21 | 08:32 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | 21:31 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | 06:28 | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:52 | 20:45 | 21:33 | 22:00 | 21:42 | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:37 | 06:35 | 06:26 | 05:34 | 05:18 | 05:45 | 06:33 | 07:23 | 08:14 | 08:08 | 08:43 |
| | 17:08 | 18:05 | 18:54 | 20:47 | 21:34 | 22:00 | 21:41 | 20:46 | 19:35 | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | 05:33 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:38 | 20:41 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 06:20 | 05:31 | 05:19 | 05:50 | 06:38 | 07:28 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | 20:52 | 21:38 | 22:00 | 21:37 | 20:39 | 19:28 | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 | 20:53 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:20 | 05:53 | 06:41 | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:21 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:55 | 06:45 | 07:35 | 07:26 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:58 | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | 05:26 | | 05:57 | 06:46 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:44 | | 21:29 | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 244 |
| Total, worst case | | | | | | | | | | | | |
| Sun reduction | | | | | | | | | | | | |
| Oper. time red. | | | | | | | | | | | | |
| Wind dir. red. | | | | | | | | | | | | |
| Total reduction | | | | | | | | | | | | |
| Total, real | | | | | | | | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
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Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** BJ - H76

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:14 | 06:10 | 05:25 | 05:22 | 05:58 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:24 | 18:16 | 20:09 | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | 07:12 | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | 06:06 | 05:23 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 | 21:03 | 21:48 | 21:59 | 21:24 | 20:22 | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:04 | 05:23 | 05:24 | 06:03 | 06:53 | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | 06:02 | 05:22 | 05:25 | 06:05 | 06:54 | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:21 | 05:26 | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 19:05 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:26 | 20:20 | 21:10 | 21:52 | 21:57 | 21:17 | 20:12 | 19:03 | 17:00 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 05:57 | 05:20 | 05:28 | 06:09 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | 20:21 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | 05:55 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:46 | 17:39 | 18:30 | 20:23 | 21:13 | 21:53 | 21:55 | 21:14 | 20:08 | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:19 | 05:30 | 06:12 | 07:02 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:56 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:33 | 20:26 | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | 06:50 | 05:50 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:52 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:47 | 05:49 | 05:18 | 05:33 | 06:17 | 07:07 | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 06:45 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:48 | 18:39 | 20:32 | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:35 | 06:20 | 07:10 | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | 20:33 | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | 18:45 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | 05:44 | 05:18 | 05:36 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | 20:37 | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 | 05:18 | 05:39 | 06:25 | 07:15 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | 06:34 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 05:38 | 05:18 | 05:41 | 06:28 | 07:19 | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | 21:30 | 21:59 | 21:45 | 20:52 | 19:42 | 18:35 | 16:42 | 16:28 |
| 21 | 08:32 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | 21:31 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | 06:28 | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:52 | 20:45 | 21:33 | 22:00 | 21:42 | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:37 | 06:35 | 06:26 | 05:34 | 05:18 | 05:45 | 06:33 | 07:23 | 08:14 | 08:08 | 08:43 |
| | 17:08 | 18:05 | 18:54 | 20:47 | 21:34 | 22:00 | 21:41 | 20:46 | 19:35 | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | 05:33 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:38 | 20:41 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 06:20 | 05:31 | 05:19 | 05:50 | 06:38 | 07:28 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | 20:52 | 21:38 | 22:00 | 21:37 | 20:39 | 19:28 | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 | 20:53 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:20 | 05:53 | 06:41 | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:21 | 17:17 | 16:32 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:55 | 06:45 | 07:35 | 07:26 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:58 | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | 05:26 | | 05:57 | 06:46 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:44 | | 21:29 | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 244 |
| Total, worst case | | | | | | | | | | | | |
| Sun reduction | | | | | | | | | | | | |
| Oper. time red. | | | | | | | | | | | | |
| Wind dir. red. | | | | | | | | | | | | |
| Total reduction | | | | | | | | | | | | |
| Total, real | | | | | | | | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** BK - H77

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:14 | 06:10 | 05:25 | 05:22 | 05:58 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:24 | 18:16 | 20:09 | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | 07:12 | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | 06:06 | 05:23 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 | 21:03 | 21:48 | 21:59 | 21:24 | 20:22 | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:04 | 05:23 | 05:24 | 06:03 | 06:53 | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | 06:02 | 05:22 | 05:25 | 06:05 | 06:54 | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:21 | 05:26 | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 19:05 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:26 | 20:20 | 21:10 | 21:52 | 21:57 | 21:17 | 20:12 | 19:03 | 17:00 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 05:57 | 05:20 | 05:28 | 06:09 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | 20:21 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | 05:55 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:46 | 17:39 | 18:30 | 20:23 | 21:13 | 21:53 | 21:55 | 21:14 | 20:08 | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:19 | 05:30 | 06:12 | 07:02 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:56 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | 20:26 | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | 06:50 | 05:50 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:52 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:47 | 05:49 | 05:18 | 05:33 | 06:17 | 07:07 | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 06:45 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:48 | 18:39 | 20:32 | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:35 | 06:20 | 07:10 | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | 20:33 | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | 18:45 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | 05:44 | 05:18 | 05:36 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | 20:37 | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 | 05:18 | 05:39 | 06:25 | 07:15 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | 06:34 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 05:38 | 05:18 | 05:41 | 06:28 | 07:19 | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | 21:30 | 21:59 | 21:45 | 20:52 | 19:42 | 18:35 | 16:42 | 16:28 |
| 21 | 08:32 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | 21:31 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | 06:28 | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:52 | 20:45 | 21:33 | 22:00 | 21:42 | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:37 | 06:35 | 06:26 | 05:34 | 05:18 | 05:45 | 06:33 | 07:23 | 08:14 | 08:08 | 08:43 |
| | 17:08 | 18:05 | 18:54 | 20:47 | 21:34 | 22:00 | 21:41 | 20:46 | 19:35 | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | 05:33 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:38 | 20:41 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 06:20 | 05:31 | 05:19 | 05:50 | 06:38 | 07:28 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | 20:52 | 21:38 | 22:00 | 21:37 | 20:39 | 19:28 | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 | 20:53 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:20 | 05:53 | 06:41 | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:21 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:55 | 06:45 | 07:35 | 07:26 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:58 | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | 05:26 | | 05:57 | 06:46 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:44 | | 21:29 | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 244 |
| Total, worst case | | | | | | | | | | | | |
| Sun reduction | | | | | | | | | | | | |
| Oper. time red. | | | | | | | | | | | | |
| Wind dir. red. | | | | | | | | | | | | |
| Total reduction | | | | | | | | | | | | |
| Total, real | | | | | | | | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

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Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** BL - H78

## Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:15 | 06:10 | 05:25 | 19:41 (8) | 05:22 | 19:42 (8) | 05:59 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | 21:00 | 21:46 | 21 20:02 (8) | 21:59 | 31 20:13 (8) | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | 07:12 | 06:08 | 05:24 | 19:40 (8) | 05:23 | 19:42 (8) | 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 21:02 | 21:47 | 23 20:03 (8) | 21:59 | 31 20:13 (8) | 21:26 | 20:24 | 19:15 | 17:09 | 16:31 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | 06:06 | 05:24 | 19:39 (8) | 05:24 | 19:42 (8) | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 | 21:03 | 21:48 | 24 20:03 (8) | 21:59 | 30 20:12 (8) | 21:25 | 20:22 | 19:12 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:04 | 05:23 | 19:39 (8) | 05:24 | 19:43 (8) | 06:03 | 06:53 | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 26 20:05 (8) | 21:58 | 29 20:12 (8) | 21:23 | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | 06:03 | 05:22 | 19:38 (8) | 05:25 | 19:44 (8) | 06:05 | 06:54 | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 27 20:05 (8) | 21:58 | 28 20:12 (8) | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:22 | 19:38 (8) | 05:26 | 19:44 (8) | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:08 | 21:51 | 28 20:06 (8) | 21:57 | 28 20:12 (8) | 21:19 | 20:15 | 19:06 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 19:38 (8) | 05:27 | 19:44 (8) | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 21:10 | 21:52 | 28 20:06 (8) | 21:57 | 27 20:11 (8) | 21:18 | 20:13 | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 05:57 | 05:20 | 19:38 (8) | 05:28 | 19:45 (8) | 06:09 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | 20:21 | 21:12 | 21:53 | 29 20:07 (8) | 21:56 | 26 20:11 (8) | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | 05:56 | 05:20 | 19:37 (8) | 05:29 | 19:46 (8) | 06:11 | 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 21:13 | 21:53 | 30 20:07 (8) | 21:56 | 25 20:11 (8) | 21:14 | 20:08 | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:20 | 19:37 (8) | 05:30 | 19:47 (8) | 06:13 | 07:03 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 31 20:08 (8) | 21:55 | 23 20:10 (8) | 21:12 | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 19:38 (8) | 05:31 | 19:48 (8) | 06:14 | 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | 20:26 | 21:16 | 21:55 | 30 20:08 (8) | 21:54 | 22 20:10 (8) | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | 06:50 | 19:00 (7) 05:51 | 05:19 | 19:38 (8) | 05:32 | 19:49 (8) | 06:16 | 07:06 | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 8 19:08 (7) 21:18 | 21:56 | 31 20:09 (8) | 21:53 | 20 20:09 (8) | 21:08 | 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:48 | 18:56 (7) 05:49 | 05:19 | 19:37 (8) | 05:33 | 19:50 (8) | 06:17 | 19:06 (7) | 07:07 | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 14 19:10 (7) 21:20 | 21:56 | 32 20:09 (8) | 21:52 | 18 20:08 (8) | 21:06 | 6 19:12 (7) | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 06:45 | 18:54 (7) 05:47 | 05:18 | 19:37 (8) | 05:34 | 19:51 (8) | 06:19 | 19:02 (7) | 07:09 | 07:59 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 18 19:12 (7) 21:21 | 21:57 | 32 20:09 (8) | 21:51 | 16 20:07 (8) | 21:04 | 12 19:14 (7) | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 18:53 (7) 05:46 | 05:18 | 19:37 (8) | 05:35 | 19:53 (8) | 06:21 | 19:01 (7) | 07:11 | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:41 | 20:33 | 20 19:13 (7) 21:23 | 21:57 | 33 20:10 (8) | 21:50 | 12 20:05 (8) | 21:02 | 15 19:16 (7) | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | 18:52 (7) 05:44 | 05:18 | 19:38 (8) | 05:37 | 19:55 (8) | 06:22 | 18:58 (7) | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 22 19:14 (7) 21:24 | 21:58 | 32 20:10 (8) | 21:49 | 7 20:02 (8) | 21:00 | 19 19:17 (7) | 19:52 | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 18:51 (7) 05:43 | 05:18 | 19:38 (8) | 05:38 | | 06:24 | 18:58 (7) | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:59 | 17:54 | 18:44 | 20:37 | 23 19:14 (7) 21:26 | 21:58 | 32 20:10 (8) | 21:48 | | 20:58 | 20 19:18 (7) | 19:49 | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 18:50 (7) 05:41 | 05:18 | 19:38 (8) | 05:39 | | 06:25 | 18:56 (7) | 07:15 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 25 19:15 (7) 21:27 | 21:59 | 33 20:11 (8) | 21:47 | | 20:56 | 22 19:18 (7) | 19:47 | 18:39 | 16:44 | 16:28 |
| 19 | 08:35 | 07:46 | 06:44 | 06:34 | 18:50 (7) 05:40 | 05:18 | 19:38 (8) | 05:40 | | 06:27 | 18:55 (7) | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | 25 19:15 (7) 21:29 | 21:59 | 33 20:11 (8) | 21:46 | | 20:54 | 24 19:19 (7) | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 18:49 (7) 05:39 | 05:18 | 19:38 (8) | 05:42 | | 06:29 | 18:54 (7) | 07:19 | 08:09 | 08:04 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | 26 19:15 (7) 21:30 | 21:59 | 33 20:11 (8) | 21:45 | | 20:52 | 25 19:19 (7) | 19:42 | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | 18:49 (7) 05:37 | 05:18 | 19:39 (8) | 05:43 | | 06:30 | 18:54 (7) | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | 26 19:15 (7) 21:32 | 22:00 | 33 20:12 (8) | 21:44 | | 20:50 | 25 19:19 (7) | 19:40 | 18:33 | 16:40 | 16:29 |
| 22 | 08:31 | 07:40 | 06:38 | 06:28 | 18:49 (7) 05:36 | 05:18 | 19:39 (8) | 05:44 | | 06:32 | 18:54 (7) | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | 26 19:15 (7) 21:33 | 22:00 | 33 20:12 (8) | 21:42 | | 20:48 | 26 19:20 (7) | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 18:50 (7) 05:35 | 05:19 | 19:39 (8) | 05:46 | | 06:33 | 18:53 (7) | 07:24 | 08:14 | 08:08 | 08:43 |
| | 17:09 | 18:05 | 18:54 | 20:47 | 24 19:14 (7) 21:34 | 22:00 | 33 20:12 (8) | 21:41 | | 20:46 | 26 19:19 (7) | 19:35 | 18:29 | 16:38 | 16:30 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | 18:50 (7) 05:33 | 05:19 | 19:39 (8) | 05:47 | | 06:35 | 18:54 (7) | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 23 19:13 (7) 21:36 | 22:00 | 33 20:12 (8) | 21:40 | | 20:44 | 25 19:19 (7) | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 18:50 (7) 05:32 | 05:19 | 19:40 (8) | 05:48 | | 06:37 | 18:53 (7) | 07:27 | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 23 19:13 (7) 21:37 | 22:00 | 32 20:12 (8) | 21:38 | | 20:42 | 25 19:18 (7) | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 06:20 | 18:51 (7) 05:31 | 05:20 | 19:40 (8) | 05:50 | | 06:38 | 18:54 (7) | 07:28 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:11 | 18:59 | 20:52 | 20 19:11 (7) 21:38 | 22:00 | 32 20:12 (8) | 21:37 | | 20:39 | 23 19:17 (7) | 19:29 | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 18:52 (7) 05:30 | 05:20 | 19:40 (8) | 05:51 | | 06:40 | 18:54 (7) | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:12 | 19:01 | 20:53 | 18 19:10 (7) 21:40 | 22:00 | 33 20:13 (8) | 21:36 | | 20:37 | 22 19:16 (7) | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 18:53 (7) 05:29 | 19:45 (8) 05:21 | 19:40 (8) | 05:53 | | 06:42 | 18:55 (7) | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 15 19:08 (7) 21:41 | 11 19:56 (8) 22:00 | 32 20:12 (8) | 21:34 | | 20:35 | 20 19:15 (7) | 19:24 | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 06:14 | 18:55 (7) 05:28 | 19:43 (8) 05:21 | 19:41 (8) | 05:54 | | 06:43 | 18:55 (7) | 07:33 | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 20:57 | 11 19:06 (7) 21:42 | 15 19:58 (8) 22:00 | 32 20:13 (8) | 21:33 | | 20:33 | 18 19:13 (7) | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 19:42 (8) 05:22 | 19:41 (8) | 05:56 | | 06:45 | 18:57 (7) | 07:35 | 07:27 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:58 | 21:43 | 17 19:59 (8) 22:00 | 31 20:12 (8) | 21:31 | | 20:31 | 14 19:11 (7) | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | 05:26 | 19:41 (8) | | 05:57 | | 06:46 | 18:59 (7) | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:44 | 19 20:00 (8) | | 21:29 | | 20:28 | 8 19:07 (7) | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | | 501 | | 453 | | 381 | 332 | 267 | 244 |
| Total, worst case | | | | 367 | 62 | 912 | | 373 | | 375 | | | | | |
| Sun reduction | | | | 0.35 | 0.37 | 0.30 | | 0.27 | | 0.30 | | | | | |
| Oper. time red. | | | | 1.00 | 1.00 | 1.00 | | 1.00 | | 1.00 | | | | | |
| Wind dir. red. | | | | 0.64 | 0.58 | 0.58 | | 0.58 | | 0.64 | | | | | |
| Total reduction | | | | 0.23 | 0.21 | 0.17 | | 0.15 | | 0.19 | | | | | |
| Total, real | | | | 84 | 13 | 158 | | 57 | | 72 | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

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Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** BM - H79

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | | | April | | | May | | | June | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | | | 07:15 | | 18:19 (8) | 06:10 | | | 05:25 | | 19:36 (4) |
| | 16:37 | 17:25 | 18:16 | | | 20:10 | 29 | 18:48 (8) | 21:00 | | | 21:46 | 31 | 20:07 (4) |
| 2 | 08:45 | 08:16 | 07:23 | | | 07:12 | | 18:19 (8) | 06:08 | | | 05:24 | | 19:36 (4) |
| | 16:38 | 17:26 | 18:18 | | | 20:11 | 30 | 18:49 (8) | 21:02 | | | 21:47 | 31 | 20:07 (4) |
| 3 | 08:44 | 08:15 | 07:20 | | | 07:10 | | 18:18 (8) | 06:06 | | | 05:24 | | 19:36 (4) |
| | 16:39 | 17:28 | 18:19 | | | 20:13 | 31 | 18:49 (8) | 21:03 | | | 21:48 | 31 | 20:07 (4) |
| 4 | 08:44 | 08:13 | 07:18 | | | 07:08 | | 18:17 (8) | 06:04 | | | 05:23 | | 19:36 (4) |
| | 16:40 | 17:30 | 18:21 | | | 20:15 | 32 | 18:49 (8) | 21:05 | | | 21:49 | 32 | 20:08 (4) |
| 5 | 08:44 | 08:12 | 07:16 | | | 07:05 | | 18:17 (8) | 06:03 | | | 05:22 | | 19:36 (4) |
| | 16:41 | 17:32 | 18:23 | | | 20:16 | 32 | 18:49 (8) | 21:07 | | | 21:50 | 32 | 20:08 (4) |
| 6 | 08:44 | 08:10 | 07:14 | | | 07:03 | | 18:16 (8) | 06:01 | | | 05:22 | | 19:36 (4) |
| | 16:43 | 17:34 | 18:25 | | | 20:18 | 33 | 18:49 (8) | 21:08 | | | 21:51 | 33 | 20:09 (4) |
| 7 | 08:43 | 08:08 | 07:12 | | | 07:01 | | 18:17 (8) | 05:59 | | | 05:21 | | 19:36 (4) |
| | 16:44 | 17:36 | 18:27 | | | 20:20 | 32 | 18:49 (8) | 21:10 | | | 21:52 | 33 | 20:09 (4) |
| 8 | 08:43 | 08:06 | 07:09 | | | 06:59 | | 18:16 (8) | 05:57 | | | 05:20 | | 19:36 (4) |
| | 16:45 | 17:37 | 18:28 | | | 20:21 | 31 | 18:47 (8) | 21:12 | | | 21:53 | 33 | 20:09 (4) |
| 9 | 08:42 | 08:05 | 07:07 | | | 06:56 | | 18:16 (8) | 05:56 | | | 05:20 | | 19:36 (4) |
| | 16:47 | 17:39 | 18:30 | | | 20:23 | 31 | 18:47 (8) | 21:13 | | | 21:53 | 33 | 20:09 (4) |
| 10 | 08:42 | 08:03 | 07:05 | | | 06:54 | | 18:17 (8) | 05:54 | | | 05:19 | | 19:36 (4) |
| | 16:48 | 17:41 | 18:32 | | | 20:25 | 29 | 18:46 (8) | 21:15 | | | 21:54 | 34 | 20:10 (4) |
| 11 | 08:41 | 08:01 | 07:03 | | 17:19 (7) | 06:52 | | 18:18 (8) | 05:52 | | | 05:19 | | 19:37 (4) |
| | 16:49 | 17:43 | 18:34 | 7 | 17:26 (7) | 20:26 | 28 | 18:46 (8) | 21:16 | | | 21:55 | 33 | 20:10 (4) |
| 12 | 08:41 | 07:59 | 07:00 | | 17:15 (7) | 06:50 | | 18:19 (8) | 05:50 | | | 05:19 | | 19:37 (4) |
| | 16:51 | 17:45 | 18:35 | 13 | 17:28 (7) | 20:28 | 26 | 18:45 (8) | 21:18 | | | 21:56 | 34 | 20:11 (4) |
| 13 | 08:40 | 07:57 | 06:58 | | 17:13 (7) | 06:48 | | 18:19 (8) | 05:49 | | | 05:19 | | 19:36 (4) |
| | 16:52 | 17:47 | 18:37 | 17 | 17:30 (7) | 20:30 | 23 | 18:42 (8) | 21:20 | | | 21:56 | 34 | 20:10 (4) |
| 14 | 08:39 | 07:55 | 06:56 | | 17:12 (7) | 06:45 | | 18:20 (8) | 05:47 | | | 05:18 | | 19:37 (4) |
| | 16:54 | 17:49 | 18:39 | 19 | 17:31 (7) | 20:32 | 21 | 18:41 (8) | 21:21 | | | 21:57 | 34 | 20:11 (4) |
| 15 | 08:38 | 07:54 | 06:54 | | 17:10 (7) | 06:43 | | 18:22 (8) | 05:46 | | | 05:18 | | 19:37 (4) |
| | 16:55 | 17:50 | 18:41 | 21 | 17:31 (7) | 20:33 | 17 | 18:39 (8) | 21:23 | | | 21:57 | 34 | 20:11 (4) |
| 16 | 08:37 | 07:52 | 06:51 | | 17:10 (7) | 06:41 | | 18:25 (8) | 05:44 | | | 05:18 | | 19:37 (4) |
| | 16:57 | 17:52 | 18:42 | 21 | 17:31 (7) | 20:35 | 10 | 18:35 (8) | 21:24 | | | 21:58 | 34 | 20:11 (4) |
| 17 | 08:37 | 07:50 | 06:49 | | 17:10 (7) | 06:39 | | | 05:43 | | | 05:18 | | 19:37 (4) |
| | 16:59 | 17:54 | 18:44 | 22 | 17:32 (7) | 20:37 | | | 21:26 | | | 21:58 | 34 | 20:11 (4) |
| 18 | 08:36 | 07:48 | 06:47 | | 17:09 (7) | 06:37 | | | 05:41 | | | 05:18 | | 19:38 (4) |
| | 17:00 | 17:56 | 18:46 | 22 | 17:31 (7) | 20:38 | | | 21:27 | | | 21:59 | 34 | 20:12 (4) |
| 19 | 08:35 | 07:46 | 06:44 | | 17:09 (7) | 06:34 | | | 05:40 | | | 05:18 | | 19:38 (4) |
| | 17:02 | 17:58 | 18:47 | 22 | 17:31 (7) | 20:40 | | | 21:29 | | | 21:59 | 34 | 20:12 (4) |
| 20 | 08:34 | 07:44 | 06:42 | | 17:10 (7) | 06:32 | | | 05:39 | | 19:45 (4) | 05:18 | | 19:38 (4) |
| | 17:03 | 18:00 | 18:49 | 20 | 17:30 (7) | 20:42 | | | 21:30 | 9 | 19:54 (4) | 22:00 | 34 | 20:12 (4) |
| 21 | 08:33 | 07:42 | 06:40 | | 17:10 (7) | 06:30 | | | 05:37 | | 19:43 (4) | 05:18 | | 19:39 (4) |
| | 17:05 | 18:01 | 18:51 | 20 | 17:30 (7) | 20:43 | | | 21:32 | 14 | 19:57 (4) | 22:00 | 34 | 20:13 (4) |
| 22 | 08:31 | 07:40 | 06:38 | | 17:11 (7) | 06:28 | | | 05:36 | | 19:41 (4) | 05:18 | | 19:39 (4) |
| | 17:07 | 18:03 | 18:53 | 17 | 17:28 (7) | 20:45 | | | 21:33 | 18 | 19:59 (4) | 22:00 | 34 | 20:13 (4) |
| 23 | 08:30 | 07:38 | 06:35 | | 17:12 (7) | 06:26 | | | 05:35 | | 19:40 (4) | 05:19 | | 19:39 (4) |
| | 17:09 | 18:05 | 18:54 | 14 | 17:26 (7) | 20:47 | | | 21:34 | 20 | 20:00 (4) | 22:00 | 34 | 20:13 (4) |
| 24 | 08:29 | 07:35 | 06:33 | | 17:15 (7) | 06:24 | | | 05:33 | | 19:40 (4) | 05:19 | | 19:39 (4) |
| | 17:10 | 18:07 | 18:56 | 8 | 17:23 (7) | 20:48 | | | 21:36 | 21 | 20:01 (4) | 22:00 | 34 | 20:13 (4) |
| 25 | 08:28 | 07:33 | 06:31 | | | 06:22 | | | 05:32 | | 19:39 (4) | 05:19 | | 19:40 (4) |
| | 17:12 | 18:09 | 18:58 | | | 20:50 | | | 21:37 | 23 | 20:02 (4) | 22:00 | 33 | 20:13 (4) |
| 26 | 08:26 | 07:31 | 06:28 | | | 06:20 | | | 05:31 | | 19:38 (4) | 05:20 | | 19:39 (4) |
| | 17:14 | 18:11 | 18:59 | | | 20:52 | | | 21:38 | 25 | 20:03 (4) | 22:00 | 34 | 20:13 (4) |
| 27 | 08:25 | 07:29 | 06:26 | | 17:30 (8) | 06:18 | | | 05:30 | | 19:38 (4) | 05:20 | | 19:40 (4) |
| | 17:16 | 18:12 | 19:01 | 11 | 17:41 (8) | 20:53 | | | 21:40 | 26 | 20:04 (4) | 22:00 | 34 | 20:14 (4) |
| 28 | 08:24 | 07:27 | 06:24 | | 17:26 (8) | 06:16 | | | 05:29 | | 19:37 (4) | 05:21 | | 19:40 (4) |
| | 17:17 | 18:14 | 19:03 | 17 | 17:43 (8) | 20:55 | | | 21:41 | 28 | 20:05 (4) | 22:00 | 34 | 20:14 (4) |
| 29 | 08:22 | | 07:21 | | 18:24 (8) | 06:14 | | | 05:28 | | 19:37 (4) | 05:21 | | 19:41 (4) |
| | 17:19 | | 20:04 | 21 | 18:45 (8) | 20:57 | | | 21:42 | 28 | 20:05 (4) | 22:00 | 33 | 20:14 (4) |
| 30 | 08:21 | | 07:19 | | 18:22 (8) | 06:12 | | | 05:27 | | 19:36 (4) | 05:22 | | 19:40 (4) |
| | 17:21 | | 20:06 | 25 | 18:47 (8) | 20:58 | | | 21:43 | 29 | 20:05 (4) | 22:00 | 34 | 20:14 (4) |
| 31 | 08:19 | | 07:17 | | 18:20 (8) | | | | 05:26 | | 19:36 (4) | | | |
| | 17:23 | | 20:08 | 27 | 18:47 (8) | | | | 21:45 | 30 | 20:06 (4) | | | |
| Potential sun hours | 260 | 278 | 367 | | | 416 | | | 485 | | | 498 | | |
| Total, worst case | | | | 344 | | | 435 | | | 271 | | | 1000 | |
| Sun reduction | | | | 0.24 | | | 0.35 | | | 0.37 | | | 0.30 | |
| Oper. time red. | | | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Wind dir. red. | | | | 0.68 | | | 0.67 | | | 0.58 | | | 0.58 | |
| Total reduction | | | | 0.17 | | | 0.24 | | | 0.21 | | | 0.17 | |
| Total, real | | | | 57 | | | 103 | | | 58 | | | 174 | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** BM - H79

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | July | | August | | | September | | October | | | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 05:22 | | 19:41 (4) | 05:59 | | 06:48 | | 18:17 (8) | 07:37 | | 17:54 (7) | 07:30 | 08:21 |
| | 21:59 | 33 | 20:14 (4) | 21:28 | | 20:26 | 28 | 18:45 (8) | 19:17 | 15 | 18:09 (7) | 17:11 | 16:31 |
| 2 | 05:23 | | 19:40 (4) | 06:00 | | 06:50 | | 18:15 (8) | 07:38 | | 17:55 (7) | 07:32 | 08:22 |
| | 21:59 | 34 | 20:14 (4) | 21:26 | | 20:24 | 29 | 18:44 (8) | 19:15 | 10 | 18:05 (7) | 17:09 | 16:30 |
| 3 | 05:24 | | 19:41 (4) | 06:02 | | 06:51 | | 18:14 (8) | 07:40 | | | 07:34 | 08:24 |
| | 21:59 | 33 | 20:14 (4) | 21:25 | | 20:22 | 31 | 18:45 (8) | 19:12 | | | 17:08 | 16:30 |
| 4 | 05:24 | | 19:41 (4) | 06:03 | | 06:53 | | 18:14 (8) | 07:42 | | | 07:35 | 08:25 |
| | 21:58 | 34 | 20:15 (4) | 21:23 | | 20:19 | 31 | 18:45 (8) | 19:10 | | | 17:06 | 16:29 |
| 5 | 05:25 | | 19:42 (4) | 06:05 | | 06:54 | | 18:13 (8) | 07:43 | | | 07:37 | 08:26 |
| | 21:58 | 33 | 20:15 (4) | 21:21 | | 20:17 | 32 | 18:45 (8) | 19:08 | | | 17:04 | 16:29 |
| 6 | 05:26 | | 19:41 (4) | 06:06 | | 06:56 | | 18:13 (8) | 07:45 | | | 07:39 | 08:28 |
| | 21:57 | 33 | 20:14 (4) | 21:19 | | 20:15 | 32 | 18:45 (8) | 19:06 | | | 17:02 | 16:28 |
| 7 | 05:27 | | 19:42 (4) | 06:08 | | 06:58 | | 18:12 (8) | 07:47 | | | 07:41 | 08:29 |
| | 21:57 | 32 | 20:14 (4) | 21:18 | | 20:13 | 32 | 18:44 (8) | 19:03 | | | 17:01 | 16:28 |
| 8 | 05:28 | | 19:42 (4) | 06:09 | | 06:59 | | 18:12 (8) | 07:48 | | | 07:43 | 08:30 |
| | 21:56 | 33 | 20:15 (4) | 21:16 | | 20:10 | 32 | 18:44 (8) | 19:01 | | | 16:59 | 16:28 |
| 9 | 05:29 | | 19:43 (4) | 06:11 | | 07:01 | | 18:11 (8) | 07:50 | | | 07:44 | 08:31 |
| | 21:56 | 32 | 20:15 (4) | 21:14 | | 20:08 | 32 | 18:43 (8) | 18:59 | | | 16:57 | 16:27 |
| 10 | 05:30 | | 19:43 (4) | 06:13 | | 07:03 | | 18:12 (8) | 07:52 | | | 07:46 | 08:32 |
| | 21:55 | 32 | 20:15 (4) | 21:12 | | 20:06 | 30 | 18:42 (8) | 18:57 | | | 16:56 | 16:27 |
| 11 | 05:31 | | 19:44 (4) | 06:14 | | 07:04 | | 18:11 (8) | 07:53 | | | 07:48 | 08:33 |
| | 21:54 | 31 | 20:15 (4) | 21:10 | | 20:03 | 29 | 18:40 (8) | 18:54 | | | 16:54 | 16:27 |
| 12 | 05:32 | | 19:44 (4) | 06:16 | | 07:06 | | 18:12 (8) | 07:55 | | | 07:50 | 08:34 |
| | 21:53 | 30 | 20:14 (4) | 21:08 | | 20:01 | 28 | 18:40 (8) | 18:52 | | | 16:53 | 16:27 |
| 13 | 05:33 | | 19:44 (4) | 06:17 | | 07:07 | | 18:14 (8) | 07:57 | | | 07:51 | 08:35 |
| | 21:52 | 30 | 20:14 (4) | 21:06 | | 19:59 | 25 | 18:39 (8) | 18:50 | | | 16:51 | 16:27 |
| 14 | 05:34 | | 19:45 (4) | 06:19 | | 07:09 | | 18:14 (8) | 07:59 | | | 07:53 | 08:36 |
| | 21:51 | 29 | 20:14 (4) | 21:04 | | 19:56 | 22 | 18:36 (8) | 18:48 | | | 16:50 | 16:27 |
| 15 | 05:35 | | 19:45 (4) | 06:21 | | 07:11 | | 18:16 (8) | 08:00 | | | 07:55 | 08:37 |
| | 21:50 | 28 | 20:13 (4) | 21:02 | | 19:54 | 18 | 18:34 (8) | 18:46 | | | 16:48 | 16:27 |
| 16 | 05:36 | | 19:46 (4) | 06:22 | | 07:12 | | 18:18 (8) | 08:02 | | | 07:57 | 08:38 |
| | 21:49 | 27 | 20:13 (4) | 21:00 | | 19:52 | 12 | 18:30 (8) | 18:43 | | | 16:47 | 16:27 |
| 17 | 05:38 | | 19:47 (4) | 06:24 | | 07:14 | | | 08:04 | | | 07:58 | 08:39 |
| | 21:48 | 26 | 20:13 (4) | 20:58 | | 19:49 | | | 18:41 | | | 16:45 | 16:27 |
| 18 | 05:39 | | 19:48 (4) | 06:25 | | 07:15 | | | 08:05 | | | 08:00 | 08:40 |
| | 21:47 | 24 | 20:12 (4) | 20:56 | | 19:47 | | | 18:39 | | | 16:44 | 16:27 |
| 19 | 05:40 | | 19:49 (4) | 06:27 | | 07:17 | | 18:03 (7) | 08:07 | | | 08:02 | 08:40 |
| | 21:46 | 22 | 20:11 (4) | 20:54 | | 19:45 | 6 | 18:09 (7) | 18:37 | | | 16:43 | 16:28 |
| 20 | 05:42 | | 19:49 (4) | 06:29 | | 07:19 | | 17:59 (7) | 08:09 | | | 08:04 | 08:41 |
| | 21:45 | 21 | 20:10 (4) | 20:52 | | 19:42 | 13 | 18:12 (7) | 18:35 | | | 16:42 | 16:28 |
| 21 | 05:43 | | 19:50 (4) | 06:30 | | 07:20 | | 17:57 (7) | 08:11 | | | 08:05 | 08:42 |
| | 21:44 | 19 | 20:09 (4) | 20:50 | | 19:40 | 16 | 18:13 (7) | 18:33 | | | 16:40 | 16:29 |
| 22 | 05:44 | | 19:53 (4) | 06:32 | | 07:22 | | 17:55 (7) | 08:12 | | | 08:07 | 08:42 |
| | 21:42 | 15 | 20:08 (4) | 20:48 | | 19:38 | 19 | 18:14 (7) | 18:31 | | | 16:39 | 16:29 |
| 23 | 05:46 | | 19:54 (4) | 06:33 | | 07:24 | | 17:53 (7) | 08:14 | | | 08:08 | 08:43 |
| | 21:41 | 12 | 20:06 (4) | 20:46 | | 19:35 | 21 | 18:14 (7) | 18:29 | | | 16:38 | 16:30 |
| 24 | 05:47 | | 19:58 (4) | 06:35 | | 07:25 | | 17:53 (7) | 08:16 | | | 08:10 | 08:43 |
| | 21:40 | 4 | 20:02 (4) | 20:44 | | 19:33 | 21 | 18:14 (7) | 18:27 | | | 16:37 | 16:30 |
| 25 | 05:48 | | | 06:37 | | 07:27 | | 17:53 (7) | 07:18 | | | 08:12 | 08:43 |
| | 21:38 | | | 20:42 | | 19:31 | 21 | 18:14 (7) | 17:25 | | | 16:36 | 16:31 |
| 26 | 05:50 | | | 06:38 | | 07:28 | | 17:51 (7) | 07:19 | | | 08:13 | 08:44 |
| | 21:37 | | | 20:39 | | 19:28 | 22 | 18:13 (7) | 17:23 | | | 16:35 | 16:31 |
| 27 | 05:51 | | | 06:40 | 18:27 (8) | 07:30 | | 17:52 (7) | 07:21 | | | 08:15 | 08:44 |
| | 21:36 | | | 20:37 | 11 18:38 (8) | 19:26 | 21 | 18:13 (7) | 17:21 | | | 16:34 | 16:32 |
| 28 | 05:53 | | | 06:42 | 18:24 (8) | 07:32 | | 17:52 (7) | 07:23 | | | 08:16 | 08:44 |
| | 21:34 | | | 20:35 | 17 18:41 (8) | 19:24 | 21 | 18:13 (7) | 17:19 | | | 16:33 | 16:33 |
| 29 | 05:54 | | | 06:43 | 18:21 (8) | 07:33 | | 17:52 (7) | 07:25 | | | 08:18 | 08:44 |
| | 21:33 | | | 20:33 | 21 18:42 (8) | 19:22 | 19 | 18:11 (7) | 17:17 | | | 16:33 | 16:34 |
| 30 | 05:56 | | | 06:45 | 18:20 (8) | 07:35 | | 17:53 (7) | 07:27 | | | 08:19 | 08:45 |
| | 21:31 | | | 20:31 | 23 18:43 (8) | 19:19 | 17 | 18:10 (7) | 17:15 | | | 16:32 | 16:35 |
| 31 | 05:57 | | | 06:46 | 18:17 (8) | | | | 07:28 | | | | 08:45 |
| | 21:29 | | | 20:28 | 26 18:43 (8) | | | | 17:13 | | | | 16:36 |
| Potential sun hours | 501 | | | 453 | | 381 | | | 332 | | | 267 | 244 |
| Total, worst case | | 647 | | | 98 | | 660 | | | 25 | | | |
| Sun reduction | | 0.27 | | | 0.30 | | 0.28 | | | 0.24 | | | |
| Oper. time red. | | 1.00 | | | 1.00 | | 1.00 | | | 1.00 | | | |
| Wind dir. red. | | 0.58 | | | 0.67 | | 0.68 | | | 0.69 | | | |
| Total reduction | | 0.15 | | | 0.20 | | 0.19 | | | 0.16 | | | |
| Total, real | | 100 | | | 20 | | 126 | | | 4 | | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** BN - H80

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | | February | | March | | April | | May | | June | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | | 08:18 | | 07:25 | | 17:20 (8) | | 07:14 | | 18:52 (4) | |
| | 16:37 | | 17:25 | | 18:16 | 8 | 17:28 (8) | | 20:10 | 20 | 19:12 (4) | |
| 2 | 08:44 | | 08:16 | | 07:23 | | 17:18 (8) | | 07:12 | | 18:52 (4) | |
| | 16:38 | | 17:26 | | 18:18 | 12 | 17:30 (8) | | 20:11 | 20 | 19:12 (4) | |
| 3 | 08:44 | | 08:15 | | 07:20 | | 17:16 (8) | | 07:10 | | 18:52 (4) | |
| | 16:39 | | 17:28 | | 18:19 | 16 | 17:32 (8) | | 20:13 | 19 | 19:11 (4) | |
| 4 | 08:44 | | 08:13 | | 07:18 | | 17:16 (8) | | 07:08 | | 18:52 (4) | |
| | 16:40 | | 17:30 | | 18:21 | 17 | 17:33 (8) | | 20:15 | 18 | 19:10 (4) | |
| 5 | 08:44 | | 08:12 | | 07:16 | | 17:14 (8) | | 07:05 | | 18:53 (4) | |
| | 16:41 | | 17:32 | | 18:23 | 18 | 17:32 (8) | | 20:16 | 16 | 19:09 (4) | |
| 6 | 08:44 | | 08:10 | | 07:14 | | 17:14 (8) | | 07:03 | | 18:54 (4) | |
| | 16:43 | | 17:34 | | 18:25 | 19 | 17:33 (8) | | 20:18 | 14 | 19:08 (4) | |
| 7 | 08:43 | | 08:08 | | 07:12 | | 17:14 (8) | | 07:01 | | 18:56 (4) | |
| | 16:44 | | 17:36 | | 18:27 | 19 | 17:33 (8) | | 20:20 | 10 | 19:06 (4) | |
| 8 | 08:43 | | 08:06 | | 07:09 | | 17:13 (8) | | 06:59 | | | |
| | 16:45 | | 17:37 | | 18:28 | 18 | 17:31 (8) | | 20:21 | | | |
| 9 | 08:42 | | 08:05 | | 07:07 | | 17:14 (8) | | 06:56 | | | |
| | 16:47 | | 17:39 | | 18:30 | 17 | 17:31 (8) | | 20:23 | | | |
| 10 | 08:42 | | 08:03 | | 07:05 | | 17:15 (8) | | 06:54 | | | |
| | 16:48 | | 17:41 | | 18:32 | 15 | 17:30 (8) | | 20:25 | | | |
| 11 | 08:41 | | 08:01 | | 07:03 | | 17:17 (8) | | 06:52 | | | |
| | 16:49 | | 17:43 | | 18:34 | 11 | 17:28 (8) | | 20:26 | | | |
| 12 | 08:41 | | 07:59 | | 07:00 | | 17:19 (8) | | 06:50 | | | |
| | 16:51 | | 17:45 | | 18:35 | 5 | 17:24 (8) | | 20:28 | | | |
| 13 | 08:40 | | 07:57 | | 06:58 | | | | 06:47 | | | |
| | 16:52 | | 17:47 | | 18:37 | | | | 20:30 | | | |
| 14 | 08:39 | | 07:55 | | 06:56 | | | | 06:45 | | | |
| | 16:54 | | 17:49 | | 18:39 | | | | 20:32 | | | |
| 15 | 08:38 | | 07:54 | | 06:54 | | | | 06:43 | | | |
| | 16:55 | | 17:50 | | 18:40 | | | | 20:33 | | | |
| 16 | 08:37 | | 07:52 | | 06:51 | | | | 06:41 | | | |
| | 16:57 | | 17:52 | | 18:42 | | | | 20:35 | | | |
| 17 | 08:37 | | 07:50 | | 06:49 | | | | 06:39 | | | |
| | 16:58 | | 17:54 | | 18:44 | | | | 20:37 | | | |
| 18 | 08:36 | | 07:48 | | 06:47 | | | | 06:37 | | | |
| | 17:00 | | 17:56 | | 18:46 | | | | 20:38 | | | |
| 19 | 08:35 | | 07:46 | | 06:44 | | | | 06:34 | | | |
| | 17:02 | | 17:58 | | 18:47 | | | | 20:40 | | | |
| 20 | 08:34 | | 07:44 | | 06:42 | | | | 06:32 | | | |
| | 17:03 | | 18:00 | | 18:49 | | | | 20:42 | | | |
| 21 | 08:33 | | 07:42 | | 06:40 | | | | 06:30 | | | |
| | 17:05 | | 18:01 | | 18:51 | | | | 20:43 | | | |
| 22 | 08:31 | | 07:40 | | 06:37 | | | | 06:28 | | | |
| | 17:07 | | 18:03 | | 18:53 | | | | 20:45 | | | |
| 23 | 08:30 | | 07:38 | | 06:35 | | | | 06:26 | | | |
| | 17:08 | | 18:05 | | 18:54 | | | | 20:47 | | | |
| 24 | 08:29 | | 07:35 | | 06:33 | | | | 06:24 | | | |
| | 17:10 | | 18:07 | | 18:56 | | | | 20:48 | | | |
| 25 | 08:28 | | 07:33 | | 06:31 | | | | 06:22 | | | |
| | 17:12 | | 18:09 | | 18:58 | | | | 20:50 | | | |
| 26 | 08:26 | | 07:31 | | 06:28 | | | | 06:20 | | 19:39 (5) | |
| | 17:14 | | 18:10 | | 18:59 | | | | 20:52 | 6 | 19:45 (5) | |
| 27 | 08:25 | | 07:29 | | 06:26 | | 17:59 (4) | | 06:18 | | 19:35 (5) | |
| | 17:15 | | 18:12 | | 19:01 | 10 | 18:09 (4) | | 20:53 | 13 | 19:48 (5) | |
| 28 | 08:24 | | 07:27 | | 06:24 | | 17:56 (4) | | 06:16 | | 19:33 (5) | |
| | 17:17 | | 18:14 | | 19:03 | 14 | 18:10 (4) | | 20:55 | 17 | 19:50 (5) | |
| 29 | 08:22 | | | | 07:21 | | 18:55 (4) | | 06:14 | | 19:31 (5) | |
| | 17:19 | | | | 20:04 | 16 | 19:11 (4) | | 20:57 | 20 | 19:51 (5) | |
| 30 | 08:21 | | | | 07:19 | | 18:54 (4) | | 06:12 | | 19:30 (5) | |
| | 17:21 | | | | 20:06 | 18 | 19:12 (4) | | 20:58 | 22 | 19:52 (5) | |
| 31 | 08:19 | | | | 07:17 | | 18:52 (4) | | | | | |
| | 17:23 | | | | 20:08 | 20 | 19:12 (4) | | | | | |
| Potential sun hours | 260 | | 278 | | 367 | | | 416 | | | 485 | | | | | 498 |
| Total, worst case | | | | | | 253 | | | | 195 | | | | 441 | | |
| Sun reduction | | | | | | 0.24 | | | | 0.35 | | | | 0.37 | | |
| Oper. time red. | | | | | | 1.00 | | | | 1.00 | | | | 1.00 | | |
| Wind dir. red. | | | | | | 0.68 | | | | 0.64 | | | | 0.60 | | |
| Total reduction | | | | | | 0.17 | | | | 0.23 | | | | 0.22 | | |
| Total, real | | | | | | 42 | | | | 44 | | | | 97 | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
**Jennings O'Donovan**
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kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** BN - H80

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | July | | | August | | | September | | | October | | | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 05:22 | | | 05:59 | | 19:38 (5) | 06:48 | | | 07:37 | | | 07:30 | 08:21 |
| | 21:59 | | | 21:28 | 25 | 20:03 (5) | 20:26 | | | 19:17 | | | 17:11 | 16:31 |
| 2 | 05:23 | | | 06:00 | | 19:38 (5) | 06:50 | | | 07:38 | | 17:56 (8) | 07:32 | 08:22 |
| | 21:59 | | | 21:26 | 26 | 20:04 (5) | 20:24 | | | 19:15 | 9 | 18:05 (8) | 17:09 | 16:30 |
| 3 | 05:24 | | | 06:02 | | 19:37 (5) | 06:51 | | | 07:40 | | 17:54 (8) | 07:34 | 08:24 |
| | 21:59 | | | 21:24 | 27 | 20:04 (5) | 20:22 | | | 19:12 | 13 | 18:07 (8) | 17:07 | 16:30 |
| 4 | 05:24 | | | 06:03 | | 19:36 (5) | 06:53 | | | 07:42 | | 17:52 (8) | 07:35 | 08:25 |
| | 21:58 | | | 21:23 | 27 | 20:03 (5) | 20:19 | | | 19:10 | 16 | 18:08 (8) | 17:06 | 16:29 |
| 5 | 05:25 | | | 06:05 | | 19:37 (5) | 06:54 | | 18:52 (4) | 07:43 | | 17:51 (8) | 07:37 | 08:26 |
| | 21:58 | | | 21:21 | 27 | 20:04 (5) | 20:17 | 10 | 19:02 (4) | 19:08 | 17 | 18:08 (8) | 17:04 | 16:29 |
| 6 | 05:26 | | | 06:06 | | 19:36 (5) | 06:56 | | 18:50 (4) | 07:45 | | 17:50 (8) | 07:39 | 08:28 |
| | 21:57 | | | 21:19 | 27 | 20:03 (5) | 20:15 | 14 | 19:04 (4) | 19:06 | 18 | 18:08 (8) | 17:02 | 16:28 |
| 7 | 05:27 | | | 06:08 | | 19:36 (5) | 06:58 | | 18:48 (4) | 07:47 | | 17:50 (8) | 07:41 | 08:29 |
| | 21:57 | | | 21:17 | 28 | 20:04 (5) | 20:12 | 16 | 19:04 (4) | 19:03 | 19 | 18:09 (8) | 17:01 | 16:28 |
| 8 | 05:28 | | | 06:09 | | 19:36 (5) | 06:59 | | 18:47 (4) | 07:48 | | 17:50 (8) | 07:43 | 08:30 |
| | 21:56 | | | 21:16 | 27 | 20:03 (5) | 20:10 | 18 | 19:05 (4) | 19:01 | 18 | 18:08 (8) | 16:59 | 16:28 |
| 9 | 05:29 | | | 06:11 | | 19:37 (5) | 07:01 | | 18:46 (4) | 07:50 | | 17:49 (8) | 07:44 | 08:31 |
| | 21:55 | | | 21:14 | 26 | 20:03 (5) | 20:08 | 19 | 19:05 (4) | 18:59 | 18 | 18:07 (8) | 16:57 | 16:27 |
| 10 | 05:30 | | | 06:13 | | 19:36 (5) | 07:02 | | 18:45 (4) | 07:52 | | 17:50 (8) | 07:46 | 08:32 |
| | 21:55 | | | 21:12 | 26 | 20:02 (5) | 20:06 | 20 | 19:05 (4) | 18:57 | 16 | 18:06 (8) | 16:56 | 16:27 |
| 11 | 05:31 | | | 06:14 | | 19:37 (5) | 07:04 | | 18:44 (4) | 07:53 | | 17:51 (8) | 07:48 | 08:33 |
| | 21:54 | | | 21:10 | 25 | 20:02 (5) | 20:03 | 20 | 19:04 (4) | 18:54 | 14 | 18:05 (8) | 16:54 | 16:27 |
| 12 | 05:32 | | | 06:16 | | 19:37 (5) | 07:06 | | 18:45 (4) | 07:55 | | 17:53 (8) | 07:50 | 08:34 |
| | 21:53 | | | 21:08 | 24 | 20:01 (5) | 20:01 | 19 | 19:04 (4) | 18:52 | 11 | 18:04 (8) | 16:53 | 16:27 |
| 13 | 05:33 | | | 06:17 | | 19:38 (5) | 07:07 | | 18:45 (4) | 07:57 | | 17:55 (8) | 07:51 | 08:35 |
| | 21:52 | | | 21:06 | 22 | 20:00 (5) | 19:59 | 19 | 19:04 (4) | 18:50 | 5 | 18:00 (8) | 16:51 | 16:27 |
| 14 | 05:34 | | | 06:19 | | 19:39 (5) | 07:09 | | 18:45 (4) | 07:58 | | | 07:53 | 08:36 |
| | 21:51 | | | 21:04 | 19 | 19:58 (5) | 19:56 | 17 | 19:02 (4) | 18:48 | | | 16:50 | 16:27 |
| 15 | 05:35 | | | 06:20 | | 19:41 (5) | 07:11 | | 18:46 (4) | 08:00 | | | 07:55 | 08:37 |
| | 21:50 | | | 21:02 | 16 | 19:57 (5) | 19:54 | 15 | 19:01 (4) | 18:46 | | | 16:48 | 16:27 |
| 16 | 05:36 | | | 06:22 | | 19:42 (5) | 07:12 | | 18:47 (4) | 08:02 | | | 07:57 | 08:38 |
| | 21:49 | | | 21:00 | 12 | 19:54 (5) | 19:52 | 11 | 18:58 (4) | 18:43 | | | 16:47 | 16:27 |
| 17 | 05:38 | | | 06:24 | | 19:47 (5) | 07:14 | | 18:50 (4) | 08:04 | | | 07:58 | 08:39 |
| | 21:48 | | | 20:58 | 2 | 19:49 (5) | 19:49 | 4 | 18:54 (4) | 18:41 | | | 16:45 | 16:27 |
| 18 | 05:39 | | | 06:25 | | | 07:15 | | | 08:05 | | | 08:00 | 08:40 |
| | 21:47 | | | 20:56 | | | 19:47 | | | 18:39 | | | 16:44 | 16:27 |
| 19 | 05:40 | | | 06:27 | | | 07:17 | | | 08:07 | | | 08:02 | 08:40 |
| | 21:46 | | | 20:54 | | | 19:45 | | | 18:37 | | | 16:43 | 16:28 |
| 20 | 05:41 | | | 06:29 | | | 07:19 | | | 08:09 | | | 08:03 | 08:41 |
| | 21:45 | | | 20:52 | | | 19:42 | | | 18:35 | | | 16:42 | 16:28 |
| 21 | 05:43 | | | 06:30 | | | 07:20 | | | 08:11 | | | 08:05 | 08:42 |
| | 21:44 | | | 20:50 | | | 19:40 | | | 18:33 | | | 16:40 | 16:28 |
| 22 | 05:44 | | | 06:32 | | | 07:22 | | | 08:12 | | | 08:07 | 08:42 |
| | 21:42 | | | 20:48 | | | 19:38 | | | 18:31 | | | 16:39 | 16:29 |
| 23 | 05:45 | | | 06:33 | | | 07:23 | | | 08:14 | | | 08:08 | 08:43 |
| | 21:41 | | | 20:46 | | | 19:35 | | | 18:29 | | | 16:38 | 16:29 |
| 24 | 05:47 | | 19:47 (5) | 06:35 | | | 07:25 | | | 08:16 | | | 08:10 | 08:43 |
| | 21:40 | 7 | 19:54 (5) | 20:44 | | | 19:33 | | | 18:27 | | | 16:37 | 16:30 |
| 25 | 05:48 | | 19:44 (5) | 06:37 | | | 07:27 | | | 07:18 | | | 08:12 | 08:43 |
| | 21:38 | 12 | 19:56 (5) | 20:41 | | | 19:31 | | | 17:25 | | | 16:36 | 16:31 |
| 26 | 05:50 | | 19:44 (5) | 06:38 | | | 07:28 | | | 07:19 | | | 08:13 | 08:44 |
| | 21:37 | 14 | 19:58 (5) | 20:39 | | | 19:28 | | | 17:23 | | | 16:35 | 16:31 |
| 27 | 05:51 | | 19:42 (5) | 06:40 | | | 07:30 | | | 07:21 | | | 08:15 | 08:44 |
| | 21:36 | 17 | 19:59 (5) | 20:37 | | | 19:26 | | | 17:21 | | | 16:34 | 16:32 |
| 28 | 05:53 | | 19:41 (5) | 06:41 | | | 07:32 | | | 07:23 | | | 08:16 | 08:44 |
| | 21:34 | 20 | 20:01 (5) | 20:35 | | | 19:24 | | | 17:19 | | | 16:33 | 16:33 |
| 29 | 05:54 | | 19:40 (5) | 06:43 | | | 07:33 | | | 07:25 | | | 08:18 | 08:44 |
| | 21:33 | 21 | 20:01 (5) | 20:33 | | | 19:22 | | | 17:17 | | | 16:33 | 16:34 |
| 30 | 05:56 | | 19:39 (5) | 06:45 | | | 07:35 | | | 07:27 | | | 08:19 | 08:45 |
| | 21:31 | 23 | 20:02 (5) | 20:31 | | | 19:19 | | | 17:15 | | | 16:32 | 16:35 |
| 31 | 05:57 | | 19:39 (5) | 06:46 | | | | | | 07:28 | | | | 08:45 |
| | 21:29 | 24 | 20:03 (5) | 20:28 | | | | | | 17:13 | | | | 16:36 |
| Potential sun hours | 501 | | | 453 | | | 381 | | | 332 | | | 267 | 244 |
| Total, worst case | | 138 | | | 386 | | | 202 | | | 174 | | | |
| Sun reduction | | 0.27 | | | 0.30 | | | 0.28 | | | 0.24 | | | |
| Oper. time red. | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | | | |
| Wind dir. red. | | 0.60 | | | 0.60 | | | 0.66 | | | 0.69 | | | |
| Total reduction | | 0.16 | | | 0.18 | | | 0.19 | | | 0.16 | | | |
| Total, real | | 22 | | | 69 | | | 38 | | | 29 | | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

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Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** BO - H81

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | | April | | | May | | | June |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | | 07:15 | | | 06:10 | | 19:13 (4) | 05:25 |
| | 16:37 | 17:25 | 18:16 | | 20:10 | | | 21:00 | 26 | 19:39 (4) | 21:46 |
| 2 | 08:45 | 08:16 | 07:23 | | 07:12 | | | 06:08 | | 19:13 (4) | 05:24 |
| | 16:38 | 17:26 | 18:18 | | 20:11 | | | 21:02 | 27 | 19:40 (4) | 21:47 |
| 3 | 08:44 | 08:15 | 07:20 | | 07:10 | | | 06:06 | | 19:12 (4) | 05:24 |
| | 16:39 | 17:28 | 18:19 | | 20:13 | | | 21:03 | 28 | 19:40 (4) | 21:48 |
| 4 | 08:44 | 08:13 | 07:18 | 17:15 (7) | 07:08 | | | 06:04 | | 19:11 (4) | 05:23 |
| | 16:40 | 17:30 | 18:21 | 5 17:20 (7) | 20:15 | | | 21:05 | 29 | 19:40 (4) | 21:49 |
| 5 | 08:44 | 08:12 | 07:16 | 17:11 (7) | 07:05 | | | 06:03 | | 19:11 (4) | 05:22 |
| | 16:41 | 17:32 | 18:23 | 12 17:23 (7) | 20:16 | | | 21:07 | 29 | 19:40 (4) | 21:50 |
| 6 | 08:44 | 08:10 | 07:14 | 17:09 (7) | 07:03 | | | 06:01 | | 19:11 (4) | 05:22 |
| | 16:43 | 17:34 | 18:25 | 15 17:24 (7) | 20:18 | | | 21:08 | 30 | 19:41 (4) | 21:51 |
| 7 | 08:43 | 08:08 | 07:12 | 17:08 (7) | 07:01 | | | 05:59 | | 19:11 (4) | 05:21 |
| | 16:44 | 17:36 | 18:27 | 17 17:25 (7) | 20:20 | | | 21:10 | 30 | 19:41 (4) | 21:52 |
| 8 | 08:43 | 08:06 | 07:09 | 17:08 (7) | 06:59 | | | 05:57 | | 19:11 (4) | 05:20 |
| | 16:45 | 17:37 | 18:28 | 18 17:26 (7) | 20:21 | | | 21:12 | 29 | 19:40 (4) | 21:53 |
| 9 | 08:42 | 08:05 | 07:07 | 17:06 (7) | 06:56 | | | 05:56 | | 19:11 (4) | 05:20 |
| | 16:47 | 17:39 | 18:30 | 20 17:26 (7) | 20:23 | | | 21:13 | 30 | 19:41 (4) | 21:53 |
| 10 | 08:42 | 08:03 | 07:05 | 17:06 (7) | 06:54 | | | 05:54 | | 19:11 (4) | 05:19 |
| | 16:48 | 17:41 | 18:32 | 20 17:26 (7) | 20:25 | | | 21:15 | 29 | 19:40 (4) | 21:54 |
| 11 | 08:41 | 08:01 | 07:03 | 17:06 (7) | 06:52 | | | 05:52 | | 19:12 (4) | 05:19 |
| | 16:49 | 17:43 | 18:34 | 20 17:26 (7) | 20:26 | | | 21:16 | 28 | 19:40 (4) | 21:55 |
| 12 | 08:41 | 07:59 | 07:00 | 17:06 (7) | 06:50 | | | 05:50 | | 19:12 (4) | 05:19 |
| | 16:51 | 17:45 | 18:35 | 18 17:24 (7) | 20:28 | | | 21:18 | 27 | 19:39 (4) | 21:56 |
| 13 | 08:40 | 07:57 | 06:58 | 17:07 (7) | 06:47 | | | 05:49 | | 19:13 (4) | 05:18 |
| | 16:52 | 17:47 | 18:37 | 17 17:24 (7) | 20:30 | | | 21:20 | 26 | 19:39 (4) | 21:56 |
| 14 | 08:39 | 07:55 | 06:56 | 17:08 (7) | 06:45 | | | 05:47 | | 19:13 (4) | 05:18 |
| | 16:54 | 17:49 | 18:39 | 15 17:23 (7) | 20:32 | | | 21:21 | 25 | 19:38 (4) | 21:57 |
| 15 | 08:38 | 07:54 | 06:54 | 17:09 (7) | 06:43 | | | 05:46 | | 19:14 (4) | 05:18 |
| | 16:55 | 17:50 | 18:41 | 22 17:32 (8) | 20:33 | | | 21:23 | 24 | 19:38 (4) | 21:57 |
| 16 | 08:37 | 07:52 | 06:51 | 17:12 (7) | 06:41 | | | 05:44 | | 19:15 (4) | 05:18 |
| | 16:57 | 17:52 | 18:42 | 21 17:35 (8) | 20:35 | | | 21:24 | 21 | 19:36 (4) | 21:58 |
| 17 | 08:37 | 07:50 | 06:49 | 17:17 (8) | 06:39 | | | 05:43 | | 19:16 (4) | 05:18 |
| | 16:59 | 17:54 | 18:44 | 20 17:37 (8) | 20:37 | | | 21:26 | 20 | 19:36 (4) | 21:58 |
| 18 | 08:36 | 07:48 | 06:47 | 17:15 (8) | 06:37 | | | 05:41 | | 19:18 (4) | 05:18 |
| | 17:00 | 17:56 | 18:46 | 22 17:37 (8) | 20:38 | | | 21:27 | 17 | 19:35 (4) | 21:59 |
| 19 | 08:35 | 07:46 | 06:44 | 17:14 (8) | 06:34 | | | 05:40 | | 19:19 (4) | 05:18 |
| | 17:02 | 17:58 | 18:47 | 24 17:38 (8) | 20:40 | | | 21:29 | 15 | 19:34 (4) | 21:59 |
| 20 | 08:34 | 07:44 | 06:42 | 17:13 (8) | 06:32 | | | 05:38 | | 19:20 (4) | 05:18 |
| | 17:03 | 18:00 | 18:49 | 26 17:39 (8) | 20:42 | | | 21:30 | 11 | 19:31 (4) | 22:00 |
| 21 | 08:33 | 07:42 | 06:40 | 17:12 (8) | 06:30 | | | 05:37 | | 19:24 (4) | 05:18 |
| | 17:05 | 18:01 | 18:51 | 27 17:39 (8) | 20:43 | | | 21:32 | 5 | 19:29 (4) | 22:00 |
| 22 | 08:31 | 07:40 | 06:38 | 17:11 (8) | 06:28 | | | 05:36 | | | 05:18 |
| | 17:07 | 18:03 | 18:53 | 28 17:39 (8) | 20:45 | | | 21:33 | | | 22:00 |
| 23 | 08:30 | 07:38 | 06:35 | 17:11 (8) | 06:26 | | | 05:35 | | | 05:19 |
| | 17:09 | 18:05 | 18:54 | 28 17:39 (8) | 20:47 | | | 21:34 | | | 22:00 |
| 24 | 08:29 | 07:35 | 06:33 | 17:11 (8) | 06:24 | | | 05:33 | | | 05:19 |
| | 17:10 | 18:07 | 18:56 | 28 17:39 (8) | 20:48 | | | 21:36 | | | 22:00 |
| 25 | 08:28 | 07:33 | 06:31 | 17:11 (8) | 06:22 | | 19:25 (4) | 05:32 | | | 05:19 |
| | 17:12 | 18:09 | 18:58 | 27 17:38 (8) | 20:50 | 4 | 19:29 (4) | 21:37 | | | 22:00 |
| 26 | 08:26 | 07:31 | 06:28 | 17:11 (8) | 06:20 | | 19:21 (4) | 05:31 | | | 05:20 |
| | 17:14 | 18:10 | 18:59 | 26 17:37 (8) | 20:52 | 13 | 19:34 (4) | 21:38 | | | 22:00 |
| 27 | 08:25 | 07:29 | 06:26 | 17:12 (8) | 06:18 | | 19:18 (4) | 05:30 | | | 05:20 |
| | 17:16 | 18:12 | 19:01 | 25 17:37 (8) | 20:53 | 18 | 19:36 (4) | 21:40 | | | 22:00 |
| 28 | 08:24 | 07:27 | 06:24 | 17:12 (8) | 06:16 | | 19:16 (4) | 05:29 | | | 05:21 |
| | 17:17 | 18:14 | 19:03 | 23 17:35 (8) | 20:55 | 21 | 19:37 (4) | 21:41 | | | 22:00 |
| 29 | 08:22 | | 07:21 | 18:13 (8) | 06:14 | | 19:15 (4) | 05:28 | | | 05:21 |
| | 17:19 | | 20:04 | 21 18:34 (8) | 20:57 | 23 | 19:38 (4) | 21:42 | | | 22:00 |
| 30 | 08:21 | | 07:19 | 18:15 (8) | 06:12 | | 19:14 (4) | 05:27 | | | 05:22 |
| | 17:21 | | 20:06 | 17 18:32 (8) | 20:58 | 25 | 19:39 (4) | 21:43 | | | 22:00 |
| 31 | 08:19 | | 07:17 | 18:17 (8) | | | | 05:26 | | | |
| | 17:23 | | 20:08 | 11 18:28 (8) | | | | 21:45 | | | |
| Potential sun hours | 260 | 278 | 367 | | 416 | | | 485 | | | 498 |
| Total, worst case | | | | 573 | | 104 | | | 506 | | |
| Sun reduction | | | | 0.24 | | 0.35 | | | 0.37 | | |
| Oper. time red. | | | | 1.00 | | 1.00 | | | 1.00 | | |
| Wind dir. red. | | | | 0.69 | | 0.61 | | | 0.61 | | |
| Total reduction | | | | 0.17 | | 0.22 | | | 0.23 | | |
| Total, real | | | | 96 | | 22 | | | 114 | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
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kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** BO - H81

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | July | | | August | | | September | | | October | | | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 05:22 | | | 05:59 | | 19:22 (4) | 06:48 | | | 07:37 | | 17:46 (7) | 07:30 | 08:21 |
| | 21:59 | | | 21:28 | 28 | 19:50 (4) | 20:26 | | | 19:17 | 18 | 18:04 (7) | 17:11 | 16:31 |
| 2 | 05:23 | | | 06:00 | | 19:22 (4) | 06:50 | | | 07:38 | | 17:44 (7) | 07:32 | 08:22 |
| | 21:59 | | | 21:26 | 29 | 19:51 (4) | 20:24 | | | 19:15 | 20 | 18:04 (7) | 17:09 | 16:30 |
| 3 | 05:24 | | | 06:02 | | 19:21 (4) | 06:51 | | | 07:40 | | 17:44 (7) | 07:34 | 08:24 |
| | 21:59 | | | 21:25 | 29 | 19:50 (4) | 20:22 | | | 19:12 | 20 | 18:04 (7) | 17:08 | 16:30 |
| 4 | 05:24 | | | 06:03 | | 19:21 (4) | 06:53 | | | 07:42 | | 17:44 (7) | 07:35 | 08:25 |
| | 21:58 | | | 21:23 | 29 | 19:50 (4) | 20:19 | | | 19:10 | 20 | 18:04 (7) | 17:06 | 16:29 |
| 5 | 05:25 | | | 06:05 | | 19:21 (4) | 06:54 | | | 07:43 | | 17:43 (7) | 07:37 | 08:26 |
| | 21:58 | | | 21:21 | 30 | 19:51 (4) | 20:17 | | | 19:08 | 19 | 18:02 (7) | 17:04 | 16:29 |
| 6 | 05:26 | | | 06:06 | | 19:20 (4) | 06:56 | | | 07:45 | | 17:44 (7) | 07:39 | 08:28 |
| | 21:57 | | | 21:19 | 30 | 19:50 (4) | 20:15 | | | 19:06 | 18 | 18:02 (7) | 17:02 | 16:28 |
| 7 | 05:27 | | | 06:08 | | 19:21 (4) | 06:58 | | | 07:47 | | 17:45 (7) | 07:41 | 08:29 |
| | 21:57 | | | 21:18 | 29 | 19:50 (4) | 20:13 | | | 19:03 | 16 | 18:01 (7) | 17:01 | 16:28 |
| 8 | 05:28 | | | 06:09 | | 19:20 (4) | 06:59 | | | 07:48 | | 17:46 (7) | 07:43 | 08:30 |
| | 21:56 | | | 21:16 | 30 | 19:50 (4) | 20:10 | | | 19:01 | 14 | 18:00 (7) | 16:59 | 16:28 |
| 9 | 05:29 | | | 06:11 | | 19:21 (4) | 07:01 | | | 07:50 | | 17:47 (7) | 07:44 | 08:31 |
| | 21:56 | | | 21:14 | 29 | 19:50 (4) | 20:08 | | | 18:59 | 9 | 17:56 (7) | 16:57 | 16:27 |
| 10 | 05:30 | | | 06:13 | | 19:21 (4) | 07:03 | | | 07:52 | | | 07:46 | 08:32 |
| | 21:55 | | | 21:12 | 28 | 19:49 (4) | 20:06 | | | 18:57 | | | 16:56 | 16:27 |
| 11 | 05:31 | | | 06:14 | | 19:21 (4) | 07:04 | | | 07:53 | | | 07:48 | 08:33 |
| | 21:54 | | | 21:10 | 28 | 19:49 (4) | 20:03 | | | 18:54 | | | 16:54 | 16:27 |
| 12 | 05:32 | | | 06:16 | | 19:21 (4) | 07:06 | | 18:09 (8) | 07:55 | | | 07:50 | 08:34 |
| | 21:53 | | | 21:08 | 26 | 19:47 (4) | 20:01 | 11 | 18:20 (8) | 18:52 | | | 16:53 | 16:27 |
| 13 | 05:33 | | | 06:17 | | 19:22 (4) | 07:07 | | 18:07 (8) | 07:57 | | | 07:51 | 08:35 |
| | 21:52 | | | 21:06 | 25 | 19:47 (4) | 19:59 | 16 | 18:23 (8) | 18:50 | | | 16:51 | 16:27 |
| 14 | 05:34 | | | 06:19 | | 19:23 (4) | 07:09 | | 18:04 (8) | 07:59 | | | 07:53 | 08:36 |
| | 21:51 | | | 21:04 | 22 | 19:45 (4) | 19:56 | 20 | 18:24 (8) | 18:48 | | | 16:50 | 16:27 |
| 15 | 05:35 | | | 06:21 | | 19:24 (4) | 07:11 | | 18:03 (8) | 08:00 | | | 07:55 | 08:37 |
| | 21:50 | | | 21:02 | 20 | 19:44 (4) | 19:54 | 22 | 18:25 (8) | 18:46 | | | 16:48 | 16:27 |
| 16 | 05:36 | | | 06:22 | | 19:25 (4) | 07:12 | | 18:01 (8) | 08:02 | | | 07:57 | 08:38 |
| | 21:49 | | | 21:00 | 17 | 19:42 (4) | 19:52 | 24 | 18:25 (8) | 18:43 | | | 16:47 | 16:27 |
| 17 | 05:38 | | | 06:24 | | 19:28 (4) | 07:14 | | 18:00 (8) | 08:04 | | | 07:58 | 08:39 |
| | 21:48 | | | 20:58 | 12 | 19:40 (4) | 19:49 | 26 | 18:26 (8) | 18:41 | | | 16:45 | 16:27 |
| 18 | 05:39 | | | 06:25 | | | 07:15 | | 17:58 (8) | 08:05 | | | 08:00 | 08:40 |
| | 21:47 | | | 20:56 | | | 19:47 | 27 | 18:25 (8) | 18:39 | | | 16:44 | 16:27 |
| 19 | 05:40 | | | 06:27 | | | 07:17 | | 17:58 (8) | 08:07 | | | 08:02 | 08:40 |
| | 21:46 | | | 20:54 | | | 19:45 | 27 | 18:25 (8) | 18:37 | | | 16:43 | 16:28 |
| 20 | 05:41 | | | 06:29 | | | 07:19 | | 17:58 (8) | 08:09 | | | 08:04 | 08:41 |
| | 21:45 | | | 20:52 | | | 19:42 | 28 | 18:26 (8) | 18:35 | | | 16:42 | 16:28 |
| 21 | 05:43 | | | 06:30 | | | 07:20 | | 17:57 (8) | 08:11 | | | 08:05 | 08:42 |
| | 21:44 | | | 20:50 | | | 19:40 | 27 | 18:24 (8) | 18:33 | | | 16:40 | 16:29 |
| 22 | 05:44 | | | 06:32 | | | 07:22 | | 17:57 (8) | 08:12 | | | 08:07 | 08:42 |
| | 21:42 | | | 20:48 | | | 19:38 | 27 | 18:24 (8) | 18:31 | | | 16:39 | 16:29 |
| 23 | 05:46 | | 19:32 (4) | 06:33 | | | 07:24 | | 17:56 (8) | 08:14 | | | 08:08 | 08:43 |
| | 21:41 | 9 | 19:41 (4) | 20:46 | | | 19:35 | 27 | 18:23 (8) | 18:29 | | | 16:38 | 16:30 |
| 24 | 05:47 | | 19:30 (4) | 06:35 | | | 07:25 | | 17:57 (8) | 08:16 | | | 08:10 | 08:43 |
| | 21:40 | 13 | 19:43 (4) | 20:44 | | | 19:33 | 25 | 18:22 (8) | 18:27 | | | 16:37 | 16:30 |
| 25 | 05:48 | | 19:29 (4) | 06:37 | | | 07:27 | | 17:58 (8) | 07:18 | | | 08:12 | 08:43 |
| | 21:38 | 16 | 19:45 (4) | 20:42 | | | 19:31 | 23 | 18:21 (8) | 17:25 | | | 16:36 | 16:31 |
| 26 | 05:50 | | 19:27 (4) | 06:38 | | | 07:28 | | 17:58 (8) | 07:19 | | | 08:13 | 08:44 |
| | 21:37 | 19 | 19:46 (4) | 20:39 | | | 19:28 | 21 | 18:19 (8) | 17:23 | | | 16:35 | 16:31 |
| 27 | 05:51 | | 19:26 (4) | 06:40 | | | 07:30 | | 18:00 (8) | 07:21 | | | 08:15 | 08:44 |
| | 21:36 | 21 | 19:47 (4) | 20:37 | | | 19:26 | 17 | 18:17 (8) | 17:21 | | | 16:34 | 16:32 |
| 28 | 05:53 | | 19:26 (4) | 06:42 | | | 07:32 | | 17:51 (7) | 07:23 | | | 08:16 | 08:44 |
| | 21:34 | 22 | 19:48 (4) | 20:35 | | | 19:24 | 23 | 18:15 (8) | 17:19 | | | 16:33 | 16:33 |
| 29 | 05:54 | | 19:24 (4) | 06:43 | | | 07:33 | | 17:48 (7) | 07:25 | | | 08:18 | 08:44 |
| | 21:33 | 24 | 19:48 (4) | 20:33 | | | 19:22 | 17 | 18:09 (8) | 17:17 | | | 16:33 | 16:34 |
| 30 | 05:56 | | 19:23 (4) | 06:45 | | | 07:35 | | 17:47 (7) | 07:27 | | | 08:19 | 08:45 |
| | 21:31 | 26 | 19:49 (4) | 20:31 | | | 19:19 | 16 | 18:03 (7) | 17:15 | | | 16:32 | 16:35 |
| 31 | 05:57 | | 19:23 (4) | 06:46 | | | | | | 07:28 | | | | 08:45 |
| | 21:29 | 27 | 19:50 (4) | 20:28 | | | | | | 17:13 | | | | 16:36 |
| Potential sun hours | 501 | | | 453 | | | 381 | | | 332 | | | 267 | 244 |
| Total, worst case | | 177 | | | 441 | | | 424 | | | 154 | | | |
| Sun reduction | | 0.27 | | | 0.30 | | | 0.28 | | | 0.24 | | | |
| Oper. time red. | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | | | |
| Wind dir. red. | | 0.61 | | | 0.61 | | | 0.68 | | | 0.69 | | | |
| Total reduction | | 0.16 | | | 0.18 | | | 0.19 | | | 0.16 | | | |
| Total, real | | 29 | | | 80 | | | 82 | | | 25 | | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
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Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** BP - H82

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | | May | June | July | August | | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:14 | | 06:10 | 05:25 | 05:22 | 05:59 | | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | | 21:00 | 21:46 | 21:59 | 21:28 | | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | 07:12 | | 06:08 | 05:24 | 05:23 | 06:00 | | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | | 21:02 | 21:47 | 21:59 | 21:26 | | 20:24 | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | | 06:06 | 05:23 | 05:24 | 06:02 | | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 | | 21:03 | 21:48 | 21:59 | 21:24 | | 20:22 | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | | 06:04 | 05:23 | 05:24 | 06:03 | | 06:53 | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | | 21:05 | 21:49 | 21:58 | 21:23 | | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | | 06:03 | 05:22 | 05:25 | 06:05 | | 06:54 | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | 20:16 | | 21:07 | 21:50 | 21:58 | 21:21 | | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | | 06:01 | 05:21 | 05:26 | 06:06 | | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | | 21:08 | 21:51 | 21:57 | 21:19 | | 20:15 | 19:05 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | | 05:59 | 05:21 | 05:27 | 06:08 | | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | | 21:10 | 21:52 | 21:57 | 21:17 | | 20:12 | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | | 05:57 | 05:20 | 05:28 | 06:09 | | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | 20:21 | | 21:12 | 21:53 | 21:56 | 21:16 | | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | | 05:55 | 05:20 | 05:29 | 06:11 | | 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | | 21:13 | 21:53 | 21:55 | 21:14 | | 20:08 | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | | 05:54 | 05:19 | 05:30 | 06:13 | | 07:02 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | | 21:15 | 21:54 | 21:55 | 21:12 | | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | | 05:52 | 05:19 | 05:31 | 06:14 | | 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | 20:26 | | 21:16 | 21:55 | 21:54 | 21:10 | | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | 06:50 | 19:22 (5) | 05:50 | 05:19 | 05:32 | 06:16 | | 07:06 | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 7 19:29 (5) | 21:18 | 21:56 | 21:53 | 21:08 | | 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:47 | 19:17 (5) | 05:49 | 05:18 | 05:33 | 06:17 | | 07:07 | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 14 19:31 (5) | 21:20 | 21:56 | 21:52 | 21:06 | | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 06:45 | 19:16 (5) | 05:47 | 05:18 | 05:34 | 06:19 | 19:24 (5) | 07:09 | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 17 19:33 (5) | 21:21 | 21:57 | 21:51 | 21:04 | 10 19:34 (5) | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 19:14 (5) | 05:46 | 05:18 | 05:35 | 06:20 | 19:22 (5) | 07:11 | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | 20:33 | 20 19:34 (5) | 21:23 | 21:57 | 21:50 | 21:02 | 15 19:37 (5) | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | 19:13 (5) | 05:44 | 05:18 | 05:36 | 06:22 | 19:20 (5) | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 22 19:35 (5) | 21:24 | 21:58 | 21:49 | 21:00 | 17 19:37 (5) | 19:52 | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 19:12 (5) | 05:43 | 05:18 | 05:38 | 06:24 | 19:19 (5) | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | 20:37 | 23 19:35 (5) | 21:26 | 21:58 | 21:48 | 20:58 | 20 19:39 (5) | 19:49 | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 19:12 (5) | 05:41 | 05:18 | 05:39 | 06:25 | 19:17 (5) | 07:15 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 24 19:36 (5) | 21:27 | 21:59 | 21:47 | 20:56 | 22 19:39 (5) | 19:47 | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | 06:34 | 19:11 (5) | 05:40 | 05:18 | 05:40 | 06:27 | 19:17 (5) | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | 25 19:36 (5) | 21:29 | 21:59 | 21:46 | 20:54 | 23 19:40 (5) | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 19:11 (5) | 05:38 | 05:18 | 05:41 | 06:29 | 19:16 (5) | 07:19 | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | 25 19:36 (5) | 21:30 | 21:59 | 21:45 | 20:52 | 24 19:40 (5) | 19:42 | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | 19:11 (5) | 05:37 | 05:18 | 05:43 | 06:30 | 19:15 (5) | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | 25 19:36 (5) | 21:32 | 22:00 | 21:44 | 20:50 | 25 19:40 (5) | 19:40 | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | 06:28 | 19:11 (5) | 05:36 | 05:18 | 05:44 | 06:32 | 19:14 (5) | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | 24 19:35 (5) | 21:33 | 22:00 | 21:42 | 20:48 | 25 19:39 (5) | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 19:11 (5) | 05:35 | 05:19 | 05:45 | 06:33 | 19:15 (5) | 07:23 | 08:14 | 08:08 | 08:43 |
| | 17:08 | 18:05 | 18:54 | 20:47 | 24 19:35 (5) | 21:34 | 22:00 | 21:41 | 20:46 | 25 19:40 (5) | 19:35 | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | 19:11 (5) | 05:33 | 05:19 | 05:47 | 06:35 | 19:15 (5) | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 23 19:34 (5) | 21:36 | 22:00 | 21:40 | 20:44 | 25 19:40 (5) | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 19:12 (5) | 05:32 | 05:19 | 05:48 | 06:37 | 19:14 (5) | 07:27 | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21 19:33 (5) | 21:37 | 22:00 | 21:38 | 20:41 | 25 19:39 (5) | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 06:20 | 19:13 (5) | 05:31 | 05:20 | 05:50 | 06:38 | 19:15 (5) | 07:28 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | 20:52 | 19 19:32 (5) | 21:38 | 22:00 | 21:37 | 20:39 | 23 19:38 (5) | 19:28 | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 19:14 (5) | 05:30 | 05:20 | 05:51 | 06:40 | 19:15 (5) | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 | 20:53 | 16 19:30 (5) | 21:40 | 22:00 | 21:36 | 20:37 | 22 19:37 (5) | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 19:15 (5) | 05:29 | 05:20 | 05:53 | 06:41 | 19:16 (5) | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 14 19:29 (5) | 21:41 | 22:00 | 21:34 | 20:35 | 20 19:36 (5) | 19:24 | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 06:14 | 19:18 (5) | 05:28 | 05:21 | 05:54 | 06:43 | 19:17 (5) | 07:33 | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 20:57 | 8 19:26 (5) | 21:42 | 22:00 | 21:33 | 20:33 | 17 19:34 (5) | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | | 05:27 | 05:22 | 05:56 | 06:45 | 19:18 (5) | 07:35 | 07:27 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:58 | | 21:43 | 22:00 | 21:31 | 20:31 | 14 19:32 (5) | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | | 05:26 | | 05:57 | 06:46 | 19:21 (5) | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | | 21:44 | | 21:29 | 20:28 | 7 19:28 (5) | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | | 485 | 498 | 501 | 453 | | 381 | 332 | 267 | 244 |
| Total, worst case | | | | | 351 | | | | | 359 | | | | |
| Sun reduction | | | | | 0.35 | | | | | 0.30 | | | | |
| Oper. time red. | | | | | 1.00 | | | | | 1.00 | | | | |
| Wind dir. red. | | | | | 0.63 | | | | | 0.63 | | | | |
| Total reduction | | | | | 0.22 | | | | | 0.19 | | | | |
| Total, real | | | | | 78 | | | | | 67 | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

Licensed user:
**Jennings O'Donovan**
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+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** BQ - H83

## Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:14 | 18:58 (5) | 06:10 | 05:25 | 05:22 | 05:59 | 06:48 | 18:57 (5) | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:24 | 18:16 | 20:10 | 21 19:19 (5) | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | 16 19:13 (5) | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | 07:12 | 18:57 (5) | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | 18:55 (5) | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 23 19:20 (5) | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 18 19:13 (5) | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | 18:56 (5) | 06:06 | 05:23 | 05:24 | 06:02 | 06:51 | 18:54 (5) | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 | 24 19:20 (5) | 21:03 | 21:48 | 21:59 | 21:25 | 20:22 | 21 19:15 (5) | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 18:55 (5) | 06:04 | 05:23 | 05:24 | 06:03 | 06:53 | 18:52 (5) | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 25 19:20 (5) | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 23 19:15 (5) | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | 18:55 (5) | 06:03 | 05:22 | 05:25 | 06:05 | 06:54 | 18:51 (5) | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | 20:16 | 25 19:20 (5) | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 24 19:15 (5) | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 18:55 (5) | 06:01 | 05:21 | 05:26 | 06:06 | 06:56 | 18:51 (5) | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 24 19:19 (5) | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 25 19:16 (5) | 19:05 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 18:55 (5) | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 18:50 (5) | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 24 19:19 (5) | 21:10 | 21:52 | 21:57 | 21:17 | 20:12 | 25 19:15 (5) | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 18:55 (5) | 05:57 | 05:20 | 05:28 | 06:09 | 06:59 | 18:50 (5) | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | 20:21 | 22 19:17 (5) | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 25 19:15 (5) | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | 18:56 (5) | 05:55 | 05:20 | 05:29 | 06:11 | 07:01 | 18:49 (5) | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 21 19:17 (5) | 21:13 | 21:53 | 21:56 | 21:14 | 20:08 | 25 19:14 (5) | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 18:57 (5) | 05:54 | 05:19 | 05:30 | 06:13 | 07:02 | 18:50 (5) | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 18 19:15 (5) | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 23 19:13 (5) | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 18:58 (5) | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 18:50 (5) | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | 20:26 | 16 19:14 (5) | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 22 19:12 (5) | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | 06:50 | 19:00 (5) | 05:50 | 05:19 | 05:32 | 06:16 | 07:06 | 18:51 (5) | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 12 19:12 (5) | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 20 19:11 (5) | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:47 | | 05:49 | 05:18 | 05:33 | 06:17 | 07:07 | 18:52 (5) | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 17 19:09 (5) | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 06:45 | | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 18:53 (5) | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | 20:32 | | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 14 19:07 (5) | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | | 05:46 | 05:18 | 05:35 | 06:20 | 07:11 | 18:56 (5) | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | 20:33 | | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | 7 19:03 (5) | 18:46 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | | 05:44 | 05:18 | 05:36 | 06:22 | 07:12 | | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | 20:37 | | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | | 05:41 | 05:18 | 05:39 | 06:25 | 07:15 | | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | 06:34 | | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | | 05:38 | 05:18 | 05:41 | 06:29 | 07:19 | | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | | 21:30 | 22:00 | 21:45 | 20:52 | 19:42 | | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | 06:28 | | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 | | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | | 21:33 | 22:00 | 21:42 | 20:48 | 19:38 | | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | | 05:35 | 05:19 | 05:45 | 06:33 | 07:23 | | 08:14 | 08:08 | 08:43 |
| | 17:08 | 18:05 | 18:54 | 20:47 | | 21:34 | 22:00 | 21:41 | 20:46 | 19:35 | | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | | 05:33 | 05:19 | 05:47 | 06:35 | 07:25 | | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | | 21:37 | 22:00 | 21:38 | 20:41 | 19:31 | | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 06:20 | | 05:31 | 05:20 | 05:50 | 06:38 | 07:28 | | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | 20:52 | | 21:38 | 22:00 | 21:37 | 20:39 | 19:28 | | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 | 20:53 | | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 18:07 (5) | 06:16 | 05:29 | 05:20 | 05:53 | 06:41 | 07:32 | | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 5 18:12 (5) | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 19:03 (5) | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 13 19:16 (5) | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:22 | | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 19:01 (5) | 06:12 | 05:27 | 05:22 | 05:55 | 06:45 | 19:05 (5) | 07:35 | | 07:27 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 17 19:18 (5) | 20:58 | 21:43 | 22:00 | 21:31 | 20:31 | 2 19:07 (5) | 19:19 | | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | 18:59 (5) | | 05:26 | | 05:57 | 06:46 | 18:59 (5) | | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | 19 19:18 (5) | | 21:44 | | 21:29 | 20:28 | 12 19:11 (5) | | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | | 485 | 498 | 501 | 453 | 381 | | 332 | 267 | 244 |
| Total, worst case | | | 54 | 255 | | | | | 14 | 305 | | | | |
| Sun reduction | | | 0.24 | 0.35 | | | | | 0.30 | 0.28 | | | | |
| Oper. time red. | | | 1.00 | 1.00 | | | | | 1.00 | 1.00 | | | | |
| Wind dir. red. | | | 0.66 | 0.66 | | | | | 0.66 | 0.66 | | | | |
| Total reduction | | | 0.16 | 0.23 | | | | | 0.19 | 0.19 | | | | |
| Total, real | | | 9 | 59 | | | | | 3 | 57 | | | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** BR - H84

## Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | | May | June | July | August | | September | | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:14 | | 06:10 | 05:25 | 05:22 | 05:59 | | 06:48 | | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | | 21:00 | 21:46 | 21:59 | 21:28 | | 20:26 | 23 | 19:29 (5) | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | 07:12 | | 06:08 | 05:24 | 05:23 | 06:00 | | 06:50 | | 19:07 (5) | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | | 21:02 | 21:47 | 21:59 | 21:26 | | 20:24 | 20 | 19:27 (5) | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | | 06:06 | 05:23 | 05:24 | 06:02 | | 06:51 | | 19:08 (5) | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 | | 21:03 | 21:48 | 21:59 | 21:25 | | 20:22 | 18 | 19:26 (5) | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | | 06:04 | 05:23 | 05:24 | 06:03 | | 06:53 | | 19:09 (5) | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | | 21:05 | 21:49 | 21:58 | 21:23 | | 20:19 | 14 | 19:23 (5) | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | | 06:03 | 05:22 | 05:25 | 06:05 | | 06:54 | | 19:13 (5) | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | 20:16 | | 21:07 | 21:50 | 21:58 | 21:21 | | 20:17 | 6 | 19:19 (5) | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | | 06:01 | 05:21 | 05:26 | 06:06 | | 06:56 | | | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | | 21:08 | 21:51 | 21:57 | 21:19 | | 20:15 | | | 19:05 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | | 19:17 (5) 05:59 | 05:21 | 05:27 | 06:08 | | 06:58 | | | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 6 | 19:23 (5) 21:10 | 21:52 | 21:57 | 21:17 | | 20:12 | | | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | | 19:12 (5) 05:57 | 05:20 | 05:28 | 06:09 | | 06:59 | | | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | 20:21 | 14 | 19:26 (5) 21:12 | 21:53 | 21:56 | 21:16 | | 20:10 | | | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | | 19:10 (5) 05:55 | 05:20 | 05:29 | 06:11 | | 07:01 | | | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 18 | 19:28 (5) 21:13 | 21:53 | 21:56 | 21:14 | | 20:08 | | | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | | 19:09 (5) 05:54 | 05:19 | 05:30 | 06:13 | | 07:02 | | | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 20 | 19:29 (5) 21:15 | 21:54 | 21:55 | 21:12 | | 20:06 | | | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | | 19:07 (5) 05:52 | 05:19 | 05:31 | 06:14 | | 07:04 | | | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | 20:26 | 23 | 19:30 (5) 21:16 | 21:55 | 21:54 | 21:10 | | 20:03 | | | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | 06:50 | | 19:07 (5) 05:50 | 05:19 | 05:32 | 06:16 | | 07:06 | | | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 24 | 19:31 (5) 21:18 | 21:56 | 21:53 | 21:08 | | 20:01 | | | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:47 | | 19:05 (5) 05:49 | 05:18 | 05:33 | 06:17 | | 07:07 | | | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 25 | 19:30 (5) 21:20 | 21:56 | 21:52 | 21:06 | | 19:59 | | | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 06:45 | | 19:04 (5) 05:47 | 05:18 | 05:34 | 06:19 | | 07:09 | | | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 26 | 19:30 (5) 21:21 | 21:57 | 21:51 | 21:04 | | 19:56 | | | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | | 19:04 (5) 05:46 | 05:18 | 05:35 | 06:20 | | 07:11 | | | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | 20:33 | 26 | 19:30 (5) 21:23 | 21:57 | 21:50 | 21:02 | | 19:54 | | | 18:46 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | | 19:04 (5) 05:44 | 05:18 | 05:36 | 06:22 | | 07:12 | | | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 26 | 19:30 (5) 21:24 | 21:58 | 21:49 | 21:00 | | 19:52 | | | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | | 19:04 (5) 05:43 | 05:18 | 05:38 | 06:24 | | 07:14 | | | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | 20:37 | 26 | 19:30 (5) 21:26 | 21:58 | 21:48 | 20:58 | | 19:49 | | | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | | 19:04 (5) 05:41 | 05:18 | 05:39 | 06:25 | 19:19 (5) | 07:15 | | | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 26 | 19:30 (5) 21:27 | 21:59 | 21:47 | 20:56 | 5 19:24 (5) | 19:47 | | | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | 06:34 | | 19:05 (5) 05:40 | 05:18 | 05:40 | 06:27 | 19:16 (5) | 07:17 | | | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | 24 | 19:29 (5) 21:29 | 21:59 | 21:46 | 20:54 | 12 19:28 (5) | 19:45 | | | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | | 19:05 (5) 05:38 | 05:18 | 05:41 | 06:29 | 19:13 (5) | 07:19 | | | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | 23 | 19:28 (5) 21:30 | 22:00 | 21:45 | 20:52 | 16 19:29 (5) | 19:42 | | | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | | 19:06 (5) 05:37 | 05:18 | 05:43 | 06:30 | 19:11 (5) | 07:20 | | | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | 21 | 19:27 (5) 21:32 | 22:00 | 21:44 | 20:50 | 20 19:31 (5) | 19:40 | | | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | 06:28 | | 19:07 (5) 05:36 | 05:18 | 05:44 | 06:32 | 19:10 (5) | 07:22 | | | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | 19 | 19:26 (5) 21:33 | 22:00 | 21:42 | 20:48 | 21 19:31 (5) | 19:38 | | | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | | 19:08 (5) 05:35 | 05:19 | 05:45 | 06:33 | 19:09 (5) | 07:23 | | | 08:14 | 08:08 | 08:43 |
| | 17:08 | 18:05 | 18:54 | 20:47 | 16 | 19:24 (5) 21:34 | 22:00 | 21:41 | 20:46 | 23 19:32 (5) | 19:35 | | | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | | 19:10 (5) 05:33 | 05:19 | 05:47 | 06:35 | 19:08 (5) | 07:25 | | | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 12 | 19:22 (5) 21:36 | 22:00 | 21:40 | 20:44 | 25 19:33 (5) | 19:33 | | | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | | 05:32 | 05:19 | 05:48 | 06:37 | 19:07 (5) | 07:27 | | | 07:18 | 08:12 | 08:43 |
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| 26 | 08:26 | 07:31 | 06:28 | 06:20 | | 05:31 | 05:20 | 05:50 | 06:38 | 19:07 (5) | 07:28 | | | 07:19 | 08:13 | 08:44 |
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| 28 | 08:24 | 07:27 | 06:24 | 06:16 | | 05:29 | 05:20 | 05:53 | 06:41 | 19:06 (5) | 07:32 | | | 07:23 | 08:16 | 08:44 |
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| 29 | 08:22 | | 07:21 | 06:14 | | 05:28 | 05:21 | 05:54 | 06:43 | 19:05 (5) | 07:33 | | | 07:25 | 08:18 | 08:44 |
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| 30 | 08:21 | | 07:19 | 06:12 | | 05:27 | 05:22 | 05:56 | 06:45 | 19:06 (5) | 07:35 | | | 07:27 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:58 | | 21:43 | 22:00 | 21:31 | 20:31 | 25 19:31 (5) | 19:19 | | | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | | 05:26 | | 05:57 | 06:46 | 19:06 (5) | | | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | | 21:44 | | 21:29 | 20:28 | 24 19:30 (5) | | | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | | 485 | 498 | 501 | 453 | | 381 | | 332 | 267 | 244 |
| Total, worst case | | | | | 375 | | | | | 300 | | 81 | | | |
| Sun reduction | | | | | 0.35 | | | | | 0.30 | | 0.28 | | | |
| Oper. time red. | | | | | 1.00 | | | | | 1.00 | | 1.00 | | | |
| Wind dir. red. | | | | | 0.64 | | | | | 0.64 | | 0.64 | | | |
| Total reduction | | | | | 0.23 | | | | | 0.19 | | 0.18 | | | |
| Total, real | | | | | 85 | | | | | 57 | | 15 | | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** BS - H85

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | | April | | May | June | July | August | September | | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | | 07:14 | | 19:11 (5) | 06:10 | 05:25 | 05:22 | 05:58 | 06:48 | 19:09 (5) | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:24 | 18:16 | | 20:09 | 13 | 19:24 (5) | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | 9 19:18 (5) | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | | 07:12 | | 19:09 (5) | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | 19:06 (5) | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | | 20:11 | 16 | 19:25 (5) | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 13 19:19 (5) | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | | 07:10 | | 19:09 (5) | 06:06 | 05:23 | 05:24 | 06:02 | 06:51 | 19:05 (5) | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | | 20:13 | 17 | 19:26 (5) | 21:03 | 21:48 | 21:59 | 21:24 | 20:22 | 16 19:21 (5) | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | | 07:08 | | 19:07 (5) | 06:04 | 05:23 | 05:24 | 06:03 | 06:53 | 19:03 (5) | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | | 20:15 | 18 | 19:25 (5) | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 18 19:21 (5) | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | | 07:05 | | 19:07 (5) | 06:03 | 05:22 | 05:25 | 06:05 | 06:54 | 19:03 (5) | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | | 20:16 | 19 | 19:26 (5) | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 18 19:21 (5) | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | | 07:03 | | 19:07 (5) | 06:01 | 05:21 | 05:26 | 06:06 | 06:56 | 19:03 (5) | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | | 20:18 | 18 | 19:25 (5) | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 19 19:22 (5) | 19:05 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | | 07:01 | | 19:07 (5) | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 19:02 (5) | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:26 | | 20:20 | 18 | 19:25 (5) | 21:10 | 21:52 | 21:57 | 21:17 | 20:12 | 19 19:21 (5) | 19:03 | 17:00 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | | 06:59 | | 19:06 (5) | 05:57 | 05:20 | 05:28 | 06:09 | 06:59 | 19:02 (5) | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | | 20:21 | 18 | 19:24 (5) | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 18 19:20 (5) | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | | 06:56 | | 19:07 (5) | 05:55 | 05:20 | 05:29 | 06:11 | 07:01 | 19:02 (5) | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | | 20:23 | 16 | 19:23 (5) | 21:13 | 21:53 | 21:55 | 21:14 | 20:08 | 17 19:19 (5) | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | | 06:54 | | 19:08 (5) | 05:54 | 05:19 | 05:30 | 06:12 | 07:02 | 19:03 (5) | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | | 20:25 | 13 | 19:21 (5) | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 15 19:18 (5) | 18:56 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | | 06:52 | | 19:10 (5) | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 19:03 (5) | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | | 20:26 | 9 | 19:19 (5) | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 13 19:16 (5) | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | | 06:50 | | | 05:50 | 05:19 | 05:32 | 06:16 | 07:06 | 19:05 (5) | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | | 20:28 | | | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 9 19:14 (5) | 18:52 | 16:52 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | | 06:47 | | | 05:49 | 05:18 | 05:33 | 06:17 | 07:07 | | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | | 20:30 | | | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | | 06:45 | | | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:48 | 18:39 | | 20:32 | | | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | | 06:43 | | | 05:46 | 05:18 | 05:35 | 06:20 | 07:10 | | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | | 20:33 | | | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | | 18:45 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | | 06:41 | | | 05:44 | 05:18 | 05:36 | 06:22 | 07:12 | | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | | 20:35 | | | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | | 06:39 | | | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | | 20:37 | | | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | | 06:37 | | | 05:41 | 05:18 | 05:39 | 06:25 | 07:15 | | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | | 20:38 | | | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | | 06:34 | | | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | | 20:40 | | | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | | 06:32 | | | 05:38 | 05:18 | 05:41 | 06:29 | 07:19 | | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | | 20:42 | | | 21:30 | 21:59 | 21:45 | 20:52 | 19:42 | | 18:35 | 16:42 | 16:28 |
| 21 | 08:32 | 07:42 | 06:40 | | 06:30 | | | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | | 20:43 | | | 21:31 | 22:00 | 21:44 | 20:50 | 19:40 | | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | | 06:28 | | | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 | | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:52 | | 20:45 | | | 21:33 | 22:00 | 21:42 | 20:48 | 19:38 | | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:37 | 06:35 | | 06:26 | | | 05:34 | 05:18 | 05:45 | 06:33 | 07:23 | | 08:14 | 08:08 | 08:43 |
| | 17:08 | 18:05 | 18:54 | | 20:47 | | | 21:34 | 22:00 | 21:41 | 20:46 | 19:35 | | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | | 06:24 | | | 05:33 | 05:19 | 05:47 | 06:35 | 07:25 | | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | | 20:48 | | | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | | 06:22 | | | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | | 20:50 | | | 21:37 | 22:00 | 21:38 | 20:41 | 19:31 | | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | | 06:20 | | | 05:31 | 05:20 | 05:50 | 06:38 | 07:28 | | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | | 20:52 | | | 21:38 | 22:00 | 21:37 | 20:39 | 19:28 | | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | | 06:18 | | | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 | | 20:53 | | | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | | 06:16 | | | 05:29 | 05:20 | 05:53 | 06:41 | 07:32 | | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | | 20:55 | | | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | | 06:14 | | | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | | 20:57 | | | 21:42 | 22:00 | 21:33 | 20:33 | 19:21 | | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | | 06:12 | | | 05:27 | 05:22 | 05:55 | 06:45 | 07:35 | | 07:26 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | | 20:58 | | | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | 19:13 (5) | | | | 05:26 | | 05:57 | 06:46 | | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | 8 19:21 (5) | | | | 21:44 | | 21:29 | 20:28 | | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | | 416 | | | 485 | 498 | 501 | 453 | 381 | | 332 | 267 | 244 |
| Total, worst case | | | | 8 | | 175 | | | | | | | 184 | | | |
| Sun reduction | | | | 0.24 | | 0.35 | | | | | | | 0.28 | | | |
| Oper. time red. | | | | 1.00 | | 1.00 | | | | | | | 1.00 | | | |
| Wind dir. red. | | | | 0.65 | | 0.65 | | | | | | | 0.65 | | | |
| Total reduction | | | | 0.16 | | 0.23 | | | | | | | 0.18 | | | |
| Total, real | | | | 1 | | 40 | | | | | | | 34 | | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

Licensed user:
**Jennings O'Donovan**
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** BT - H86

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:14 | 06:10 | 05:25 | 05:22 | 05:58 | 06:48 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:24 | 18:16 | 20:09 | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | 07:12 | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | 07:10 | 06:06 | 05:23 | 05:24 | 06:02 | 06:51 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | 20:13 | 21:03 | 21:48 | 21:59 | 21:24 | 20:22 | 19:12 | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | 06:04 | 05:23 | 05:24 | 06:03 | 06:53 | 07:42 | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:05 | 06:02 | 05:22 | 05:25 | 06:05 | 06:54 | 07:43 | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | 06:01 | 05:21 | 05:26 | 06:06 | 06:56 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | 19:05 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:26 | 20:20 | 21:10 | 21:52 | 21:57 | 21:17 | 20:12 | 19:03 | 17:00 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | 06:59 | 05:57 | 05:20 | 05:28 | 06:09 | 06:59 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | 20:21 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 | 05:55 | 05:20 | 05:29 | 06:11 | 07:01 | 07:50 | 07:44 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 21:13 | 21:53 | 21:55 | 21:14 | 20:08 | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 05:54 | 05:19 | 05:30 | 06:12 | 07:02 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:56 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | 07:53 | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | 20:26 | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | 06:50 | 05:50 | 05:19 | 05:32 | 06:16 | 07:06 | 07:55 | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:52 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | 06:47 | 05:49 | 05:18 | 05:33 | 06:17 | 07:07 | 07:57 | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | 06:45 | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | 07:58 | 07:53 | 08:36 |
| | 16:54 | 17:48 | 18:39 | 20:32 | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 05:46 | 05:18 | 05:35 | 06:20 | 07:10 | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | 20:33 | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | 18:45 | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | 06:41 | 05:44 | 05:18 | 05:36 | 06:22 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | 08:04 | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | 20:37 | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | 18:41 | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 05:41 | 05:18 | 05:39 | 06:25 | 07:15 | 08:05 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | 06:34 | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | 08:07 | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | 20:40 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 05:38 | 05:18 | 05:41 | 06:28 | 07:19 | 08:09 | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | 20:42 | 21:30 | 21:59 | 21:45 | 20:52 | 19:42 | 18:35 | 16:42 | 16:28 |
| 21 | 08:32 | 07:42 | 06:40 | 06:30 | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | 20:43 | 21:31 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | 06:28 | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:52 | 20:45 | 21:33 | 22:00 | 21:42 | 20:48 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:37 | 06:35 | 06:26 | 05:34 | 05:18 | 05:45 | 06:33 | 07:23 | 08:14 | 08:08 | 08:43 |
| | 17:08 | 18:05 | 18:54 | 20:47 | 21:34 | 22:00 | 21:41 | 20:46 | 19:35 | 18:29 | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | 06:24 | 05:33 | 05:19 | 05:47 | 06:35 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:48 | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | 07:18 | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:38 | 20:41 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | 06:20 | 05:31 | 05:19 | 05:50 | 06:38 | 07:28 | 07:19 | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | 20:52 | 21:38 | 22:00 | 21:37 | 20:39 | 19:28 | 17:23 | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 | 20:53 | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 05:29 | 05:20 | 05:53 | 06:41 | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | 06:14 | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | 07:25 | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:21 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 | 05:27 | 05:22 | 05:55 | 06:45 | 07:35 | 07:26 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:58 | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | 05:26 | | 05:57 | 06:46 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:44 | | 21:29 | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 244 |
| Total, worst case | | | | | | | | | | | | |
| Sun reduction | | | | | | | | | | | | |
| Oper. time red. | | | | | | | | | | | | |
| Wind dir. red. | | | | | | | | | | | | |
| Total reduction | | | | | | | | | | | | |
| Total, real | | | | | | | | | | | | |

**Table layout: For each day in each month the following matrix apply**

| | | | | |
|---|---|---|---|---|
| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |

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Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar

**Calculation:** 6460 Gortloughra WF only WC **Shadow receptor:** BU - H87

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | | | April | | | May | June | July | August | September | | | October | | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | | | 07:14 | | 18:58 (5) | 06:10 | 05:25 | 05:22 | 05:58 | 06:48 | | | 07:37 | | 07:30 | 08:21 |
| | 16:37 | 17:24 | 18:16 | | | 20:09 | 12 | 19:10 (5) | 21:00 | 21:46 | 21:59 | 21:28 | 20:26 | | | 19:17 | | 17:11 | 16:31 |
| 2 | 08:44 | 08:16 | 07:23 | | | 07:12 | | 19:00 (5) | 06:08 | 05:24 | 05:23 | 06:00 | 06:50 | | | 07:38 | | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | | | 20:11 | 8 | 19:08 (5) | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | | | 19:15 | | 17:09 | 16:30 |
| 3 | 08:44 | 08:15 | 07:20 | | | 07:10 | | | 06:06 | 05:23 | 05:24 | 06:02 | 06:51 | | | 07:40 | | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:19 | | | 20:13 | | | 21:03 | 21:48 | 21:59 | 21:24 | 20:22 | | | 19:12 | | 17:07 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | | | 07:08 | | | 06:04 | 05:23 | 05:24 | 06:03 | 06:53 | | | 07:42 | | 07:35 | 08:25 |
| | 16:40 | 17:30 | 18:21 | | | 20:15 | | | 21:05 | 21:49 | 21:58 | 21:23 | 20:19 | | | 19:10 | | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | | | 07:05 | | | 06:02 | 05:22 | 05:25 | 06:05 | 06:54 | | | 07:43 | | 07:37 | 08:26 |
| | 16:41 | 17:32 | 18:23 | | | 20:16 | | | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | | | 19:08 | | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | | | 07:03 | | | 06:01 | 05:21 | 05:26 | 06:06 | 06:56 | | | 07:45 | | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | | | 20:18 | | | 21:08 | 21:51 | 21:57 | 21:19 | 20:15 | | | 19:05 | | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | | | 07:01 | | | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 | | | 07:47 | | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:26 | | | 20:20 | | | 21:10 | 21:52 | 21:57 | 21:17 | 20:12 | | | 19:03 | | 17:00 | 16:28 |
| 8 | 08:43 | 08:06 | 07:09 | | | 06:59 | | | 05:57 | 05:20 | 05:28 | 06:09 | 06:59 | | | 07:48 | | 07:43 | 08:30 |
| | 16:45 | 17:37 | 18:28 | | | 20:21 | | | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | | | 19:01 | | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | | | 06:56 | | | 05:55 | 05:20 | 05:29 | 06:11 | 07:01 | | | 07:50 | | 07:44 | 08:31 |
| | 16:46 | 17:39 | 18:30 | | | 20:23 | | | 21:13 | 21:53 | 21:55 | 21:14 | 20:08 | | | 18:59 | | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | | | 06:54 | | | 05:54 | 05:19 | 05:30 | 06:12 | 07:02 | | 18:54 (5) | 07:52 | | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | | | 20:25 | | | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 7 | 19:01 (5) | 18:56 | | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | | | 06:52 | | | 05:52 | 05:19 | 05:31 | 06:14 | 07:04 | | 18:51 (5) | 07:53 | | 07:48 | 08:33 |
| | 16:49 | 17:43 | 18:34 | | | 20:26 | | | 21:16 | 21:55 | 21:54 | 21:10 | 20:03 | 11 | 19:02 (5) | 18:54 | | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:00 | | | 06:50 | | | 05:50 | 05:19 | 05:32 | 06:16 | 07:06 | | 18:49 (5) | 07:55 | | 07:50 | 08:34 |
| | 16:51 | 17:45 | 18:35 | | | 20:28 | | | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 15 | 19:04 (5) | 18:52 | | 16:52 | 16:27 |
| 13 | 08:40 | 07:57 | 06:58 | | | 06:47 | | | 05:49 | 05:18 | 05:33 | 06:17 | 07:07 | | 18:47 (5) | 07:57 | | 07:51 | 08:35 |
| | 16:52 | 17:47 | 18:37 | | | 20:30 | | | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 17 | 19:04 (5) | 18:50 | | 16:51 | 16:27 |
| 14 | 08:39 | 07:55 | 06:56 | | | 06:45 | | | 05:47 | 05:18 | 05:34 | 06:19 | 07:09 | | 18:47 (5) | 07:58 | | 07:53 | 08:36 |
| | 16:54 | 17:48 | 18:39 | | | 20:32 | | | 21:21 | 21:57 | 21:51 | 21:04 | 19:56 | 17 | 19:04 (5) | 18:48 | | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | | | 06:43 | | | 05:46 | 05:18 | 05:35 | 06:20 | 07:10 | | 18:46 (5) | 08:00 | | 07:55 | 08:37 |
| | 16:55 | 17:50 | 18:40 | | | 20:33 | | | 21:23 | 21:57 | 21:50 | 21:02 | 19:54 | 19 | 19:05 (5) | 18:45 | | 16:48 | 16:27 |
| 16 | 08:37 | 07:52 | 06:51 | | | 06:41 | | | 05:44 | 05:18 | 05:36 | 06:22 | 07:12 | | 18:45 (5) | 08:02 | | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | | | 20:35 | | | 21:24 | 21:58 | 21:49 | 21:00 | 19:52 | 19 | 19:04 (5) | 18:43 | | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | | | 06:39 | | | 05:43 | 05:18 | 05:38 | 06:24 | 07:14 | | 18:46 (5) | 08:04 | | 07:58 | 08:39 |
| | 16:58 | 17:54 | 18:44 | | | 20:37 | | | 21:26 | 21:58 | 21:48 | 20:58 | 19:49 | 18 | 19:04 (5) | 18:41 | | 16:45 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | | | 06:37 | | | 05:41 | 05:18 | 05:39 | 06:25 | 07:15 | | 18:45 (5) | 08:05 | | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | | | 20:38 | | | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 17 | 19:02 (5) | 18:39 | | 16:44 | 16:27 |
| 19 | 08:35 | 07:46 | 06:44 | | | 06:34 | | | 05:40 | 05:18 | 05:40 | 06:27 | 07:17 | | 18:46 (5) | 08:07 | | 08:02 | 08:40 |
| | 17:02 | 17:58 | 18:47 | | | 20:40 | | | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 15 | 19:01 (5) | 18:37 | | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | | | 06:32 | | | 05:38 | 05:18 | 05:41 | 06:28 | 07:19 | | 18:48 (5) | 08:09 | | 08:03 | 08:41 |
| | 17:03 | 18:00 | 18:49 | | | 20:42 | | | 21:30 | 21:59 | 21:45 | 20:52 | 19:42 | 12 | 19:00 (5) | 18:35 | | 16:42 | 16:28 |
| 21 | 08:32 | 07:42 | 06:40 | | | 06:30 | | | 05:37 | 05:18 | 05:43 | 06:30 | 07:20 | | 18:49 (5) | 08:11 | | 08:05 | 08:42 |
| | 17:05 | 18:01 | 18:51 | | | 20:43 | | | 21:31 | 22:00 | 21:44 | 20:50 | 19:40 | 7 | 18:56 (5) | 18:33 | | 16:40 | 16:28 |
| 22 | 08:31 | 07:40 | 06:37 | | 18:05 (5) | 06:28 | | | 05:36 | 05:18 | 05:44 | 06:32 | 07:22 | | | 08:12 | | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:52 | 5 | 18:10 (5) | 20:45 | | | 21:33 | 22:00 | 21:42 | 20:48 | 19:38 | | | 18:31 | | 16:39 | 16:29 |
| 23 | 08:30 | 07:37 | 06:35 | | 18:02 (5) | 06:26 | | | 05:34 | 05:18 | 05:45 | 06:33 | 07:23 | | | 08:14 | | 08:08 | 08:43 |
| | 17:08 | 18:05 | 18:54 | 11 | 18:13 (5) | 20:47 | | | 21:34 | 22:00 | 21:41 | 20:46 | 19:35 | | | 18:29 | | 16:38 | 16:29 |
| 24 | 08:29 | 07:35 | 06:33 | | 17:59 (5) | 06:24 | | | 05:33 | 05:19 | 05:47 | 06:35 | 07:25 | | | 08:16 | | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 14 | 18:13 (5) | 20:48 | | | 21:36 | 22:00 | 21:40 | 20:44 | 19:33 | | | 18:27 | | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | | 17:58 (5) | 06:22 | | | 05:32 | 05:19 | 05:48 | 06:37 | 07:27 | | | 07:18 | | 08:12 | 08:43 |
| | 17:12 | 18:09 | 18:58 | 16 | 18:14 (5) | 20:50 | | | 21:37 | 22:00 | 21:38 | 20:41 | 19:31 | | | 17:25 | | 16:36 | 16:31 |
| 26 | 08:26 | 07:31 | 06:28 | | 17:57 (5) | 06:20 | | | 05:31 | 05:19 | 05:50 | 06:38 | 07:28 | | | 07:19 | | 08:13 | 08:44 |
| | 17:14 | 18:10 | 18:59 | 18 | 18:15 (5) | 20:52 | | | 21:38 | 22:00 | 21:37 | 20:39 | 19:28 | | | 17:23 | | 16:35 | 16:31 |
| 27 | 08:25 | 07:29 | 06:26 | | 17:57 (5) | 06:18 | | | 05:30 | 05:20 | 05:51 | 06:40 | 07:30 | | | 07:21 | | 08:15 | 08:44 |
| | 17:15 | 18:12 | 19:01 | 18 | 18:15 (5) | 20:53 | | | 21:40 | 22:00 | 21:36 | 20:37 | 19:26 | | | 17:21 | | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | | 17:56 (5) | 06:16 | | | 05:29 | 05:20 | 05:53 | 06:41 | 07:32 | | | 07:23 | | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 18 | 18:14 (5) | 20:55 | | | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | | | 17:19 | | 16:33 | 16:33 |
| 29 | 08:22 | | 07:21 | | 18:56 (5) | 06:14 | | | 05:28 | 05:21 | 05:54 | 06:43 | 07:33 | | | 07:25 | | 08:18 | 08:44 |
| | 17:19 | | 20:04 | 18 | 19:14 (5) | 20:57 | | | 21:42 | 22:00 | 21:33 | 20:33 | 19:21 | | | 17:17 | | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | | 18:57 (5) | 06:12 | | | 05:27 | 05:22 | 05:55 | 06:45 | 07:35 | | | 07:26 | | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 17 | 19:14 (5) | 20:58 | | | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | | | 17:15 | | 16:32 | 16:35 |
| 31 | 08:19 | | 07:17 | | 18:57 (5) | | | | 05:26 | | 05:57 | 06:46 | | | | 07:28 | | | 08:45 |
| | 17:23 | | 20:08 | 15 | 19:12 (5) | | | | 21:44 | | 21:29 | 20:28 | | | | 17:13 | | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | | | 416 | | | 485 | 498 | 501 | 453 | 381 | | | 332 | | 267 | 244 |
| Total, worst case | | | | 150 | | | 20 | | | | | | | 174 | | | | | |
| Sun reduction | | | | 0.24 | | | 0.35 | | | | | | | 0.28 | | | | | |
| Oper. time red. | | | | 1.00 | | | 1.00 | | | | | | | 1.00 | | | | | |
| Wind dir. red. | | | | 0.66 | | | 0.66 | | | | | | | 0.66 | | | | | |
| Total reduction | | | | 0.16 | | | 0.24 | | | | | | | 0.19 | | | | | |
| Total, real | | | | 24 | | | 5 | | | | | | | 33 | | | | | |

**Table layout: For each day in each month the following matrix apply**

| Day in month | Sun rise (hh:mm)<br>Sun set (hh:mm) | Minutes with flicker | First time (hh:mm) with flicker<br>Last time (hh:mm) with flicker | (WTG causing flicker first time)<br>(WTG causing flicker last time) |
|---|---|---|---|---|

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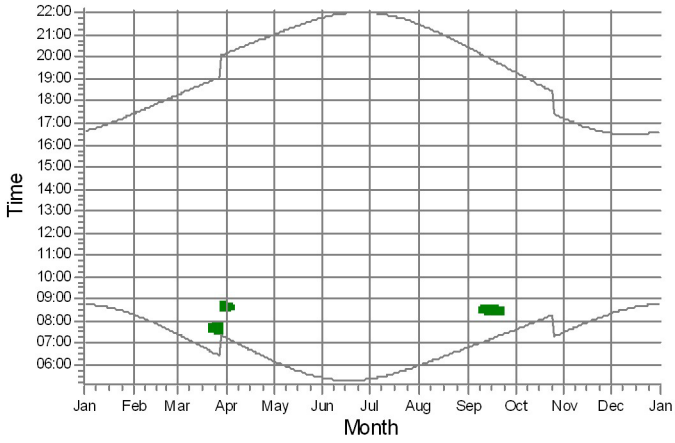
Calculated:
10/09/2024 11:52/4.0.552

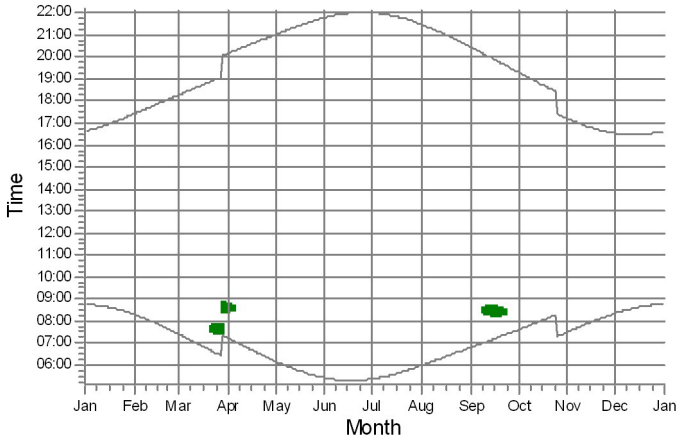
# SHADOW - Calendar, graphical

**Calculation:** 6460 Gortloughra WF only WC

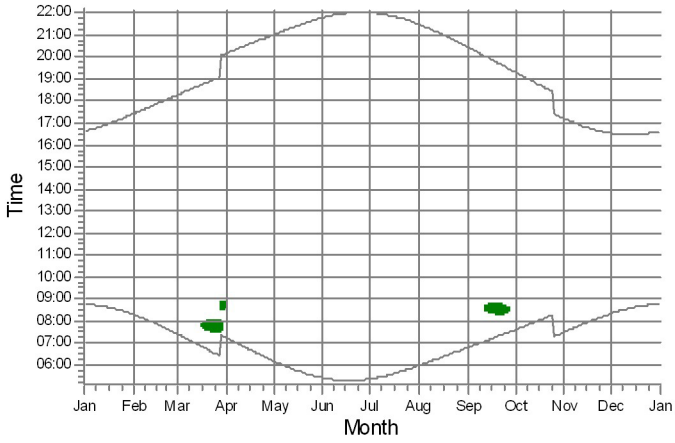
A: H1



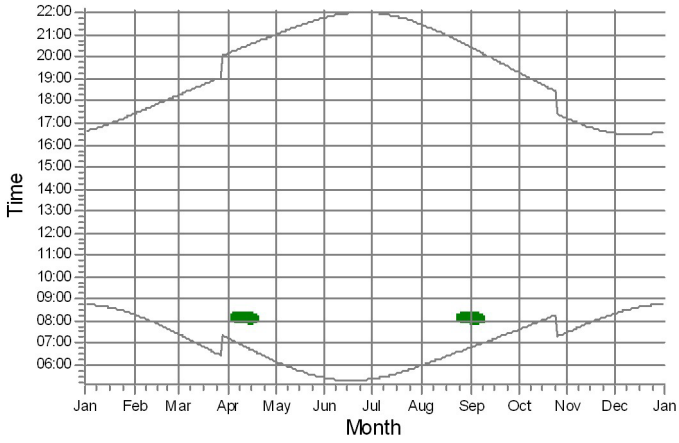

B: H2



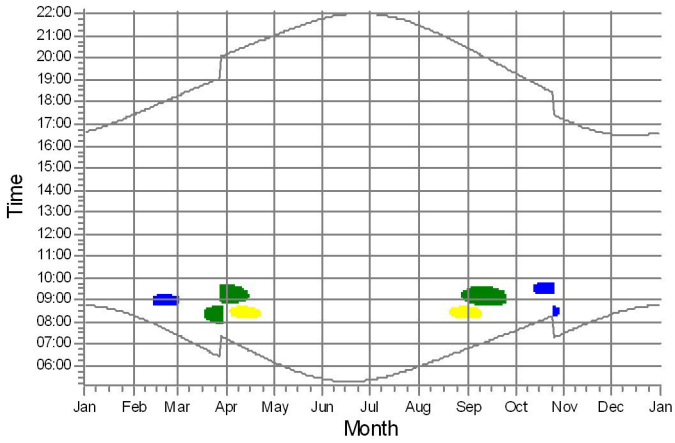

C: H3



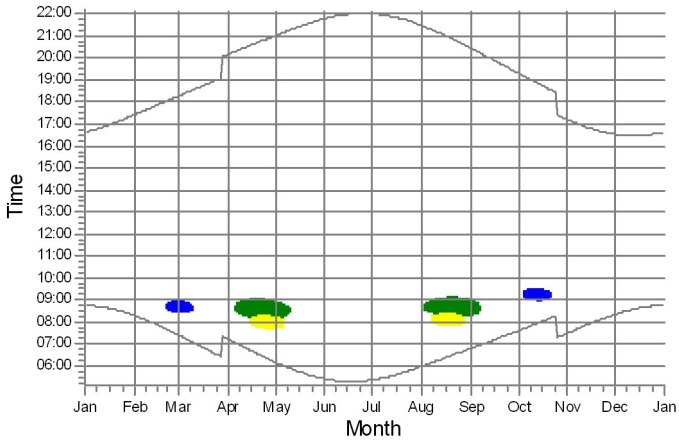

D: H4




E: H5




F: H6




WTGs

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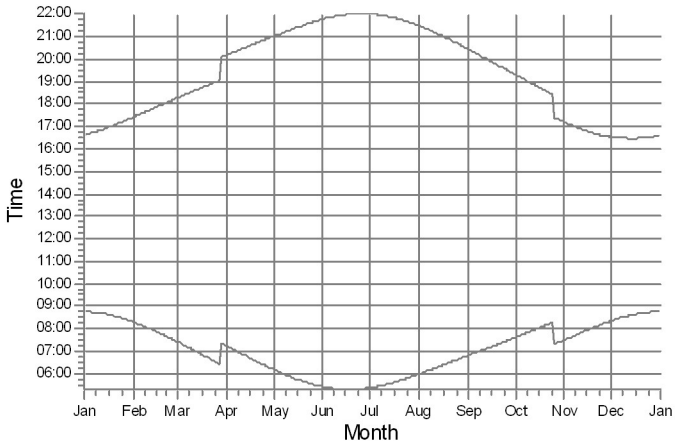
Calculated:
10/09/2024 11:52/4.0.552

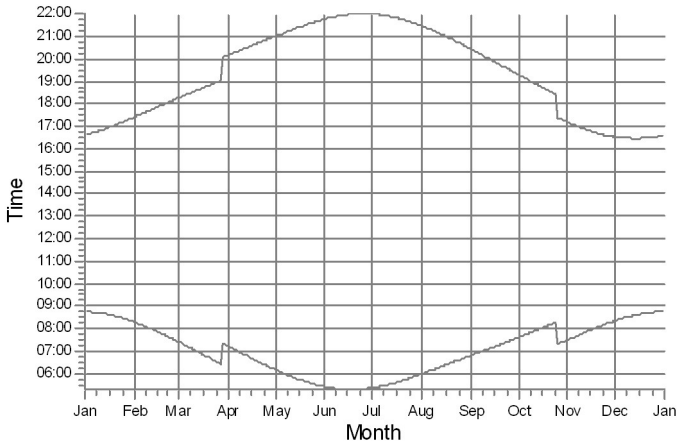
# SHADOW - Calendar, graphical

**Calculation:** 6460 Gortloughra WF only WC

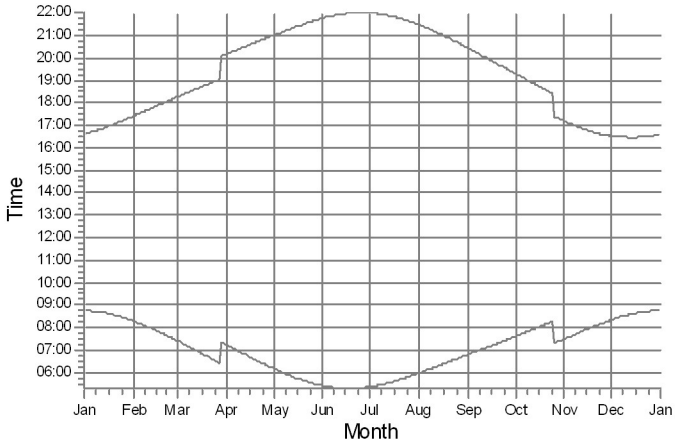
G: H7



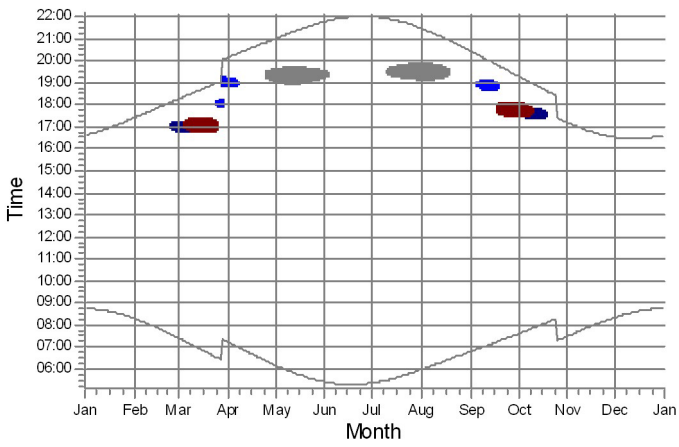

H: H8



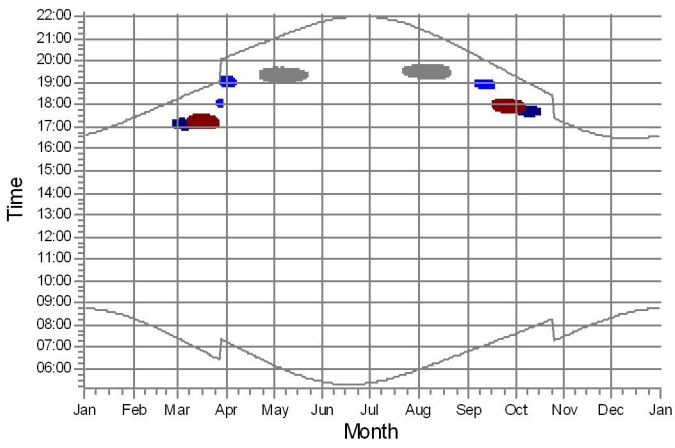

I: H9



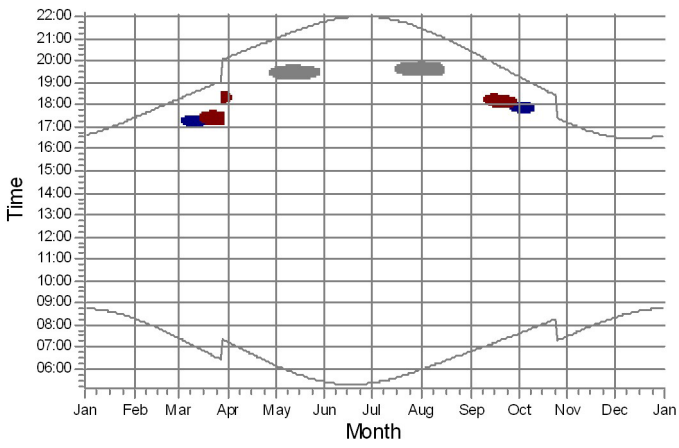

J: H10




K: H11




L: H12




WTGs

3: T03 4: T04 7: T08 8: T09

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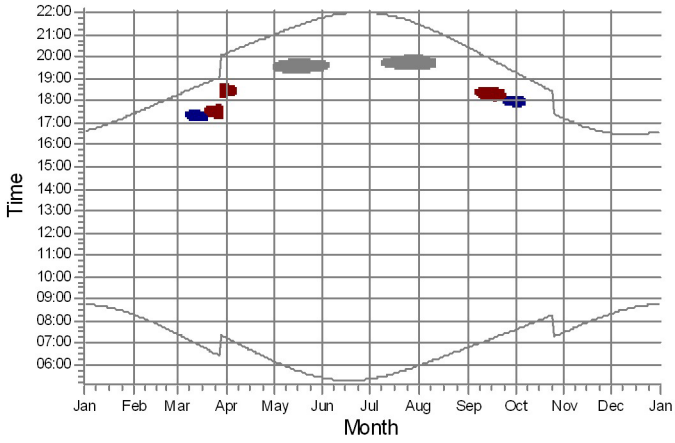
Calculated:
10/09/2024 11:52/4.0.552

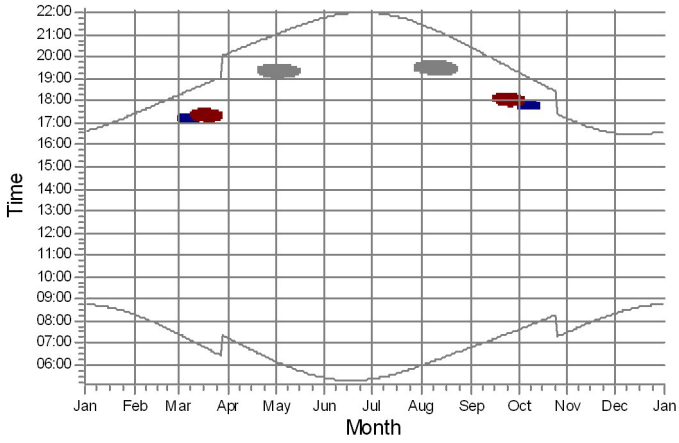
## SHADOW - Calendar, graphical

**Calculation:** 6460 Gortloughra WF only WC

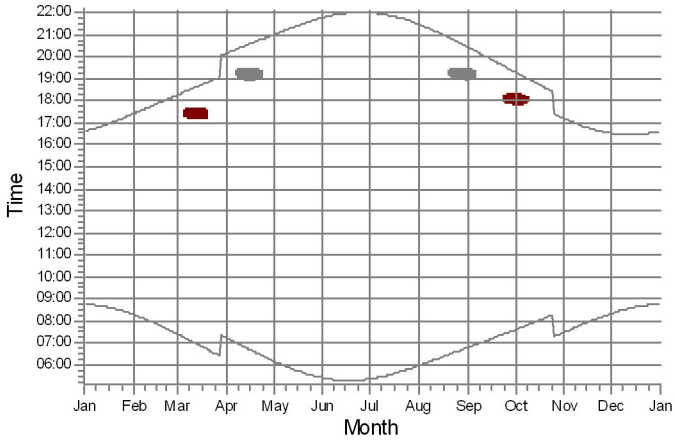
M: H13



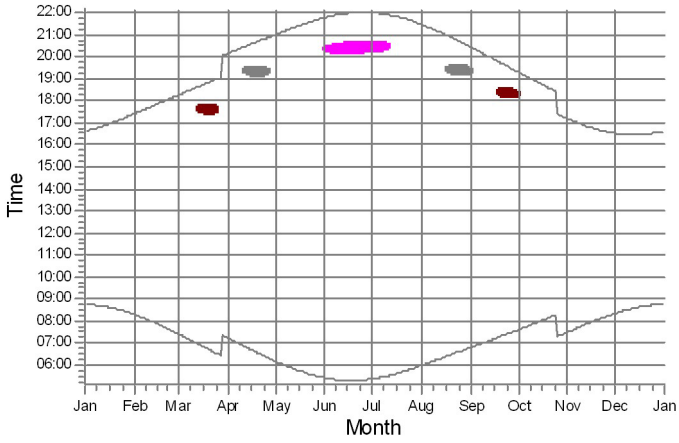

N: H14



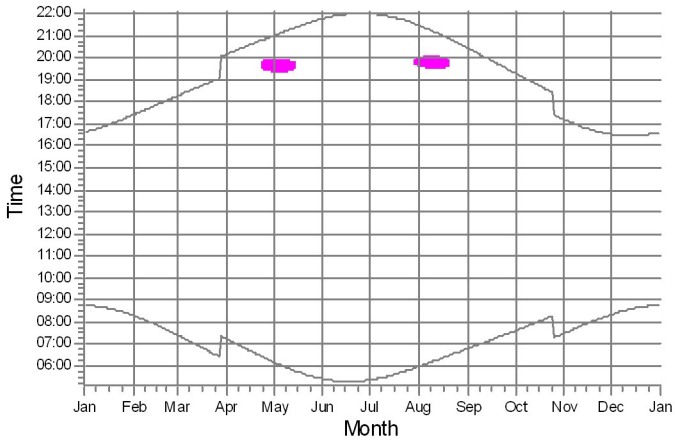

O: H15



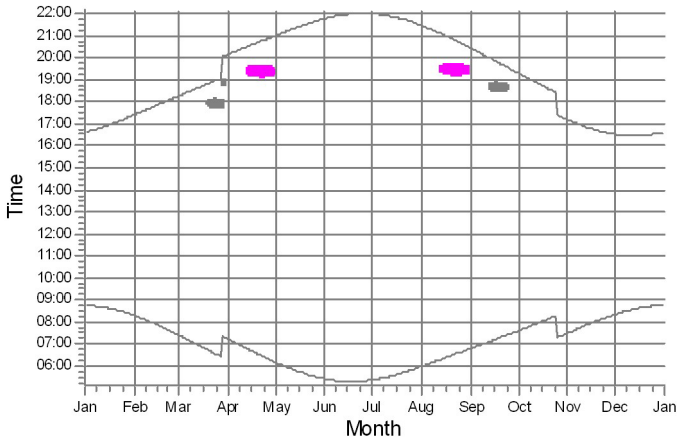

P: H17




Q: H18




R: H19




WTGs

4: T04 5: T06 7: T08 8: T09

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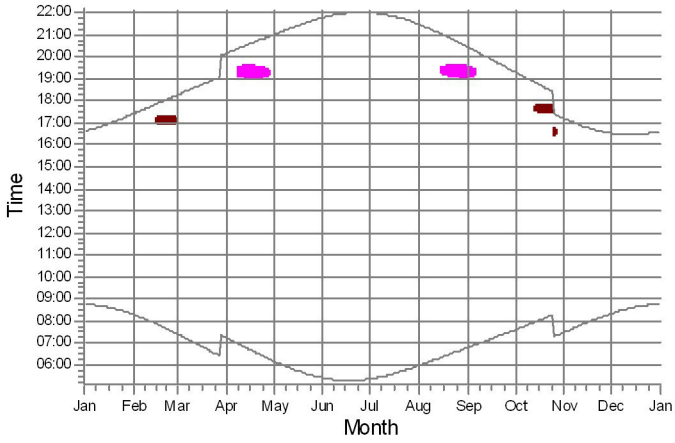
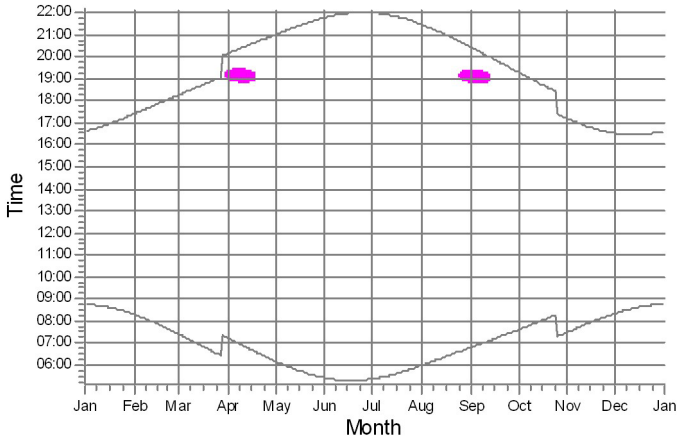
# SHADOW - Calendar, graphical

**Calculation:** 6460 Gortloughra WF only WC

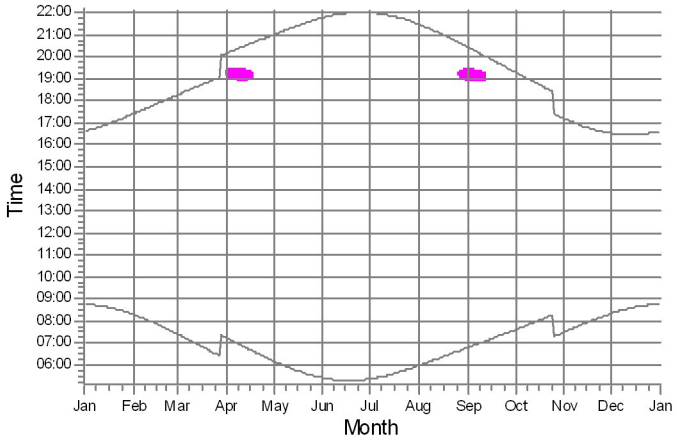
S: H20



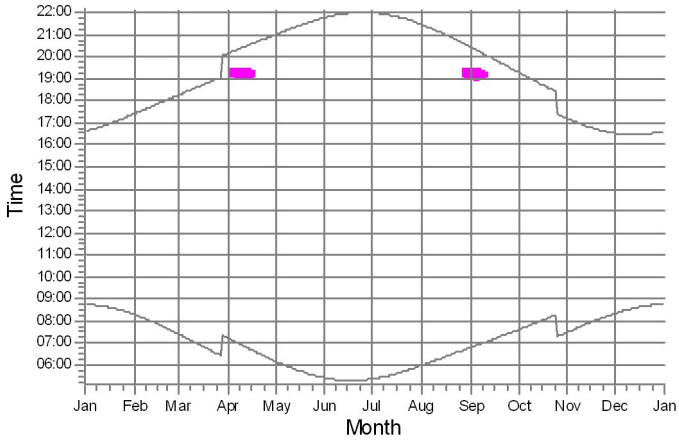

T: H21



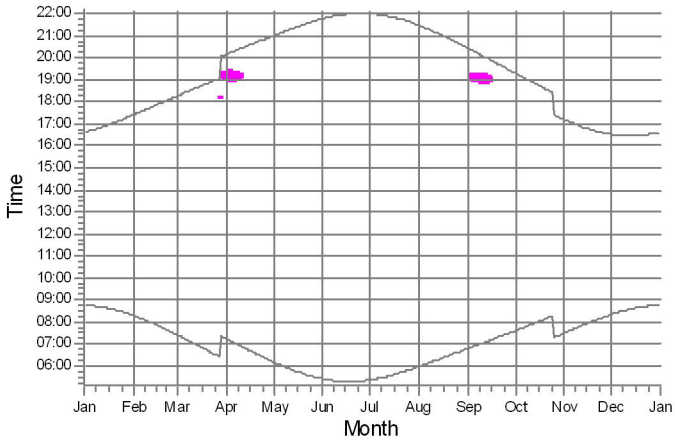

U: H22



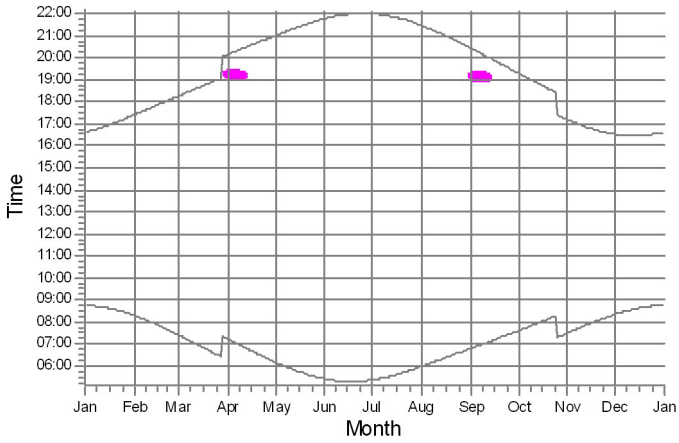

V: H23




W: H24




X: H25




WTGs

5: T06 8: T09

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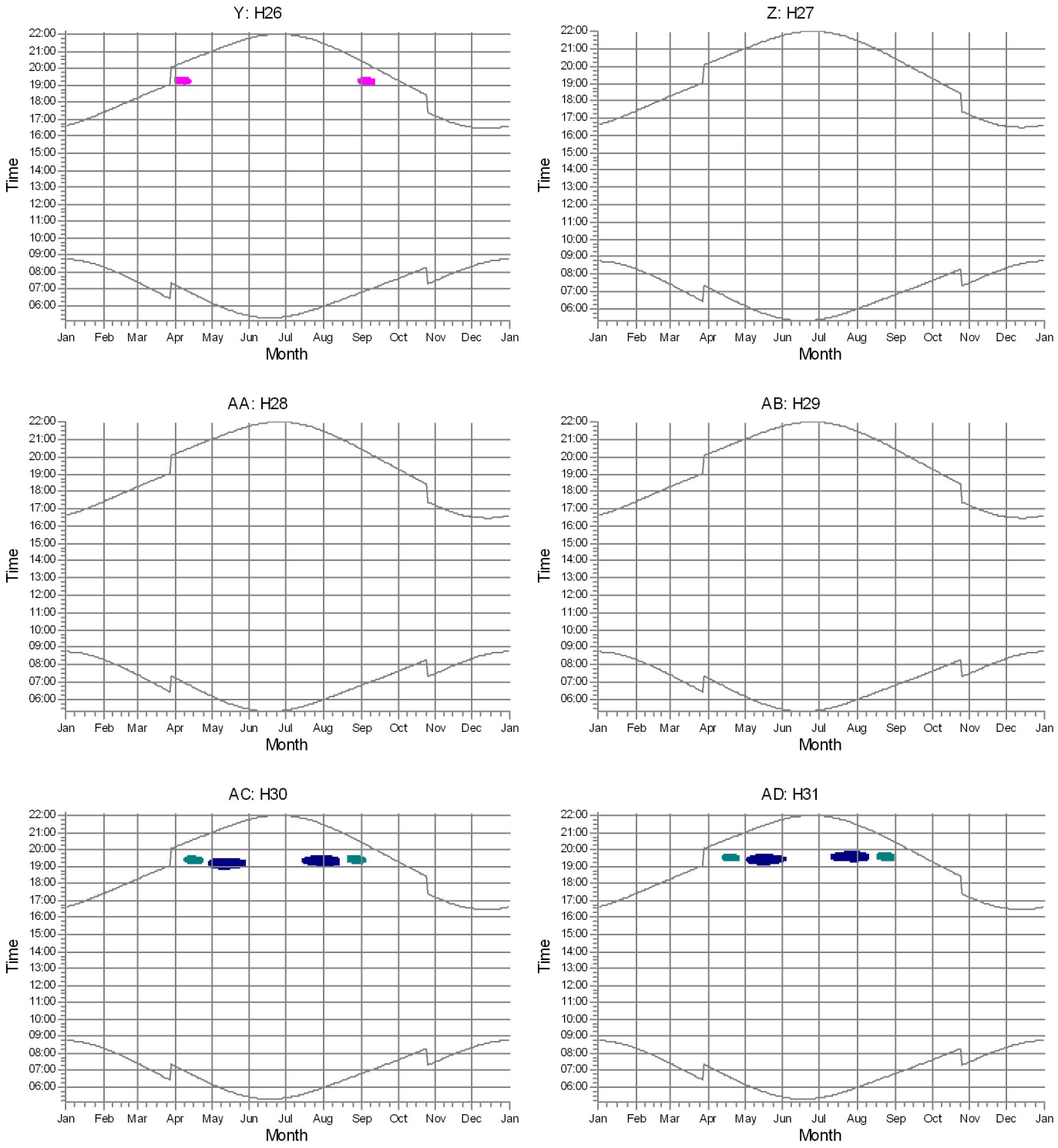
# SHADOW - Calendar, graphical

**Calculation:** 6460 Gortloughra WF only WC



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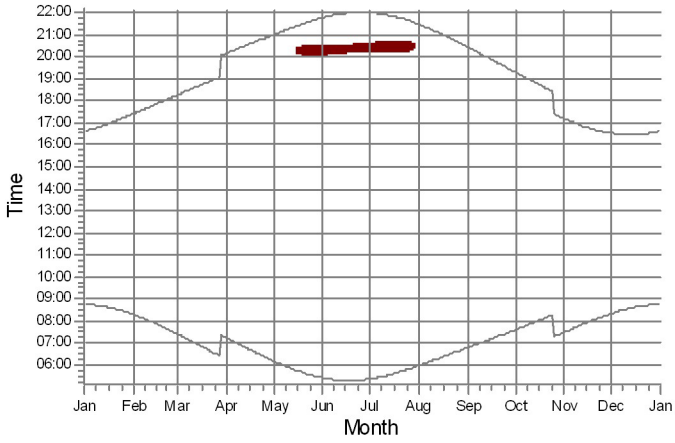
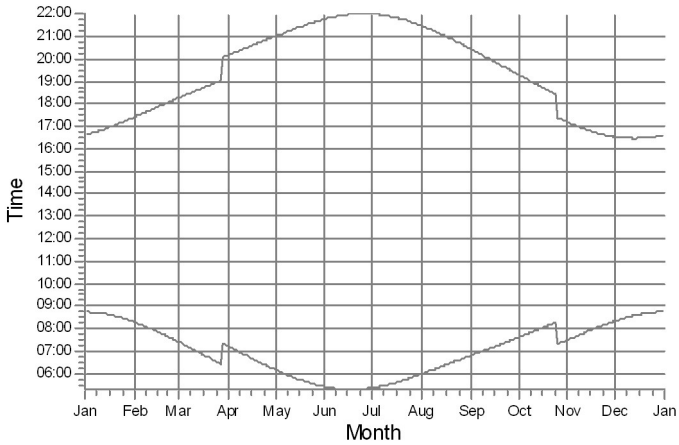
# SHADOW - Calendar, graphical

**Calculation:** 6460 Gortloughra WF only WC

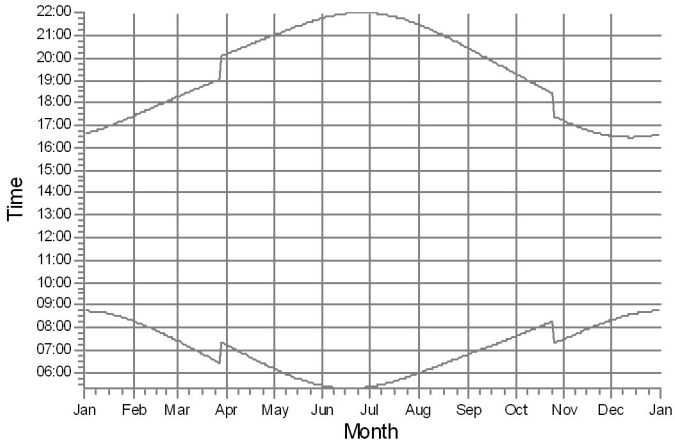
AE: H33



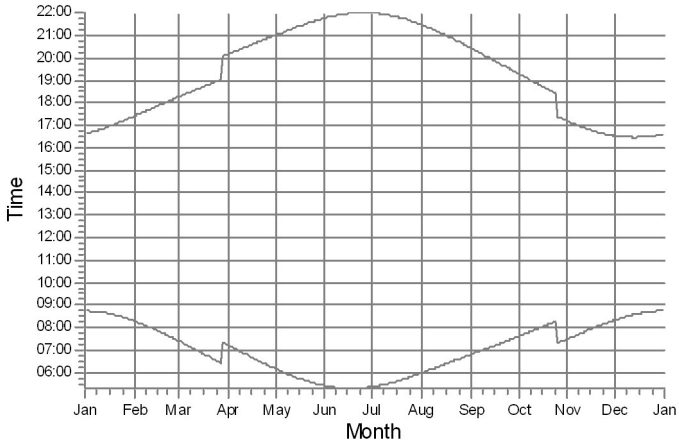

AF: H34



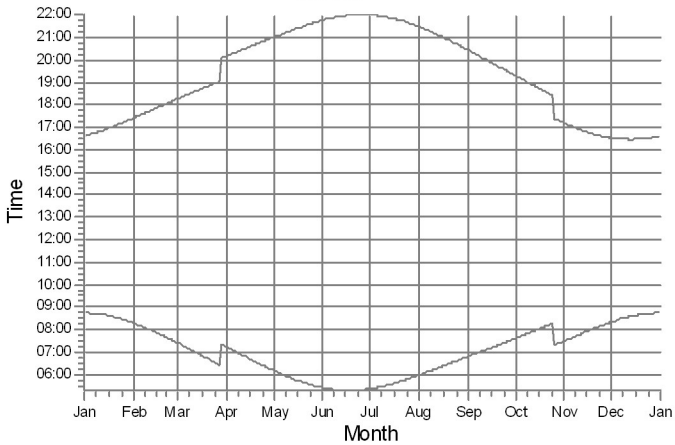

AG: H35



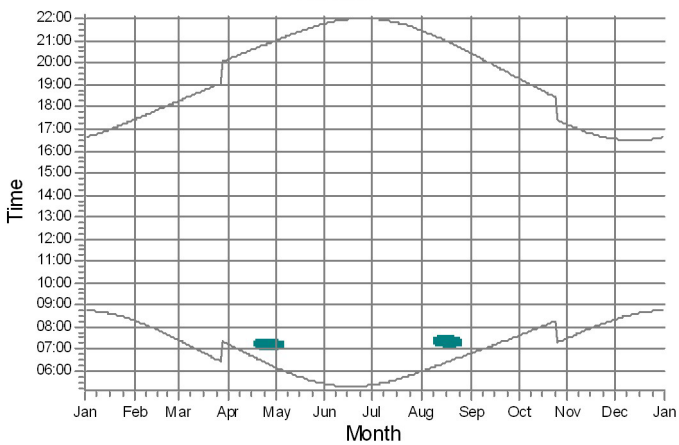

AH: H36




AI: H37




AJ: H38




WTGs

6: T07 8: T09

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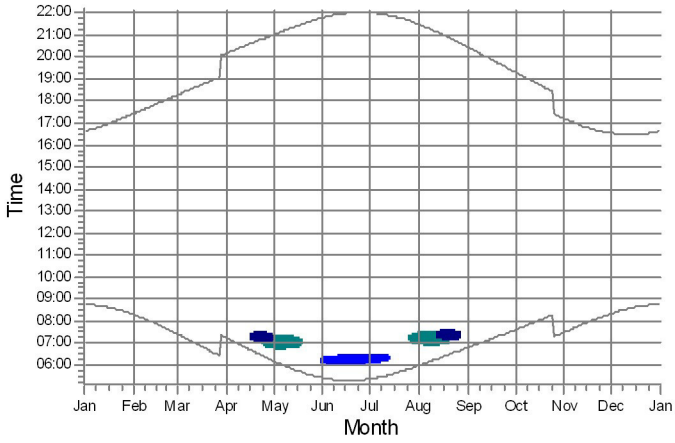
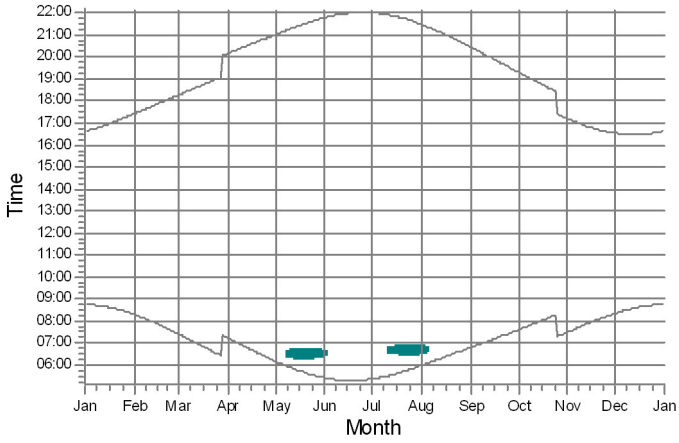
## SHADOW - Calendar, graphical

**Calculation:** 6460 Gortloughra WF only WC

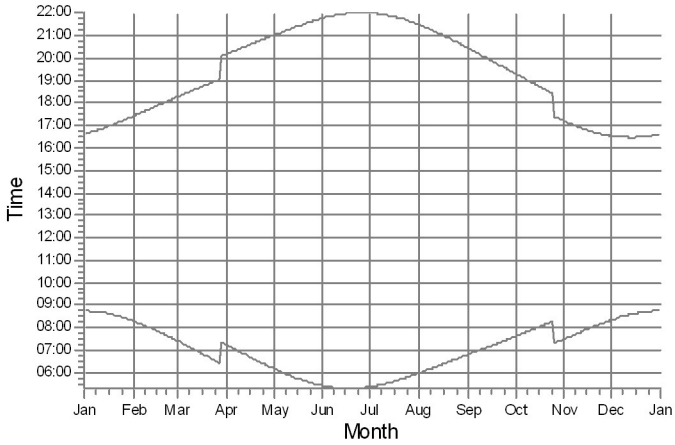
AK: H39



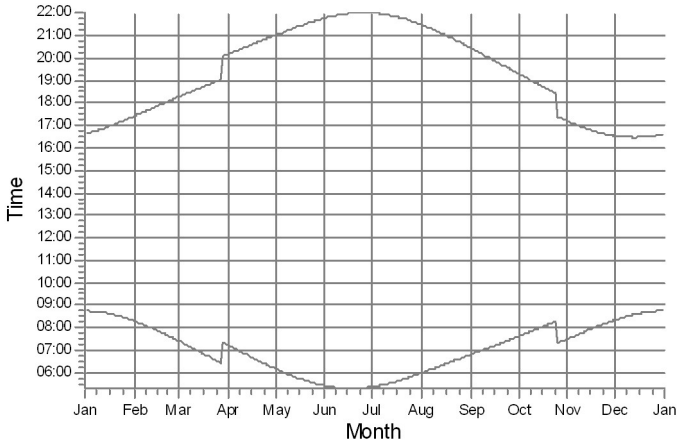

AL: H40



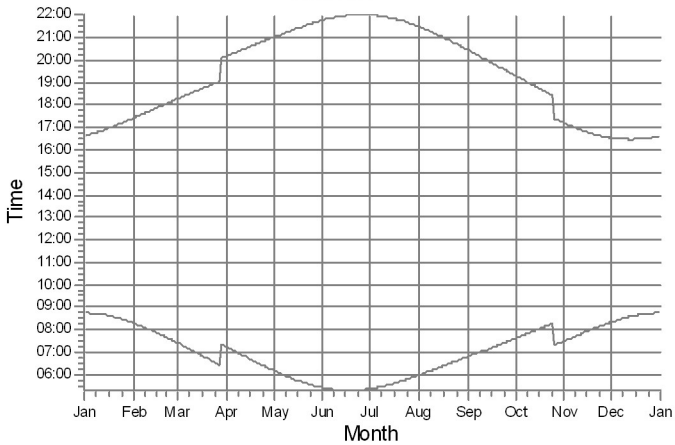

AM: H41



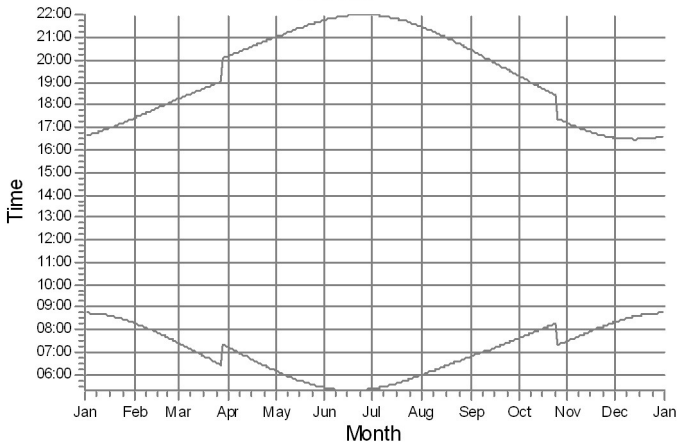

AN: H42




AO: H44




AP: H45




WTGs

3: T03 6: T07 7: T08

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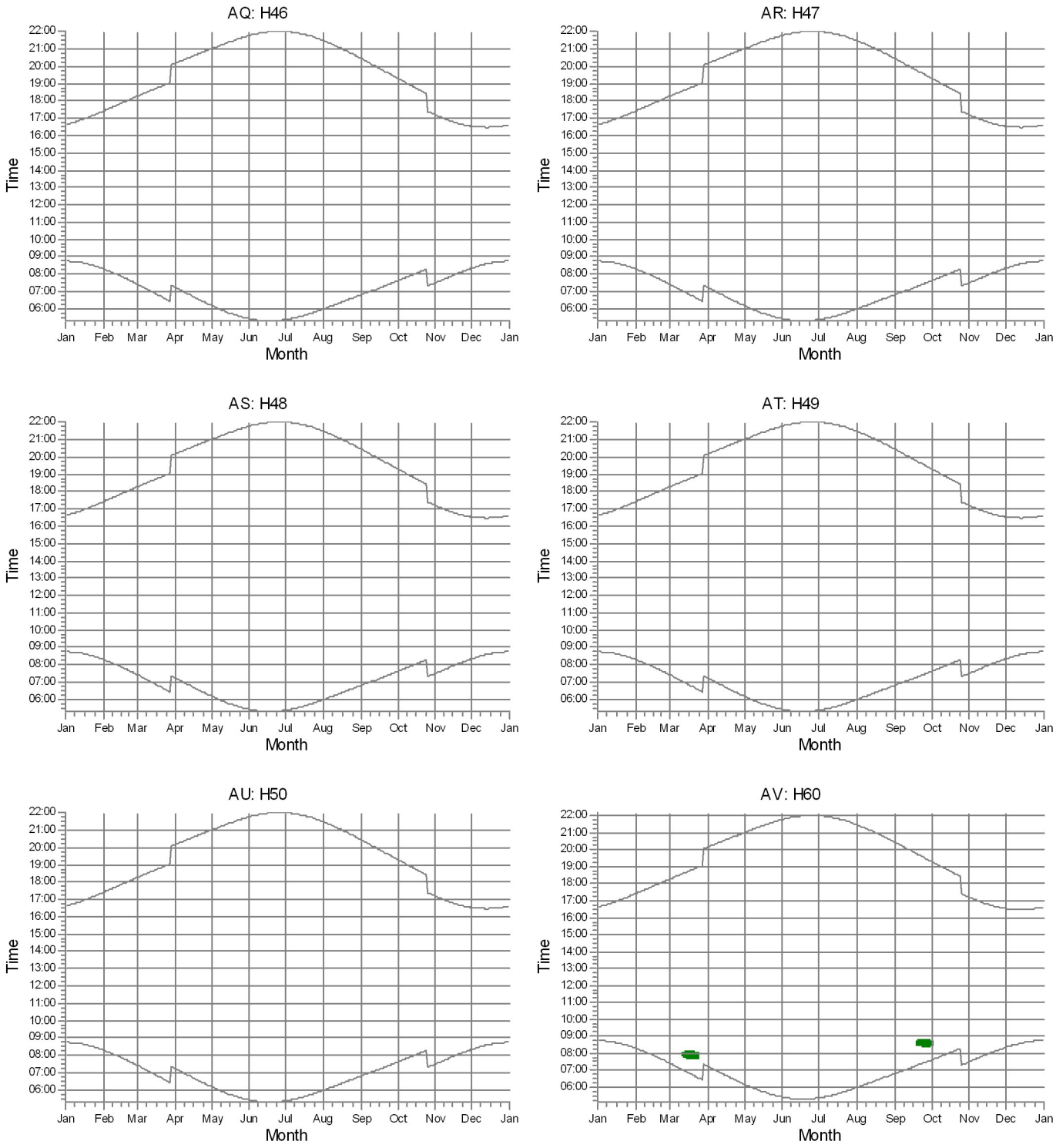
# SHADOW - Calendar, graphical

**Calculation:** 6460 Gortloughra WF only WC




WTGs

1: T01

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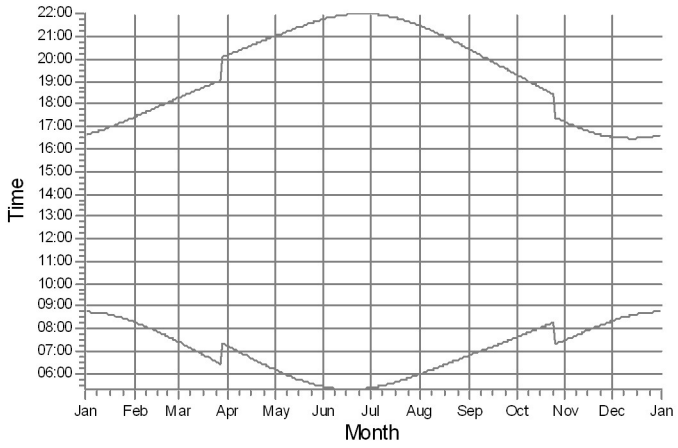
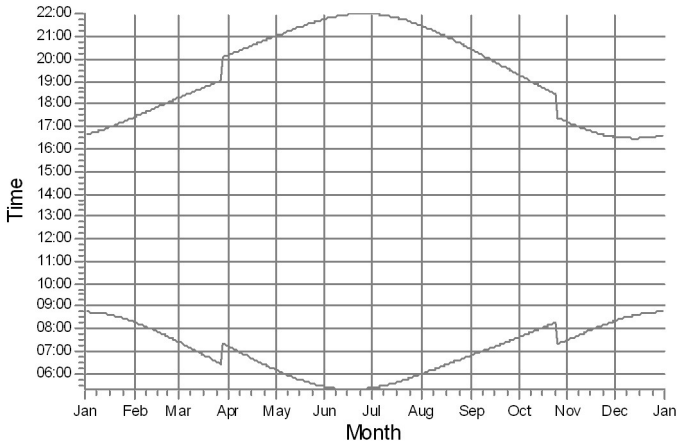
# SHADOW - Calendar, graphical

**Calculation:** 6460 Gortloughra WF only WC

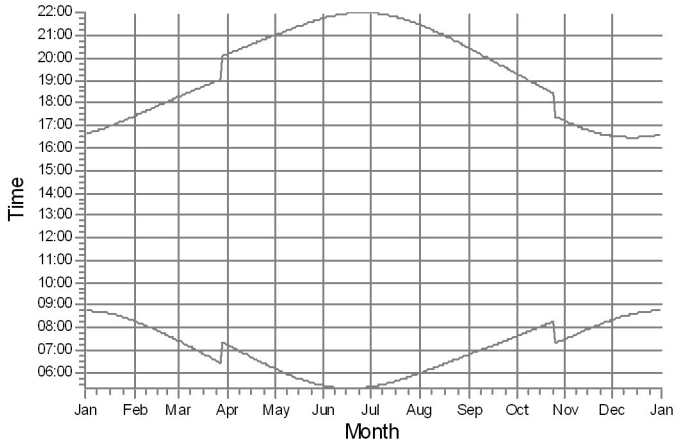
AW: H61



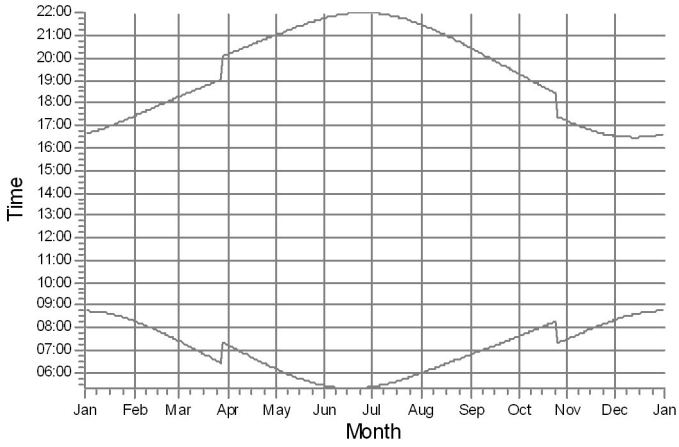

AX: H62



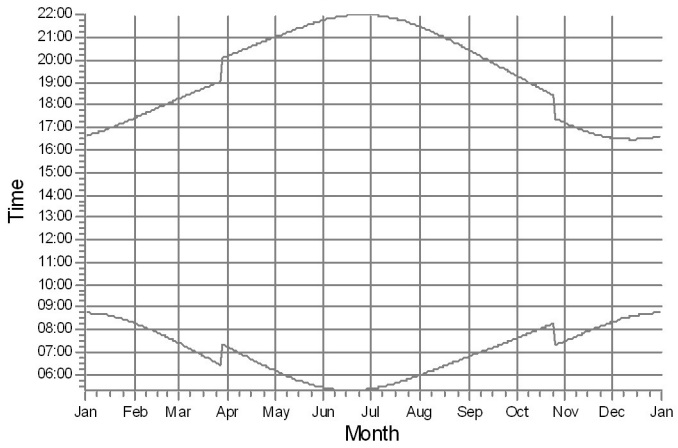

AY: H63



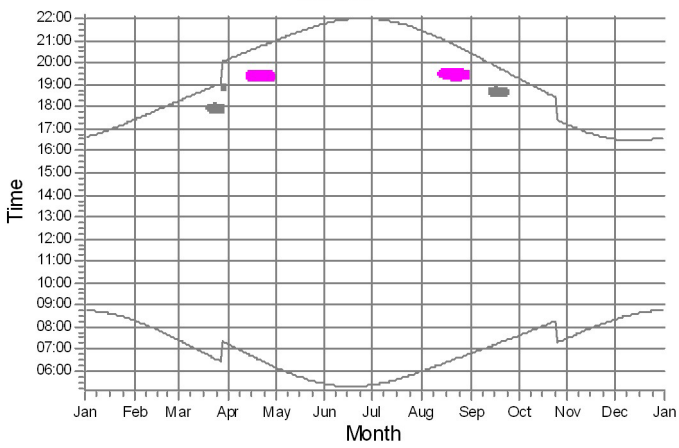

AZ: H64




BA: H67




BB: H68




WTGs

4: T04 5: T06

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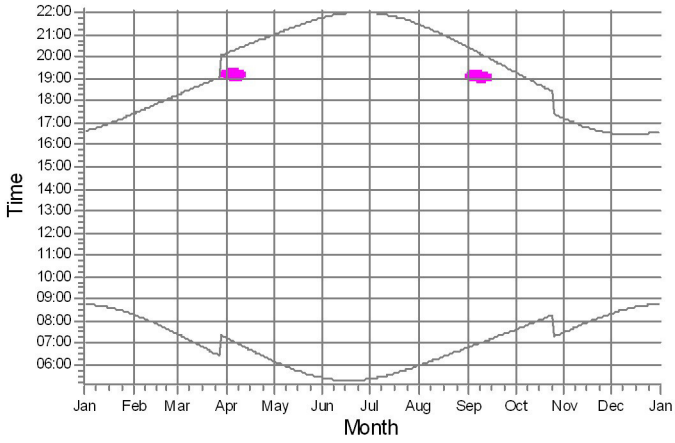
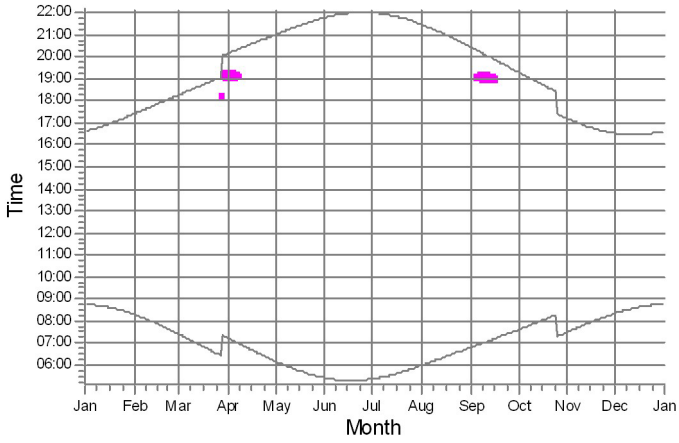
# SHADOW - Calendar, graphical

**Calculation:** 6460 Gortloughra WF only WC

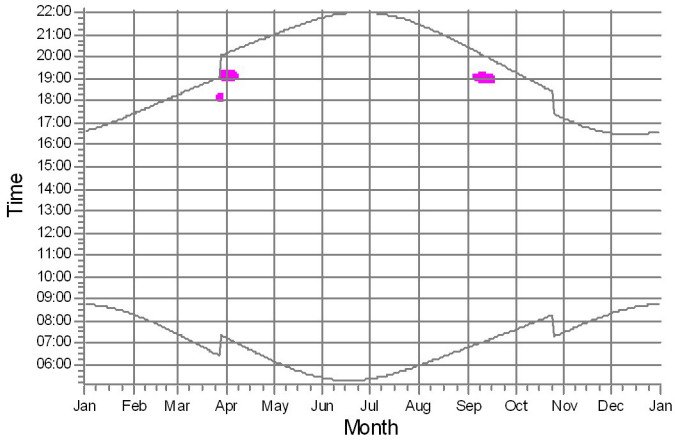
BC: H69



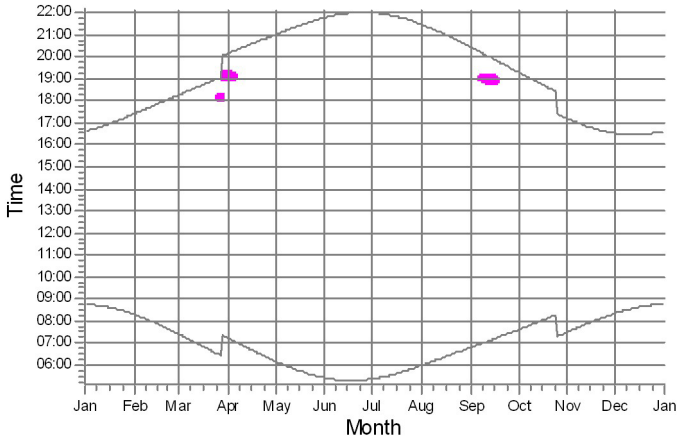

BD: H70



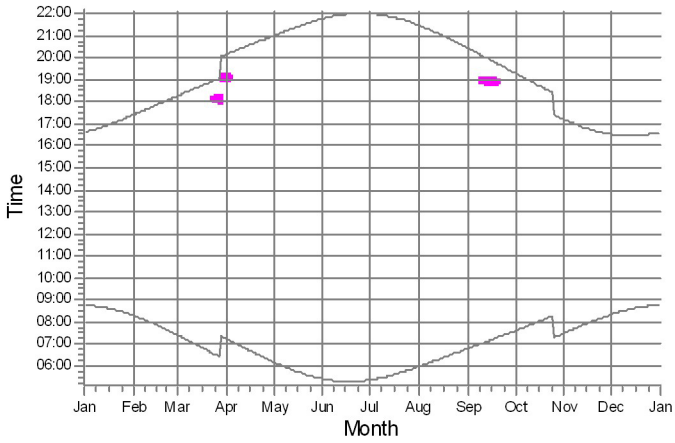

BE: H71



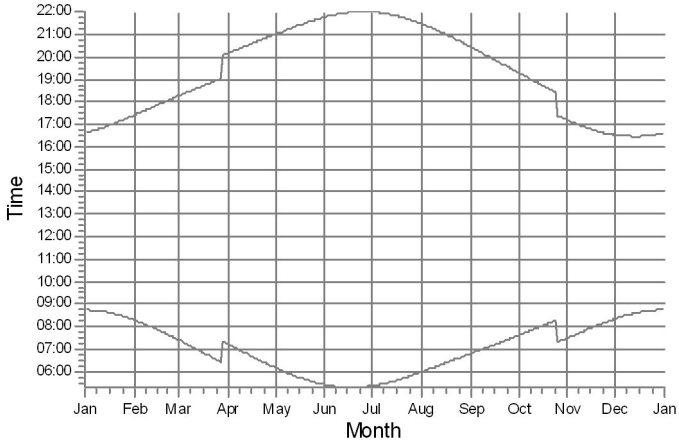

BF: H72




BG: H73




BH: H74




WTGs

5: T06

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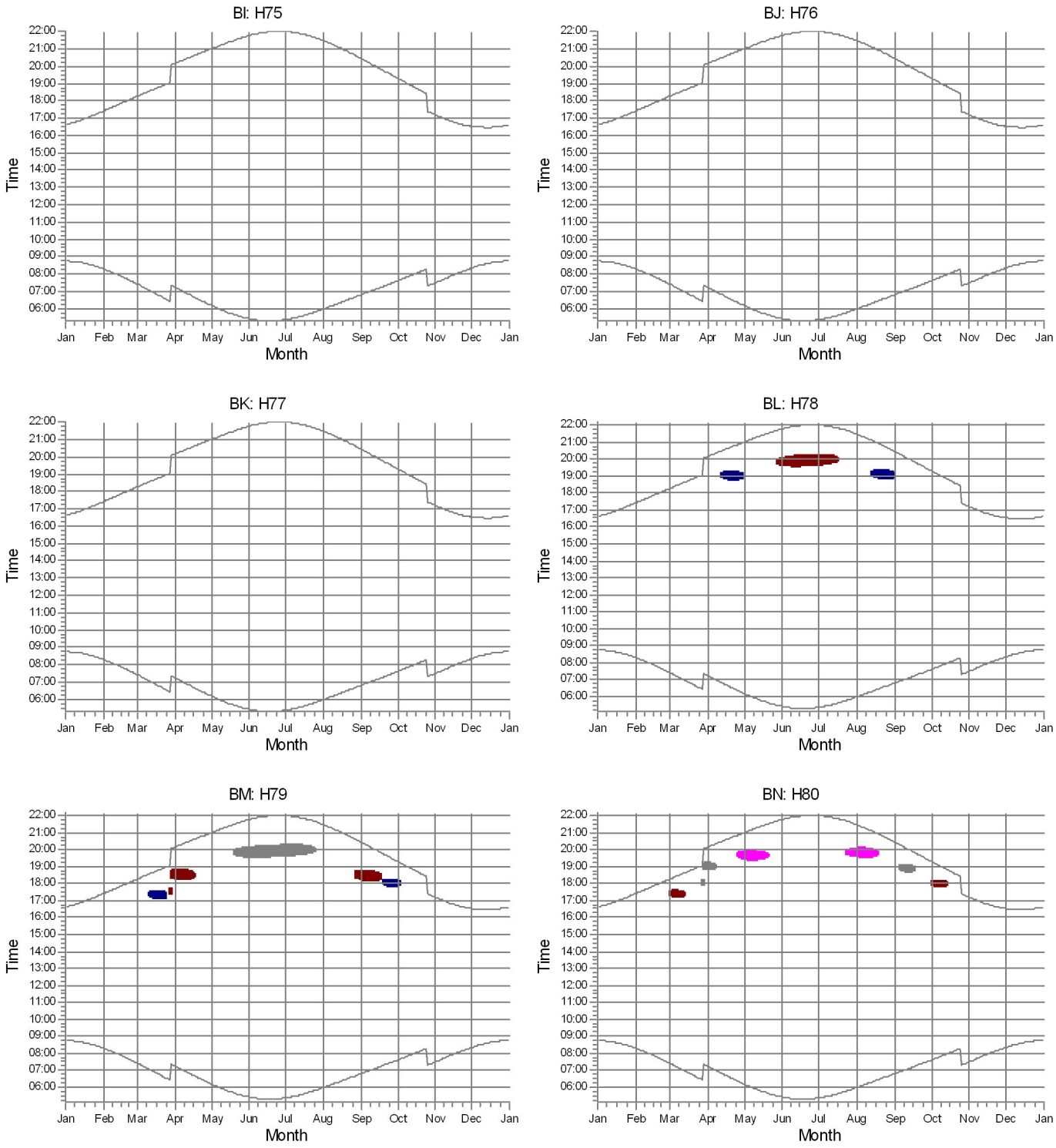
# SHADOW - Calendar, graphical

**Calculation:** 6460 Gortloughra WF only WC



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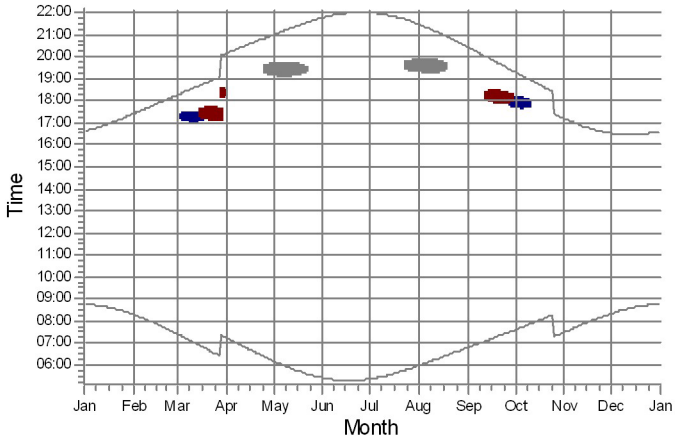
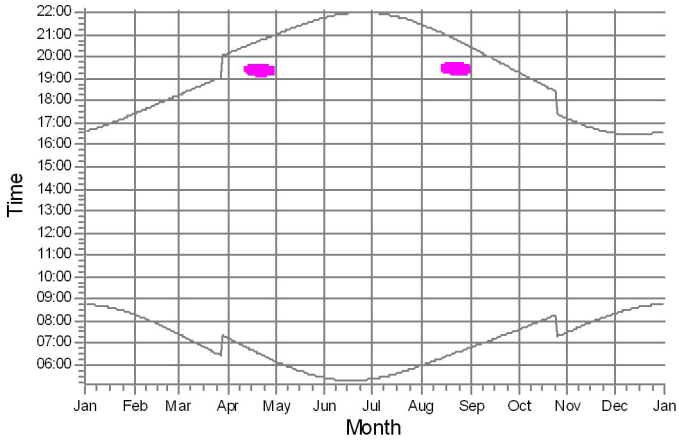
# SHADOW - Calendar, graphical

**Calculation:** 6460 Gortloughra WF only WC

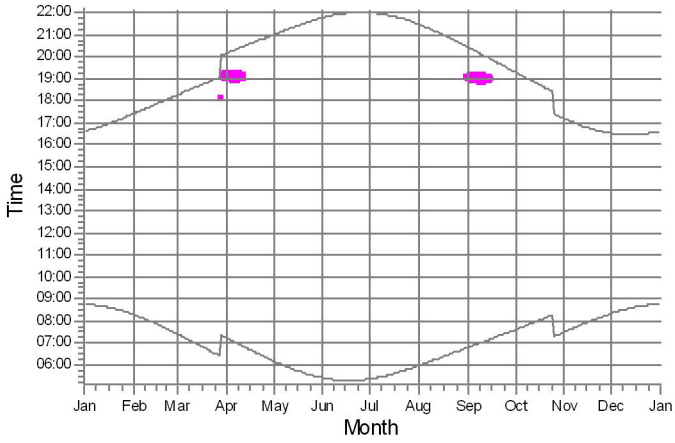
BO: H81



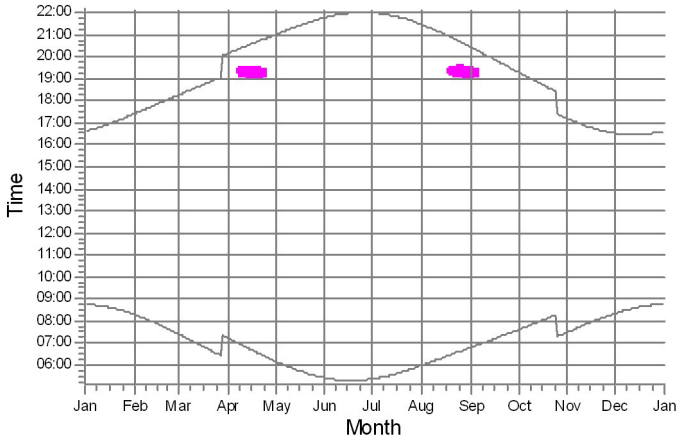

BP: H82



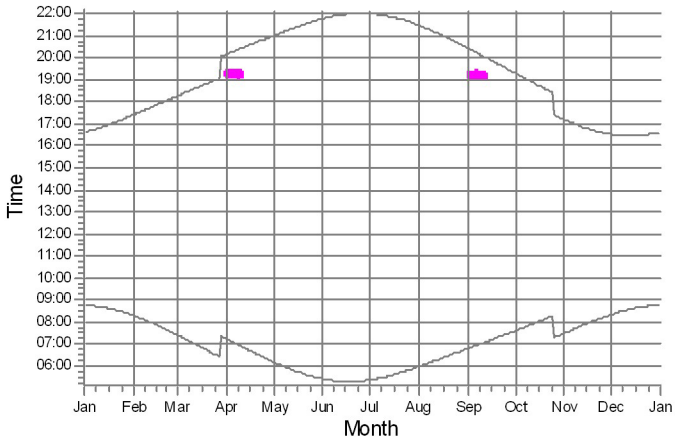

BQ: H83



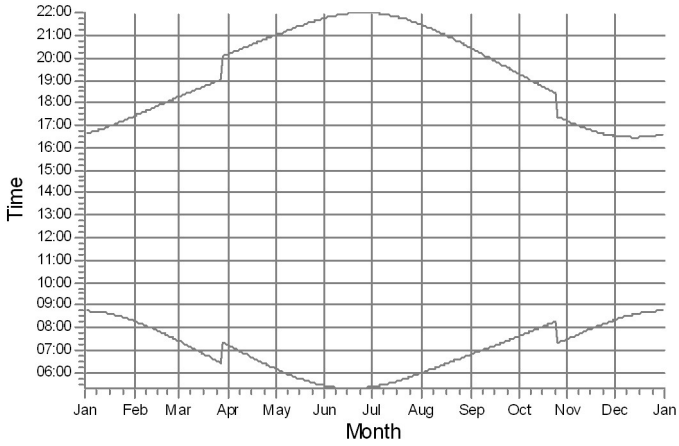

BR: H84




BS: H85




BT: H86




WTGs

4: T04 5: T06 7: T08 8: T09

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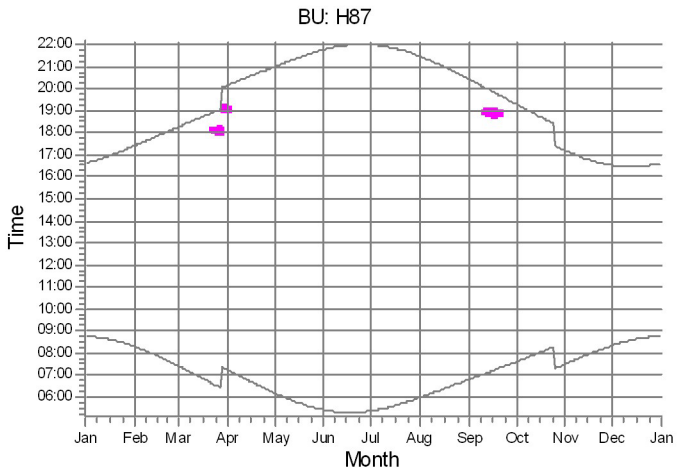
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar, graphical

**Calculation:** 6460 Gortloughra WF only WC




WTGs

5: T06

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Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar per WTG

**Calculation:** 6460 Gortloughra WF only WC **WTG:** 1 - T01

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | | April | | May | | June |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | | 07:15 | 08:57-09:39/42 | 06:10 | 08:15-08:52/37 | 05:25 |
| | 16:37 | 17:25 | 18:16 | | 20:10 | 08:27-08:48/21 | 21:00 | | 21:46 |
| 2 | 08:45 | 08:17 | 07:23 | | 07:12 | 08:57-09:38/41 | 06:08 | 08:16-08:51/35 | 05:24 |
| | 16:38 | 17:27 | 18:18 | | 20:11 | 08:28-08:46/18 | 21:02 | | 21:47 |
| 3 | 08:45 | 08:15 | 07:21 | | 07:10 | 08:57-09:38/41 | 06:06 | 08:16-08:49/33 | 05:24 |
| | 16:39 | 17:28 | 18:20 | | 20:13 | 08:30-08:44/14 | 21:04 | | 21:48 |
| 4 | 08:44 | 08:13 | 07:18 | | 07:08 | 08:57-09:37/40 08:32-08:40/8 | 06:05 | 08:17-08:47/30 | 05:23 |
| | 16:40 | 17:30 | 18:21 | | 20:15 | 08:06-08:17/11 | 21:05 | | 21:49 |
| 5 | 08:44 | 08:12 | 07:16 | | 07:06 | 08:57-09:36/39 | 06:03 | 08:19-08:46/27 | 05:22 |
| | 16:42 | 17:32 | 18:23 | | 20:16 | 08:03-08:18/15 | 21:07 | | 21:50 |
| 6 | 08:44 | 08:10 | 07:14 | | 07:03 | 08:38-08:43/5 08:01-08:20/19 | 06:01 | 08:20-08:44/24 | 05:22 |
| | 16:43 | 17:34 | 18:25 | | 20:18 | 08:57-09:35/38 | 21:09 | | 21:51 |
| 7 | 08:43 | 08:08 | 07:12 | | 07:01 | 08:32-08:49/17 08:00-08:21/21 | 05:59 | 08:21-08:42/21 | 05:21 |
| | 16:44 | 17:36 | 18:27 | | 20:20 | 08:58-09:34/36 | 21:10 | | 21:52 |
| 8 | 08:43 | 08:07 | 07:10 | | 06:59 | 08:29-08:52/23 07:59-08:22/23 | 05:57 | 08:24-08:40/16 | 05:21 |
| | 16:45 | 17:38 | 18:28 | | 20:22 | 08:59-09:33/34 | 21:12 | | 21:53 |
| 9 | 08:42 | 08:05 | 07:07 | | 06:57 | 08:26-08:53/27 07:57-08:21/24 | 05:56 | 08:28-08:35/7 | 05:20 |
| | 16:47 | 17:39 | 18:30 | | 20:23 | 08:59-09:30/31 | 21:13 | | 21:54 |
| 10 | 08:42 | 08:03 | 07:05 | | 06:54 | 08:24-08:55/31 07:57-08:21/24 | 05:54 | | 05:20 |
| | 16:48 | 17:41 | 18:32 | | 20:25 | 09:00-09:29/29 | 21:15 | | 21:54 |
| 11 | 08:41 | 08:01 | 07:03 | | 06:52 | 08:22-08:56/34 07:57-08:21/24 | 05:52 | | 05:19 |
| | 16:50 | 17:43 | 18:34 | | 20:27 | 09:01-09:27/26 | 21:17 | | 21:55 |
| 12 | 08:41 | 07:59 | 07:01 | 07:53-07:58/5 | 06:50 | 07:57-08:57/60 | 05:51 | | 05:19 |
| | 16:51 | 17:45 | 18:35 | | 20:28 | 09:03-09:24/21 | 21:18 | | 21:56 |
| 13 | 08:40 | 07:58 | 06:58 | 07:49-08:00/11 | 06:48 | 07:57-08:58/61 | 05:49 | | 05:19 |
| | 16:52 | 17:47 | 18:37 | | 20:30 | 09:06-09:21/15 | 21:20 | | 21:56 |
| 14 | 08:39 | 07:56 | 06:56 | 07:47-08:02/15 | 06:45 | 07:56-08:58/62 | 05:47 | | 05:18 |
| | 16:54 | 17:49 | 18:39 | | 20:32 | 09:11-09:13/2 | 21:21 | | 21:57 |
| 15 | 08:38 | 07:54 | 06:54 | 07:46-08:03/17 | 06:43 | 07:56-08:58/62 | 05:46 | | 05:18 |
| | 16:55 | 17:51 | 18:41 | | 20:33 | | 21:23 | | 21:58 |
| 16 | 08:38 | 07:52 | 06:51 | 07:44-08:03/19 | 06:41 | 07:57-08:59/62 | 05:44 | | 05:18 |
| | 16:57 | 17:52 | 18:42 | | 20:35 | | 21:24 | | 21:58 |
| 17 | 08:37 | 07:50 | 06:49 | 07:44-08:03/19 | 06:39 | 07:58-08:59/61 | 05:43 | | 05:18 |
| | 16:59 | 17:54 | 18:44 | | 20:37 | | 21:26 | | 21:59 |
| 18 | 08:36 | 07:48 | 06:47 | 07:43-08:03/20 | 06:37 | 08:15-08:59/44 | 05:41 | | 05:18 |
| | 17:00 | 17:56 | 18:46 | | 20:38 | 07:59-08:14/15 | 21:27 | | 21:59 |
| 19 | 08:35 | 07:46 | 06:45 | 07:40-08:02/22 | 06:35 | 08:14-08:59/45 | 05:40 | | 05:18 |
| | 17:02 | 17:58 | 18:48 | 08:16-08:29/13 | 20:40 | 08:02-08:12/10 | 21:29 | | 21:59 |
| 20 | 08:34 | 07:44 | 06:42 | 07:38-08:02/24 | 06:32 | 08:14-08:59/45 | 05:39 | | 05:18 |
| | 17:04 | 18:00 | 18:49 | 08:12-08:33/21 | 20:42 | | 21:30 | | 22:00 |
| 21 | 08:33 | 07:42 | 06:40 | 07:37-08:01/24 | 06:30 | 08:13-08:59/46 | 05:37 | | 05:18 |
| | 17:05 | 18:02 | 18:51 | 08:10-08:35/25 | 20:44 | | 21:32 | | 22:00 |
| 22 | 08:32 | 07:40 | 06:38 | 07:34-07:59/25 | 06:28 | 08:13-08:59/46 | 05:36 | | 05:18 |
| | 17:07 | 18:03 | 18:53 | 08:07-08:36/29 | 20:45 | | 21:33 | | 22:00 |
| 23 | 08:30 | 07:38 | 06:35 | 07:32-07:58/26 | 06:26 | 08:13-08:58/45 | 05:35 | | 05:19 |
| | 17:09 | 18:05 | 18:54 | 08:06-08:37/31 | 20:47 | | 21:34 | | 22:00 |
| 24 | 08:29 | 07:36 | 06:33 | 07:30-07:59/29 | 06:24 | 08:13-08:58/45 | 05:33 | | 05:19 |
| | 17:10 | 18:07 | 18:56 | 08:04-08:39/35 | 20:49 | | 21:36 | | 22:00 |
| 25 | 08:28 | 07:34 | 06:31 | 08:02-08:39/37 | 06:22 | 08:13-08:57/44 | 05:32 | | 05:19 |
| | 17:12 | 18:09 | 18:58 | 07:29-07:57/28 | 20:50 | | 21:37 | | 22:00 |
| 26 | 08:27 | 07:31 | 06:28 | 08:01-08:39/38 | 06:20 | 08:13-08:56/43 | 05:31 | | 05:20 |
| | 17:14 | 18:11 | 19:00 | 07:28-07:57/29 | 20:52 | | 21:39 | | 22:00 |
| 27 | 08:25 | 07:29 | 06:26 | 08:01-08:40/39 | 06:18 | 08:13-08:55/42 | 05:30 | | 05:20 |
| | 17:16 | 18:12 | 19:01 | 07:28-07:57/29 | 20:54 | | 21:40 | | 22:00 |
| 28 | 08:24 | 07:27 | 06:24 | 07:59-08:39/40 | 06:16 | 08:13-08:55/42 | 05:29 | | 05:21 |
| | 17:17 | 18:14 | 19:03 | 07:27-07:56/29 | 20:55 | | 21:41 | | 22:00 |
| 29 | 08:23 | | 07:22 | 08:59-09:40/41 | 06:14 | 08:13-08:53/40 | 05:28 | | 05:21 |
| | 17:19 | | 20:05 | 08:26-08:53/27 | 20:57 | | 21:42 | | 22:00 |
| 30 | 08:21 | | 07:19 | 08:58-09:40/42 | 06:12 | 08:14-08:52/38 | 05:27 | | 05:22 |
| | 17:21 | | 20:06 | 08:27-08:52/25 | 20:59 | | 21:43 | | 22:00 |
| 31 | 08:20 | | 07:17 | 08:58-09:40/42 | | | 05:26 | | |
| | 17:23 | | 20:08 | 08:27-08:50/23 | | | 21:45 | | |
| Potential sun hours | 260 | 278 | 367 | | 416 | | 485 | | 498 |
| Sum of minutes with flicker | 0 | 0 | 879 | | 1752 | | 230 | | 0 |

**Table layout: For each day in each month the following matrix apply**

| | | |
|---|---|---|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |
| | Sun set (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |

Licensed user:
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Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar per WTG

**Calculation:** 6460 Gortloughra WF only WC **WTG:** 1 - T01

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | July | August | September | October | November | December |
|---|---|---|---|---|---|---|
| 1 | 05:22 | 05:59 | 06:48 08:21-08:55/34 07:56-08:20/24 | 07:37 08:30-08:39/9 | 07:30 | 08:21 |
| | 22:00 | 21:28 | 20:26 09:00-09:26/26 | 19:17 | 17:11 | 16:31 |
| 2 | 05:23 | 06:00 | 06:50 08:23-08:54/31 07:56-08:20/24 | 07:38 | 07:32 | 08:22 |
| | 21:59 | 21:26 | 20:24 08:59-09:28/29 | 19:15 | 17:09 | 16:31 |
| 3 | 05:24 | 06:02 | 06:51 08:24-08:51/27 07:55-08:19/24 | 07:40 | 07:34 | 08:24 |
| | 21:59 | 21:25 | 20:22 08:57-09:28/31 | 19:13 | 17:08 | 16:30 |
| 4 | 05:25 | 06:03 08:37-08:47/10 | 06:53 08:26-08:49/23 07:56-08:19/23 | 07:42 | 07:36 | 08:25 |
| | 21:59 | 21:23 | 20:20 08:56-09:30/34 | 19:10 | 17:06 | 16:29 |
| 5 | 05:25 | 06:05 08:33-08:50/17 | 06:55 08:28-08:45/17 07:56-08:17/21 | 07:43 | 07:37 | 08:26 |
| | 21:58 | 21:21 | 20:17 08:54-09:30/36 | 19:08 | 17:04 | 16:29 |
| 6 | 05:26 | 06:06 08:31-08:53/22 | 06:56 08:34-08:40/6 07:57-08:16/19 | 07:45 | 07:39 | 08:28 |
| | 21:58 | 21:19 | 20:15 08:53-09:31/38 | 19:06 | 17:02 | 16:28 |
| 7 | 05:27 | 06:08 08:29-08:54/25 | 06:58 08:52-09:31/39 | 07:47 | 07:41 | 08:29 |
| | 21:57 | 21:18 | 20:13 07:58-08:14/16 | 19:03 | 17:01 | 16:28 |
| 8 | 05:28 | 06:10 08:28-08:56/28 | 06:59 08:52-09:32/40 08:27-08:34/7 | 07:48 | 07:43 | 08:30 |
| | 21:56 | 21:16 | 20:10 08:00-08:11/11 | 19:01 | 16:59 | 16:28 |
| 9 | 05:29 | 06:11 08:26-08:57/31 | 07:01 08:50-09:31/41 | 07:50 | 07:45 | 08:31 |
| | 21:56 | 21:14 | 20:08 08:24-08:38/14 | 18:59 | 16:57 | 16:27 |
| 10 | 05:30 | 06:13 08:25-08:58/33 | 07:03 08:50-09:32/42 | 07:52 | 07:46 | 08:32 |
| | 21:55 | 21:12 | 20:06 08:21-08:40/19 | 18:57 | 16:56 | 16:27 |
| 11 | 05:31 | 06:14 08:24-08:59/35 | 07:04 08:50-09:32/42 | 07:54 | 07:48 | 08:34 |
| | 21:54 | 21:10 | 20:03 08:20-08:41/21 | 18:54 | 16:54 | 16:27 |
| 12 | 05:32 | 06:16 08:23-09:00/37 | 07:06 08:49-09:31/42 | 07:55 | 07:50 | 08:35 |
| | 21:53 | 21:08 | 20:01 08:19-08:41/22 | 18:52 | 16:53 | 16:27 |
| 13 | 05:33 | 06:17 08:22-09:01/39 | 07:07 08:50-09:31/41 | 07:57 | 07:52 | 08:36 |
| | 21:52 | 21:06 | 19:59 08:18-08:43/25 | 18:50 | 16:51 | 16:27 |
| 14 | 05:34 | 06:19 08:22-09:02/40 | 07:09 08:49-09:30/41 | 07:59 | 07:53 | 08:37 |
| | 21:52 | 21:04 | 19:57 08:17-08:44/27 | 18:48 | 16:50 | 16:27 |
| 15 | 05:35 | 06:21 08:21-09:02/41 | 07:11 08:49-09:30/41 | 08:00 | 07:55 | 08:37 |
| | 21:51 | 21:02 | 19:54 08:17-08:45/28 | 18:46 | 16:48 | 16:27 |
| 16 | 05:37 | 06:22 08:21-09:03/42 | 07:12 08:49-09:28/39 | 08:02 | 07:57 | 08:38 |
| | 21:50 | 21:00 | 19:52 08:17-08:46/29 | 18:44 | 16:47 | 16:27 |
| 17 | 05:38 | 06:24 08:19-09:03/44 | 07:14 08:50-09:28/38 | 08:04 | 07:59 | 08:39 |
| | 21:49 | 20:58 | 19:50 08:16-08:45/29 | 18:41 | 16:46 | 16:27 |
| 18 | 05:39 | 06:25 08:19-09:04/45 | 07:16 08:50-09:27/37 | 08:06 | 08:00 | 08:40 |
| | 21:47 | 20:56 | 19:47 08:17-08:46/29 | 18:39 | 16:44 | 16:28 |
| 19 | 05:40 | 06:27 08:19-09:03/44 | 07:17 08:17-08:45/28 | 08:07 | 08:02 | 08:41 |
| | 21:46 | 20:54 | 19:45 08:50-09:25/35 | 18:37 | 16:43 | 16:28 |
| 20 | 05:42 | 06:29 08:19-09:04/45 | 07:19 08:18-08:45/27 | 08:09 | 08:04 | 08:41 |
| | 21:45 | 20:52 | 19:43 08:52-09:24/32 | 18:35 | 16:42 | 16:28 |
| 21 | 05:43 | 06:30 08:18-09:03/45 | 07:20 08:19-08:44/25 | 08:11 | 08:05 | 08:42 |
| | 21:44 | 20:50 | 19:40 08:52-09:22/30 | 18:33 | 16:41 | 16:29 |
| 22 | 05:44 | 06:32 08:18-09:04/46 | 07:22 08:21-08:45/24 | 08:13 | 08:07 | 08:42 |
| | 21:43 | 20:48 | 19:38 08:54-09:20/26 | 18:31 | 16:39 | 16:29 |
| 23 | 05:46 | 06:34 08:17-09:03/46 | 07:24 08:23-08:46/23 | 08:14 | 08:09 | 08:43 |
| | 21:41 | 20:46 | 19:36 08:56-09:18/22 | 18:29 | 16:38 | 16:30 |
| 24 | 05:47 | 06:35 08:18-09:03/45 | 07:25 08:23-08:46/23 | 08:16 | 08:10 | 08:43 |
| | 21:40 | 20:44 08:05-08:16/11 | 19:33 08:58-09:14/16 | 18:27 | 16:37 | 16:30 |
| 25 | 05:48 | 06:37 08:02-09:02/60 | 07:27 08:25-08:46/21 | 07:18 | 08:12 | 08:44 |
| | 21:39 | 20:42 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 05:50 | 06:38 08:01-09:02/61 | 07:29 08:26-08:46/20 | 07:20 | 08:13 | 08:44 |
| | 21:37 | 20:39 | 19:29 | 17:23 | 16:35 | 16:32 |
| 27 | 05:51 | 06:40 07:59-09:01/62 | 07:30 08:26-08:45/19 | 07:21 | 08:15 | 08:44 |
| | 21:36 | 20:37 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 05:53 | 06:42 07:58-09:00/62 | 07:32 08:26-08:44/18 | 07:23 | 08:17 | 08:44 |
| | 21:34 | 20:35 | 19:24 | 17:19 | 16:34 | 16:33 |
| 29 | 05:54 | 06:43 07:57-08:59/62 | 07:33 08:27-08:43/16 | 07:25 | 08:18 | 08:45 |
| | 21:33 | 20:33 09:11-09:15/4 | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 05:56 | 06:45 07:57-08:58/61 | 07:35 08:28-08:41/13 | 07:27 | 08:20 | 08:45 |
| | 21:31 | 20:31 09:06-09:21/15 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 05:57 | 06:47 07:57-08:57/60 | | 07:28 | | 08:45 |
| | 21:30 | 20:28 09:03-09:24/21 | | 17:13 | | 16:36 |
| Potential sun hours | 501 | 453 | 381 | 332 | 267 | 244 |
| Sum of minutes with flicker | 0 | 1239 | 1645 | 9 | 0 | 0 |

**Table layout: For each day in each month the following matrix apply**

| | | |
|---|---|---|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |
| | Sun set (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |

Licensed user:
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+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar per WTG

**Calculation:** 6460 Gortloughra WF only WC **WTG:** 2 - T02

## Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | May | June | July | August | September | October | November | December |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:15 | 06:10 07:48-08:09/21 | 05:25 | 05:22 | 05:59 | 06:48 08:13-08:38/25 | 07:37 | 07:30 | 08:21 |
| | 16:37 | 17:25 | 18:16 | 20:10 | 21:00 | 21:46 | 22:00 | 21:28 | 20:26 | 19:17 | 17:11 | 16:31 |
| 2 | 08:45 | 08:17 | 07:23 | 07:12 | 06:08 07:49-08:08/19 | 05:24 | 05:23 | 06:00 | 06:50 08:14-08:38/24 | 07:38 | 07:32 | 08:22 |
| | 16:38 | 17:26 | 18:18 | 20:11 | 21:02 | 21:47 | 21:59 | 21:26 | 20:24 | 19:15 | 17:09 | 16:31 |
| 3 | 08:44 | 08:15 | 07:21 | 07:10 | 06:06 07:49-08:06/17 | 05:24 | 05:24 | 06:02 | 06:51 08:13-08:37/24 | 07:40 | 07:34 | 08:24 |
| | 16:39 | 17:28 | 18:20 | 20:13 | 21:04 | 21:48 | 21:59 | 21:25 | 20:22 | 19:12 | 17:08 | 16:30 |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 08:28-08:31/3 | 06:05 07:51-08:04/13 | 05:23 | 05:25 | 06:03 | 06:53 08:14-08:36/22 | 07:42 | 07:36 | 08:25 |
| | 16:40 | 17:30 | 18:21 | 20:15 | 21:05 | 21:49 | 21:59 | 21:23 | 20:19 | 19:10 | 17:06 | 16:29 |
| 5 | 08:44 | 08:12 | 07:16 | 07:06 08:22-08:35/13 | 06:03 07:54-08:02/8 | 05:22 | 05:25 | 06:05 | 06:55 08:14-08:34/20 | 07:43 | 07:37 | 08:26 |
| | 16:42 | 17:32 | 18:23 | 20:16 | 21:07 | 21:50 | 21:58 | 21:21 | 20:17 | 19:08 | 17:04 | 16:29 |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 08:20-08:37/17 | 06:01 | 05:22 | 05:26 | 06:06 | 06:56 08:16-08:33/17 | 07:45 | 07:39 | 08:28 |
| | 16:43 | 17:34 | 18:25 | 20:18 | 21:09 | 21:51 | 21:58 | 21:19 | 20:15 | 19:06 | 17:02 | 16:28 |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 08:18-08:38/20 | 05:59 | 05:21 | 05:27 | 06:08 | 06:58 08:17-08:30/13 | 07:47 | 07:41 | 08:29 |
| | 16:44 | 17:36 | 18:27 | 20:20 | 21:10 | 21:52 | 21:57 | 21:18 | 20:13 | 19:03 | 17:01 | 16:28 |
| 8 | 08:43 | 08:07 | 07:10 | 06:59 08:17-08:39/22 | 05:57 | 05:20 | 05:28 | 06:09 08:02-08:13/11 | 06:59 08:22-08:26/4 | 07:48 | 07:43 | 08:30 |
| | 16:45 | 17:38 | 18:28 | 20:22 | 21:12 | 21:53 | 21:56 | 21:16 | 20:10 | 19:01 | 16:59 | 16:28 |
| 9 | 08:42 | 08:05 | 07:07 | 06:56 08:15-08:39/24 | 05:56 | 05:20 | 05:29 | 06:11 08:00-08:14/14 | 07:01 | 07:50 | 07:45 | 08:31 |
| | 16:47 | 17:39 | 18:30 | 20:23 | 21:13 | 21:54 | 21:56 | 21:14 | 20:08 | 18:59 | 16:57 | 16:27 |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 08:15-08:39/24 | 05:54 | 05:20 | 05:30 | 06:13 07:58-08:15/17 | 07:03 | 07:52 | 07:46 | 08:32 |
| | 16:48 | 17:41 | 18:32 | 20:25 | 21:15 | 21:54 | 21:55 | 21:12 | 20:06 | 18:57 | 16:56 | 16:27 |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 08:14-08:39/25 | 05:52 | 05:19 | 05:31 | 06:14 07:57-08:17/20 | 07:04 | 07:54 | 07:48 | 08:34 |
| | 16:49 | 17:43 | 18:34 | 20:27 | 21:17 | 21:55 | 21:54 | 21:10 | 20:03 | 18:54 | 16:54 | 16:27 |
| 12 | 08:41 | 07:59 | 07:01 | 06:50 08:14-08:39/25 | 05:51 | 05:19 | 05:32 | 06:16 07:55-08:17/22 | 07:06 | 07:55 | 07:50 | 08:35 |
| | 16:51 | 17:45 | 18:35 | 20:28 | 21:18 | 21:56 | 21:53 | 21:08 | 20:01 | 18:52 | 16:53 | 16:27 |
| 13 | 08:40 | 07:58 | 06:58 | 06:48 08:14-08:39/25 | 05:49 | 05:19 | 05:33 | 06:17 07:55-08:18/23 | 07:07 | 07:57 | 07:52 | 08:36 |
| | 16:52 | 17:47 | 18:37 | 20:30 | 21:20 | 21:56 | 21:52 | 21:06 | 19:59 | 18:50 | 16:51 | 16:27 |
| 14 | 08:39 | 07:56 | 06:56 | 06:45 08:13-08:38/25 | 05:47 | 05:18 | 05:34 | 06:19 07:55-08:19/24 | 07:09 | 07:59 | 07:53 | 08:37 |
| | 16:54 | 17:49 | 18:39 | 20:32 | 21:21 | 21:57 | 21:52 | 21:04 | 19:56 | 18:48 | 16:50 | 16:27 |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 08:13-08:37/24 | 05:46 | 05:18 | 05:35 | 06:21 07:54-08:19/25 | 07:11 | 08:00 | 07:55 | 08:37 |
| | 16:55 | 17:51 | 18:41 | 20:33 | 21:23 | 21:58 | 21:51 | 21:02 | 19:54 | 18:46 | 16:48 | 16:27 |
| 16 | 08:38 | 07:52 | 06:51 | 06:41 07:58-08:05/7 | 05:44 | 05:18 | 05:37 | 06:22 07:54-08:20/26 | 07:12 | 08:02 | 07:57 | 08:38 |
| | 16:57 | 17:52 | 18:42 | 20:35 08:13-08:36/23 | 21:24 | 21:58 | 21:50 | 21:00 | 19:52 | 18:43 | 16:47 | 16:27 |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 07:55-08:08/13 | 05:43 | 05:18 | 05:38 | 06:24 07:53-08:19/26 | 07:14 | 08:04 | 07:59 | 08:39 |
| | 16:59 | 17:54 | 18:44 | 20:37 08:14-08:35/21 | 21:26 | 21:59 | 21:49 | 20:58 | 19:50 | 18:41 | 16:46 | 16:27 |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 07:53-08:10/17 | 05:41 | 05:18 | 05:39 | 06:25 07:53-08:20/27 | 07:16 | 08:06 | 08:00 | 08:40 |
| | 17:00 | 17:56 | 18:46 | 20:38 08:15-08:34/19 | 21:27 | 21:59 | 21:47 | 20:56 | 19:47 | 18:39 | 16:44 | 16:28 |
| 19 | 08:35 | 07:46 | 06:45 | 06:35 07:51-08:11/20 | 05:40 | 05:18 | 05:40 | 06:27 07:53-08:19/26 | 07:17 | 08:07 | 08:02 | 08:41 |
| | 17:02 | 17:58 | 18:48 | 20:40 08:16-08:32/16 | 21:29 | 21:59 | 21:46 | 20:54 | 19:45 | 18:37 | 16:43 | 16:28 |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 07:50-08:12/22 | 05:39 | 05:18 | 05:42 | 06:29 07:53-08:19/26 | 07:19 | 08:09 | 08:04 | 08:41 |
| | 17:04 | 18:00 | 18:49 | 20:42 08:18-08:30/12 | 21:30 | 22:00 | 21:45 | 20:52 | 19:43 | 18:35 | 16:42 | 16:28 |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 07:49-08:13/24 | 05:37 | 05:18 | 05:43 | 06:30 07:53-08:18/25 | 07:20 | 08:11 | 08:05 | 08:42 |
| | 17:05 | 18:02 | 18:51 | 20:44 08:21-08:27/6 | 21:32 | 22:00 | 21:44 | 20:50 | 19:40 | 18:33 | 16:41 | 16:29 |
| 22 | 08:32 | 07:40 | 06:38 | 06:28 07:48-08:13/25 | 05:36 | 05:18 | 05:44 | 06:32 07:54-08:17/23 | 07:22 | 08:12 | 08:07 | 08:42 |
| | 17:07 | 18:03 | 18:53 | 20:45 | 21:33 | 22:00 | 21:43 | 20:48 08:25-08:32/7 | 19:38 | 18:31 | 16:39 | 16:29 |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 07:47-08:13/26 | 05:35 | 05:19 | 05:46 | 06:34 07:54-08:16/22 | 07:24 | 08:14 | 08:09 | 08:43 |
| | 17:09 | 18:05 | 18:54 | 20:47 | 21:34 | 22:00 | 21:41 | 20:46 08:21-08:34/13 | 19:36 | 18:29 | 16:38 | 16:30 |
| 24 | 08:29 | 07:36 | 06:33 | 06:24 07:47-08:13/26 | 05:33 | 05:19 | 05:47 | 06:35 07:55-08:15/20 | 07:25 | 08:16 | 08:10 | 08:43 |
| | 17:10 | 18:07 | 18:56 | 20:49 | 21:36 | 22:00 | 21:40 | 20:44 08:19-08:36/17 | 19:33 | 18:27 | 16:37 | 16:30 |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 07:46-08:13/27 | 05:32 | 05:19 | 05:48 | 06:37 07:56-08:13/17 | 07:27 | 07:18 | 08:12 | 08:44 |
| | 17:12 | 18:09 | 18:58 | 20:50 | 21:37 | 22:00 | 21:39 | 20:42 08:17-08:37/20 | 19:31 | 17:25 | 16:36 | 16:31 |
| 26 | 08:27 | 07:31 | 06:28 | 06:20 07:46-08:13/27 | 05:31 | 05:20 | 05:50 | 06:38 07:58-08:11/13 | 07:29 | 07:20 | 08:13 | 08:44 |
| | 17:14 | 18:11 | 18:59 | 20:52 | 21:38 | 22:00 | 21:37 | 20:39 08:17-08:38/21 | 19:29 | 17:23 | 16:35 | 16:32 |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 07:46-08:12/26 | 05:30 | 05:20 | 05:51 | 06:40 08:01-08:06/5 | 07:30 | 07:21 | 08:15 | 08:44 |
| | 17:16 | 18:12 | 19:01 | 20:54 | 21:40 | 22:00 | 21:36 | 20:37 08:15-08:38/23 | 19:26 | 17:21 | 16:34 | 16:32 |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 07:46-08:11/25 | 05:29 | 05:21 | 05:53 | 06:42 08:15-08:39/24 | 07:32 | 07:23 | 08:16 | 08:44 |
| | 17:17 | 18:14 | 19:03 | 20:55 | 21:41 | 22:00 | 21:34 | 20:35 | 19:24 | 17:19 | 16:34 | 16:33 |
| 29 | 08:23 | | 07:22 | 06:14 07:46-08:11/25 | 05:28 | 05:21 | 05:54 | 06:43 08:14-08:39/25 | 07:33 | 07:25 | 08:18 | 08:45 |
| | 17:19 | | 20:05 | 20:57 | 21:42 | 22:00 | 21:33 | 20:33 | 19:22 | 17:17 | 16:33 | 16:34 |
| 30 | 08:21 | | 07:19 | 06:12 07:47-08:10/23 | 05:27 | 05:22 | 05:56 | 06:45 08:14-08:39/25 | 07:35 | 07:27 | 08:19 | 08:45 |
| | 17:21 | | 20:06 | 20:59 | 21:43 | 22:00 | 21:31 | 20:31 | 19:19 | 17:15 | 16:32 | 16:35 |
| 31 | 08:20 | | 07:17 | | 05:26 | | 05:57 | 06:46 08:14-08:39/25 | | 07:28 | | 08:45 |
| | 17:23 | | 20:08 | | 21:45 | | 21:30 | 20:28 | | 17:13 | | 16:36 |
| Potential sun hours | 260 | 278 | 367 | 416 | 485 | 498 | 501 | 453 | 381 | 332 | 267 | 244 |
| Sum of minutes with flicker | 0 | 0 | 0 | 677 | 78 | 0 | 0 | 612 | 149 | 0 | 0 | 0 |

**Table layout: For each day in each month the following matrix apply**

| | | |
|---|---|---|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |
| | Sun set (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |

Licensed user:
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kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar per WTG

**Calculation:** 6460 Gortloughra WF only WC **WTG:** 3 - T03

## Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | | March | | April | | May | | June | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | | 07:25 | 08:30-08:54/24 | 07:15 | 18:51-19:13/22 | 06:10 | | 05:25 | 06:09-06:17/8 |
| | 16:37 | 17:25 | | 18:16 | | 20:10 | | 21:00 | | 21:46 | |
| 2 | 08:45 | 08:17 | | 07:23 | 08:30-08:54/24 | 07:12 | 18:51-19:12/21 | 06:08 | | 05:24 | 06:08-06:18/10 |
| | 16:38 | 17:27 | | 18:18 | | 20:11 | | 21:02 | | 21:47 | |
| 3 | 08:44 | 08:15 | | 07:21 | 08:30-08:54/24 | 07:10 | 18:52-19:12/20 | 06:06 | | 05:24 | 06:08-06:20/12 |
| | 16:39 | 17:28 | | 18:20 | | 20:13 | | 21:04 | | 21:48 | |
| 4 | 08:44 | 08:13 | | 07:18 | 08:30-08:53/23 | 07:08 | 18:52-19:10/18 | 06:05 | | 05:23 | 06:07-06:20/13 |
| | 16:40 | 17:30 | | 18:21 | | 20:15 | | 21:05 | | 21:49 | |
| 5 | 08:44 | 08:12 | | 07:16 | 08:31-08:53/22 | 07:06 | 18:53-19:09/16 | 06:03 | | 05:22 | 06:06-06:20/14 |
| | 16:42 | 17:32 | | 18:23 | | 20:16 | | 21:07 | | 21:50 | |
| 6 | 08:44 | 08:10 | | 07:14 | 08:31-08:51/20 | 07:03 | 18:55-19:06/11 | 06:01 | | 05:22 | 06:06-06:22/16 |
| | 16:43 | 17:34 | | 18:25 | | 20:18 | | 21:09 | | 21:51 | |
| 7 | 08:43 | 08:08 | | 07:12 | 08:32-08:49/17 | 07:01 | 18:59-19:01/2 | 05:59 | | 05:21 | 06:05-06:22/17 |
| | 16:44 | 17:36 | | 18:27 | | 20:20 | | 21:10 | | 21:52 | |
| 8 | 08:43 | 08:07 | | 07:10 | 08:34-08:47/13 | 06:59 | | 05:57 | | 05:21 | 06:05-06:23/18 |
| | 16:45 | 17:38 | | 18:28 | | 20:22 | | 21:12 | | 21:53 | |
| 9 | 08:42 | 08:05 | | 07:07 | 08:37-08:43/6 | 06:57 | | 05:56 | | 05:20 | 06:06-06:23/17 |
| | 16:47 | 17:39 | | 18:30 | | 20:23 | | 21:13 | | 21:54 | |
| 10 | 08:42 | 08:03 | | 07:05 | | 06:54 | | 05:54 | | 05:20 | 06:05-06:23/18 |
| | 16:48 | 17:41 | | 18:32 | | 20:25 | | 21:15 | | 21:54 | |
| 11 | 08:41 | 08:01 | | 07:03 | | 06:52 | | 05:52 | | 05:19 | 06:05-06:24/19 |
| | 16:50 | 17:43 | | 18:34 | | 20:27 | | 21:17 | | 21:55 | |
| 12 | 08:41 | 07:59 | | 07:01 | | 06:50 | | 05:51 | | 05:19 | 06:05-06:24/19 |
| | 16:51 | 17:45 | | 18:35 | | 20:28 | | 21:18 | | 21:56 | |
| 13 | 08:40 | 07:57 | | 06:58 | | 06:48 | | 05:49 | | 05:19 | 06:06-06:25/19 |
| | 16:52 | 17:47 | | 18:37 | | 20:30 | | 21:20 | | 21:56 | |
| 14 | 08:39 | 07:56 | 08:56-09:05/9 | 06:56 | | 06:45 | | 05:47 | | 05:18 | 06:05-06:25/20 |
| | 16:54 | 17:49 | | 18:39 | | 20:32 | | 21:21 | | 21:57 | |
| 15 | 08:38 | 07:54 | 08:53-09:08/15 | 06:54 | | 06:43 | | 05:46 | | 05:18 | 06:05-06:25/20 |
| | 16:55 | 17:51 | | 18:41 | | 20:33 | | 21:23 | | 21:58 | |
| 16 | 08:38 | 07:52 | 08:52-09:09/17 | 06:51 | | 06:41 | | 05:44 | | 05:18 | 06:05-06:25/20 |
| | 16:57 | 17:52 | | 18:42 | | 20:35 | | 21:24 | | 21:58 | |
| 17 | 08:37 | 07:50 | 08:51-09:10/19 | 06:49 | | 06:39 | | 05:43 | | 05:18 | 06:05-06:26/21 |
| | 16:59 | 17:54 | | 18:44 | | 20:37 | | 21:26 | | 21:59 | |
| 18 | 08:36 | 07:48 | 08:50-09:11/21 | 06:47 | | 06:37 | | 05:41 | | 05:18 | 06:06-06:26/20 |
| | 17:00 | 17:56 | | 18:46 | | 20:38 | | 21:27 | | 21:59 | |
| 19 | 08:35 | 07:46 | 08:50-09:12/22 | 06:45 | | 06:35 | | 05:40 | | 05:18 | 06:06-06:26/20 |
| | 17:02 | 17:58 | | 18:48 | | 20:40 | | 21:29 | | 21:59 | |
| 20 | 08:34 | 07:44 | 08:49-09:12/23 | 06:42 | | 06:32 | | 05:39 | | 05:18 | 06:07-06:27/20 |
| | 17:04 | 18:00 | | 18:49 | | 20:42 | | 21:30 | | 22:00 | |
| 21 | 08:33 | 07:42 | 08:49-09:12/23 | 06:40 | | 06:30 | | 05:37 | | 05:18 | 06:07-06:27/20 |
| | 17:05 | 18:02 | | 18:51 | | 20:43 | | 21:32 | | 22:00 | |
| 22 | 08:32 | 07:40 | 08:39-08:48/9 | 06:38 | | 06:28 | | 05:36 | | 05:18 | 06:07-06:27/20 |
| | 17:07 | 18:03 | 08:49-09:12/23 | 18:53 | | 20:45 | | 21:33 | | 22:00 | |
| 23 | 08:30 | 07:38 | 08:37-09:12/35 | 06:35 | | 06:26 | | 05:35 | | 05:19 | 06:07-06:27/20 |
| | 17:09 | 18:05 | | 18:54 | | 20:47 | | 21:34 | | 22:00 | |
| 24 | 08:29 | 07:36 | 08:34-09:10/36 | 06:33 | | 06:24 | | 05:33 | | 05:19 | 06:08-06:28/20 |
| | 17:10 | 18:07 | | 18:56 | | 20:49 | | 21:36 | | 22:00 | |
| 25 | 08:28 | 07:33 | 08:33-09:09/36 | 06:31 | 18:02-18:04/2 | 06:22 | | 05:32 | | 05:19 | 06:07-06:28/21 |
| | 17:12 | 18:09 | | 18:58 | | 20:50 | | 21:37 | | 22:00 | |
| 26 | 08:27 | 07:31 | 08:32-09:08/36 | 06:28 | 17:58-18:09/11 | 06:20 | | 05:31 | | 05:20 | 06:07-06:27/20 |
| | 17:14 | 18:11 | | 18:59 | | 20:52 | | 21:38 | | 22:00 | |
| 27 | 08:25 | 07:29 | 08:31-09:07/36 | 06:26 | 17:56-18:11/15 | 06:18 | | 05:30 | | 05:20 | 06:08-06:28/20 |
| | 17:16 | 18:12 | | 19:01 | | 20:54 | | 21:40 | | 22:00 | |
| 28 | 08:24 | 07:27 | 08:31-09:04/33 | 06:24 | 17:54-18:12/18 | 06:16 | | 05:29 | | 05:21 | 06:08-06:28/20 |
| | 17:17 | 18:14 | | 19:03 | | 20:55 | | 21:41 | | 22:00 | |
| 29 | 08:22 | | | 07:22 | 18:53-19:13/20 | 06:14 | | 05:28 | | 05:21 | 06:09-06:28/19 |
| | 17:19 | | | 20:05 | | 20:57 | | 21:42 | | 22:00 | |
| 30 | 08:21 | | | 07:19 | 18:52-19:13/21 | 06:12 | | 05:27 | | 05:22 | 06:09-06:28/19 |
| | 17:21 | | | 20:06 | | 20:59 | | 21:43 | | 22:00 | |
| 31 | 08:20 | | | 07:17 | 18:51-19:13/22 | | | 05:26 | 06:12-06:14/2 | | |
| | 17:23 | | | 20:08 | | | | 21:45 | | | |
| Potential sun hours | 260 | 278 | | 367 | | 416 | | 485 | | 498 | |
| Sum of minutes with flicker | 0 | 393 | | 282 | | 110 | | 2 | | 540 | |

**Table layout: For each day in each month the following matrix apply**

| | | |
|---|---|---|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |
| | Sun set (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |

Licensed user:
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+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar per WTG

**Calculation:** 6460 Gortloughra WF only WC **WTG:** 3 - T03

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | July | | August | September | | October | | November | December |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 05:22 | 06:09-06:28/19 | 05:59 | 06:48 | | 07:37 | | 07:30 | 08:21 |
| | 22:00 | | 21:28 | 20:26 | | 19:17 | | 17:11 | 16:31 |
| 2 | 05:23 | 06:10-06:28/18 | 06:00 | 06:50 | | 07:38 | | 07:32 | 08:22 |
| | 21:59 | | 21:26 | 20:24 | | 19:15 | | 17:09 | 16:31 |
| 3 | 05:24 | 06:10-06:28/18 | 06:02 | 06:51 | | 07:40 | | 07:34 | 08:24 |
| | 21:59 | | 21:25 | 20:22 | | 19:12 | | 17:08 | 16:30 |
| 4 | 05:25 | 06:11-06:28/17 | 06:03 | 06:53 | | 07:42 | | 07:36 | 08:25 |
| | 21:58 | | 21:23 | 20:19 | | 19:10 | | 17:06 | 16:29 |
| 5 | 05:25 | 06:11-06:28/17 | 06:05 | 06:55 | 18:55-18:57/2 | 07:43 | 09:12-09:23/11 | 07:37 | 08:26 |
| | 21:58 | | 21:21 | 20:17 | | 19:08 | | 17:04 | 16:29 |
| 6 | 05:26 | 06:12-06:28/16 | 06:06 | 06:56 | 18:51-19:02/11 | 07:45 | 09:09-09:24/15 | 07:39 | 08:28 |
| | 21:58 | | 21:19 | 20:15 | | 19:06 | | 17:02 | 16:28 |
| 7 | 05:27 | 06:13-06:28/15 | 06:08 | 06:58 | 18:48-19:04/16 | 07:47 | 09:08-09:26/18 | 07:41 | 08:29 |
| | 21:57 | | 21:18 | 20:13 | | 19:03 | | 17:01 | 16:28 |
| 8 | 05:28 | 06:13-06:27/14 | 06:10 | 06:59 | 18:47-19:05/18 | 07:48 | 09:07-09:27/20 | 07:43 | 08:30 |
| | 21:56 | | 21:16 | 20:10 | | 19:01 | | 16:59 | 16:28 |
| 9 | 05:29 | 06:14-06:26/12 | 06:11 | 07:01 | 18:45-19:05/20 | 07:50 | 09:05-09:27/22 | 07:45 | 08:31 |
| | 21:56 | | 21:14 | 20:08 | | 18:59 | | 16:57 | 16:27 |
| 10 | 05:30 | 06:15-06:26/11 | 06:13 | 07:03 | 18:45-19:05/20 | 07:52 | 09:04-09:28/24 | 07:46 | 08:32 |
| | 21:55 | | 21:12 | 20:06 | | 18:57 | | 16:56 | 16:27 |
| 11 | 05:31 | 06:16-06:25/9 | 06:14 | 07:04 | 18:43-19:05/22 | 07:54 | 09:04-09:28/24 | 07:48 | 08:34 |
| | 21:54 | | 21:10 | 20:03 | | 18:54 | | 16:54 | 16:27 |
| 12 | 05:32 | 06:18-06:23/5 | 06:16 | 07:06 | 18:43-19:05/22 | 07:55 | 09:04-09:28/24 | 07:50 | 08:35 |
| | 21:53 | | 21:08 | 20:01 | | 18:52 | | 16:53 | 16:27 |
| 13 | 05:33 | | 06:17 | 07:07 | 18:43-19:05/22 | 07:57 | 09:04-09:28/24 | 07:52 | 08:36 |
| | 21:52 | | 21:06 | 19:59 | | 18:50 | 09:31-09:34/3 | 16:51 | 16:27 |
| 14 | 05:34 | | 06:19 | 07:09 | 18:43-19:03/20 | 07:59 | 09:03-09:38/35 | 07:53 | 08:36 |
| | 21:52 | | 21:04 | 19:56 | | 18:48 | | 16:50 | 16:27 |
| 15 | 05:35 | | 06:21 | 07:11 | 18:44-19:02/18 | 08:00 | 09:04-09:40/36 | 07:55 | 08:37 |
| | 21:51 | | 21:02 | 19:54 | | 18:46 | | 16:48 | 16:27 |
| 16 | 05:37 | | 06:22 | 07:12 | 18:44-19:00/16 | 08:02 | 09:04-09:41/37 | 07:57 | 08:38 |
| | 21:50 | | 21:00 | 19:52 | | 18:44 | | 16:47 | 16:27 |
| 17 | 05:38 | | 06:24 | 07:14 | 18:46-18:58/12 | 08:04 | 09:05-09:42/37 | 07:59 | 08:39 |
| | 21:48 | | 20:58 | 19:50 | | 18:41 | | 16:46 | 16:27 |
| 18 | 05:39 | | 06:25 | 07:16 | 18:48-18:53/5 | 08:06 | 09:07-09:43/36 | 08:00 | 08:40 |
| | 21:47 | | 20:56 | 19:47 | | 18:39 | | 16:44 | 16:28 |
| 19 | 05:40 | | 06:27 | 07:17 | | 08:07 | 09:08-09:42/34 | 08:02 | 08:41 |
| | 21:46 | | 20:54 | 19:45 | | 18:37 | | 16:43 | 16:28 |
| 20 | 05:42 | | 06:29 | 07:19 | | 08:09 | 09:11-09:17/6 | 08:04 | 08:41 |
| | 21:45 | | 20:52 | 19:43 | | 18:35 | 09:20-09:42/22 | 16:42 | 16:28 |
| 21 | 05:43 | | 06:30 | 07:20 | | 08:11 | 09:20-09:42/22 | 08:05 | 08:42 |
| | 21:44 | | 20:50 | 19:40 | | 18:33 | | 16:41 | 16:29 |
| 22 | 05:44 | | 06:32 | 07:22 | | 08:12 | 09:20-09:42/22 | 08:07 | 08:42 |
| | 21:43 | | 20:48 | 19:38 | | 18:31 | | 16:39 | 16:29 |
| 23 | 05:46 | | 06:34 | 07:24 | | 08:14 | 09:20-09:42/22 | 08:09 | 08:43 |
| | 21:41 | | 20:46 | 19:36 | | 18:29 | | 16:38 | 16:30 |
| 24 | 05:47 | | 06:35 | 07:25 | | 08:16 | 09:21-09:41/20 | 08:10 | 08:43 |
| | 21:40 | | 20:44 | 19:33 | | 18:27 | | 16:37 | 16:30 |
| 25 | 05:48 | | 06:37 | 07:27 | | 07:18 | 08:22-08:40/18 | 08:12 | 08:44 |
| | 21:39 | | 20:42 | 19:31 | | 17:25 | | 16:36 | 16:31 |
| 26 | 05:50 | | 06:38 | 07:29 | | 07:20 | 08:22-08:38/16 | 08:13 | 08:44 |
| | 21:37 | | 20:39 | 19:29 | | 17:23 | | 16:35 | 16:32 |
| 27 | 05:51 | | 06:40 | 07:30 | | 07:21 | 08:23-08:37/14 | 08:15 | 08:44 |
| | 21:36 | | 20:37 | 19:26 | | 17:21 | | 16:34 | 16:32 |
| 28 | 05:53 | | 06:42 | 07:32 | | 07:23 | 08:26-08:34/8 | 08:16 | 08:44 |
| | 21:34 | | 20:35 | 19:24 | | 17:19 | | 16:34 | 16:33 |
| 29 | 05:54 | | 06:43 | 07:33 | | 07:25 | | 08:18 | 08:45 |
| | 21:33 | | 20:33 | 19:22 | | 17:17 | | 16:33 | 16:34 |
| 30 | 05:56 | | 06:45 | 07:35 | | 07:27 | | 08:19 | 08:45 |
| | 21:31 | | 20:31 | 19:19 | | 17:15 | | 16:32 | 16:35 |
| 31 | 05:57 | | 06:46 | | | 07:28 | | | 08:45 |
| | 21:30 | | 20:28 | | | 17:13 | | | 16:36 |
| Potential sun hours | 501 | | 453 | 381 | | 332 | | 267 | 244 |
| Sum of minutes with flicker | 171 | | 0 | 224 | | 570 | | 0 | 0 |

**Table layout: For each day in each month the following matrix apply**

| | | |
|---|---|---|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |
| | Sun set (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |

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Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar per WTG

**Calculation:** 6460 Gortloughra WF only WC **WTG:** 4 - T04

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | | April | | May | | June | |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | | 07:15 | 18:52-19:12/20 | 06:10 | 19:04-19:39/35 | 05:25 | 19:29-20:07/38 |
| | 16:37 | 17:25 | 18:16 | | 20:10 | | 21:00 | | 21:46 | 19:17-19:28/11 |
| 2 | 08:45 | 08:16 | 07:23 | | 07:12 | 18:52-19:12/20 | 06:08 | 19:04-19:40/36 | 05:24 | 19:30-20:07/37 |
| | 16:38 | 17:26 | 18:18 | | 20:11 | | 21:02 | | 21:47 | 19:19-19:26/7 |
| 3 | 08:44 | 08:15 | 07:21 | | 07:10 | 18:52-19:11/19 | 06:06 | 19:03-19:41/38 | 05:24 | 19:31-20:07/36 |
| | 16:39 | 17:28 | 18:20 | | 20:13 | | 21:04 | | 21:48 | |
| 4 | 08:44 | 08:13 | 07:18 | | 07:08 | 18:52-19:10/18 | 06:04 | 19:02-19:42/40 | 05:23 | 19:34-20:08/34 |
| | 16:40 | 17:30 | 18:21 | | 20:15 | | 21:05 | | 21:49 | |
| 5 | 08:44 | 08:12 | 07:16 | | 07:05 | 18:53-19:09/16 | 06:03 | 19:02-19:43/41 | 05:22 | 19:36-20:08/32 |
| | 16:42 | 17:32 | 18:23 | | 20:16 | | 21:07 | | 21:50 | |
| 6 | 08:44 | 08:10 | 07:14 | | 07:03 | 18:54-19:08/14 | 06:01 | 19:02-19:45/43 | 05:22 | 19:36-20:09/33 |
| | 16:43 | 17:34 | 18:25 | | 20:18 | | 21:08 | | 21:51 | |
| 7 | 08:43 | 08:08 | 07:12 | | 07:01 | 18:56-19:06/10 | 05:59 | 19:01-19:46/45 | 05:21 | 19:36-20:09/33 |
| | 16:44 | 17:36 | 18:27 | | 20:20 | 19:12-19:19/7 | 21:10 | | 21:52 | |
| 8 | 08:43 | 08:07 | 07:09 | | 06:59 | 19:08-19:21/13 | 05:57 | 19:01-19:46/45 | 05:20 | 19:36-20:09/33 |
| | 16:45 | 17:38 | 18:28 | | 20:21 | | 21:12 | | 21:53 | |
| 9 | 08:42 | 08:05 | 07:07 | | 06:56 | 19:06-19:23/17 | 05:56 | 19:01-19:47/46 | 05:20 | 19:36-20:09/33 |
| | 16:47 | 17:39 | 18:30 | | 20:23 | | 21:13 | | 21:53 | |
| 10 | 08:42 | 08:03 | 07:05 | | 06:54 | 19:04-19:24/20 | 05:54 | 19:00-19:47/47 | 05:20 | 19:36-20:10/34 |
| | 16:48 | 17:41 | 18:32 | | 20:25 | | 21:15 | | 21:54 | |
| 11 | 08:41 | 08:01 | 07:03 | | 06:52 | 19:03-19:25/22 | 05:52 | 19:01-19:48/47 | 05:19 | 19:37-20:10/33 |
| | 16:49 | 17:43 | 18:34 | | 20:27 | | 21:17 | | 21:55 | |
| 12 | 08:41 | 07:59 | 07:00 | | 06:50 | 19:03-19:29/26 | 05:51 | 19:01-19:48/47 | 05:19 | 19:37-20:11/34 |
| | 16:51 | 17:45 | 18:35 | | 20:28 | | 21:18 | | 21:56 | |
| 13 | 08:40 | 07:57 | 06:58 | | 06:48 | 19:01-19:29/28 | 05:49 | 19:01-19:49/48 | 05:19 | 19:36-20:10/34 |
| | 16:52 | 17:47 | 18:37 | | 20:30 | | 21:20 | | 21:56 | |
| 14 | 08:39 | 07:56 | 06:56 | | 06:45 | 19:01-19:31/30 | 05:47 | 19:01-19:48/47 | 05:18 | 19:37-20:11/34 |
| | 16:54 | 17:49 | 18:39 | | 20:32 | | 21:21 | | 21:57 | |
| 15 | 08:38 | 07:54 | 06:54 | | 06:43 | 19:00-19:31/31 | 05:46 | 19:02-19:49/47 | 05:18 | 19:37-20:11/34 |
| | 16:55 | 17:50 | 18:41 | | 20:33 | | 21:23 | | 21:58 | |
| 16 | 08:38 | 07:52 | 06:51 | | 06:41 | 19:01-19:32/31 | 05:44 | 19:01-19:48/47 | 05:18 | 19:37-20:11/34 |
| | 16:57 | 17:52 | 18:42 | | 20:35 | | 21:24 | | 21:58 | |
| 17 | 08:37 | 07:50 | 06:49 | | 06:39 | 19:01-19:32/31 | 05:43 | 19:02-19:49/47 | 05:18 | 19:37-20:11/34 |
| | 16:59 | 17:54 | 18:44 | | 20:37 | | 21:26 | | 21:59 | |
| 18 | 08:36 | 07:48 | 06:47 | | 06:37 | 19:01-19:32/31 | 05:41 | 19:03-19:49/46 | 05:18 | 19:38-20:12/34 |
| | 17:00 | 17:56 | 18:46 | | 20:38 | | 21:27 | | 21:59 | |
| 19 | 08:35 | 07:46 | 06:44 | 17:54-17:57/3 | 06:35 | 19:02-19:32/30 | 05:40 | 19:04-19:49/45 | 05:18 | 19:38-20:12/34 |
| | 17:02 | 17:58 | 18:47 | | 20:40 | | 21:29 | | 21:59 | |
| 20 | 08:34 | 07:44 | 06:42 | 17:50-18:01/11 | 06:32 | 19:03-19:31/28 | 05:39 | 19:03-19:54/51 | 05:18 | 19:38-20:12/34 |
| | 17:03 | 18:00 | 18:49 | | 20:42 | | 21:30 | | 22:00 | |
| 21 | 08:33 | 07:42 | 06:40 | 17:47-18:01/14 | 06:30 | 19:04-19:31/27 | 05:37 | 19:04-19:57/53 | 05:18 | 19:39-20:13/34 |
| | 17:05 | 18:01 | 18:51 | | 20:43 | | 21:32 | | 22:00 | |
| 22 | 08:31 | 07:40 | 06:38 | 17:46-18:02/16 | 06:28 | 19:05-19:30/25 | 05:36 | 19:05-19:59/54 | 05:18 | 19:39-20:13/34 |
| | 17:07 | 18:03 | 18:53 | | 20:45 | | 21:33 | | 22:00 | |
| 23 | 08:30 | 07:38 | 06:35 | 17:46-18:03/17 | 06:26 | 19:08-19:32/24 | 05:35 | 19:06-20:00/54 | 05:19 | 19:39-20:13/34 |
| | 17:09 | 18:05 | 18:54 | | 20:47 | | 21:34 | | 22:00 | |
| 24 | 08:29 | 07:36 | 06:33 | 17:45-18:04/19 | 06:24 | 19:11-19:33/22 | 05:33 | 19:07-20:01/54 | 05:19 | 19:39-20:13/34 |
| | 17:10 | 18:07 | 18:56 | | 20:49 | | 21:36 | | 22:00 | |
| 25 | 08:28 | 07:33 | 06:31 | 17:44-18:03/19 | 06:22 | 19:10-19:34/24 | 05:32 | 19:08-20:02/54 | 05:19 | 19:40-20:13/33 |
| | 17:12 | 18:09 | 18:58 | | 20:50 | | 21:37 | | 22:00 | |
| 26 | 08:27 | 07:31 | 06:28 | 17:44-18:02/18 | 06:20 | 19:09-19:35/26 | 05:31 | 19:09-20:03/54 | 05:20 | 19:39-20:13/34 |
| | 17:14 | 18:11 | 18:59 | | 20:52 | | 21:38 | | 22:00 | |
| 27 | 08:25 | 07:29 | 06:26 | 17:45-18:09/24 | 06:18 | 19:08-19:36/28 | 05:30 | 19:10-20:04/54 | 05:20 | 19:40-20:14/34 |
| | 17:16 | 18:12 | 19:01 | | 20:54 | | 21:40 | | 22:00 | |
| 28 | 08:24 | 07:27 | 06:24 | 17:45-18:10/25 | 06:16 | 19:07-19:37/30 | 05:29 | 19:11-20:05/54 | 05:21 | 19:40-20:14/34 |
| | 17:17 | 18:14 | 19:03 | | 20:55 | | 21:41 | | 22:00 | |
| 29 | 08:22 | | 07:21 | 18:46-19:11/25 | 06:14 | 19:06-19:38/32 | 05:28 | 19:12-20:05/53 | 05:21 | 19:41-20:14/33 |
| | 17:19 | | 20:05 | | 20:57 | | 21:42 | | 22:00 | |
| 30 | 08:21 | | 07:19 | 18:48-19:12/24 | 06:12 | 19:05-19:39/34 | 05:27 | 19:13-20:05/52 | 05:22 | 19:40-20:14/34 |
| | 17:21 | | 20:06 | | 20:59 | | 21:43 | | 22:00 | |
| 31 | 08:20 | | 07:17 | 18:52-19:12/20 | | | 05:26 | 19:14-20:06/52 | | |
| | 17:23 | | 20:08 | | | | 21:45 | | | |
| Potential sun hours | 260 | 278 | 367 | | 416 | | 485 | | 498 | |
| Sum of minutes with flicker | 0 | 0 | 235 | | 734 | | 1476 | | 1038 | |

**Table layout: For each day in each month the following matrix apply**

| | | |
|---|---|---|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |
| | Sun set (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |

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Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar per WTG

**Calculation:** 6460 Gortloughra WF only WC **WTG:** 4 - T04

## Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | July | | August | | September | | October | November | December |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 05:22 | 19:41-20:14/33 | 05:59 | 19:11-19:58/47 | 06:48 | 19:02-19:24/22 | 07:37 | 07:30 | 08:21 |
| | 22:00 | | 21:28 | | 20:26 | | 19:17 | 17:11 | 16:31 |
| 2 | 05:23 | 19:40-20:14/34 | 06:00 | 19:11-19:59/48 | 06:50 | 19:02-19:22/20 | 07:38 | 07:32 | 08:22 |
| | 21:59 | | 21:26 | | 20:24 | | 19:15 | 17:09 | 16:31 |
| 3 | 05:24 | 19:41-20:14/33 | 06:02 | 19:11-19:58/47 | 06:51 | 19:04-19:21/17 | 07:40 | 07:34 | 08:24 |
| | 21:59 | | 21:25 | | 20:22 | | 19:12 | 17:08 | 16:30 |
| 4 | 05:24 | 19:41-20:15/34 | 06:03 | 19:10-19:57/47 | 06:53 | 19:06-19:19/13 | 07:42 | 07:36 | 08:25 |
| | 21:58 | | 21:23 | | 20:19 | | 19:10 | 17:06 | 16:29 |
| 5 | 05:25 | 19:42-20:15/33 | 06:05 | 19:11-19:56/45 | 06:55 | 18:52-19:02/10 | 07:43 | 07:37 | 08:26 |
| | 21:58 | | 21:21 | | 20:17 | 19:08-19:15/7 | 19:08 | 17:04 | 16:29 |
| 6 | 05:26 | 19:41-20:14/33 | 06:06 | 19:11-19:55/44 | 06:56 | 18:50-19:04/14 | 07:45 | 07:39 | 08:28 |
| | 21:57 | | 21:19 | | 20:15 | | 19:06 | 17:02 | 16:28 |
| 7 | 05:27 | 19:42-20:14/32 | 06:08 | 19:11-19:54/43 | 06:58 | 18:48-19:04/16 | 07:47 | 07:41 | 08:29 |
| | 21:57 | | 21:18 | | 20:13 | | 19:03 | 17:01 | 16:28 |
| 8 | 05:28 | 19:42-20:15/33 | 06:09 | 19:11-19:52/41 | 06:59 | 18:47-19:05/18 | 07:48 | 07:43 | 08:30 |
| | 21:56 | | 21:16 | | 20:10 | | 19:01 | 16:59 | 16:28 |
| 9 | 05:29 | 19:39-20:15/36 | 06:11 | 19:12-19:51/39 | 07:01 | 18:46-19:05/19 | 07:50 | 07:44 | 08:31 |
| | 21:56 | | 21:14 | | 20:08 | | 18:59 | 16:57 | 16:27 |
| 10 | 05:30 | 19:38-20:15/37 | 06:13 | 19:12-19:49/37 | 07:03 | 18:45-19:05/20 | 07:52 | 07:46 | 08:32 |
| | 21:55 | 19:28-19:31/3 | 21:12 | | 20:06 | | 18:57 | 16:56 | 16:27 |
| 11 | 05:31 | 19:37-20:15/38 | 06:14 | 19:13-19:49/36 | 07:04 | 18:44-19:04/20 | 07:53 | 07:48 | 08:33 |
| | 21:54 | 19:25-19:35/10 | 21:10 | | 20:03 | | 18:54 | 16:54 | 16:27 |
| 12 | 05:32 | 19:23-20:14/51 | 06:16 | 19:13-19:47/34 | 07:06 | 18:45-19:04/19 | 07:55 | 07:50 | 08:35 |
| | 21:53 | | 21:08 | | 20:01 | | 18:52 | 16:53 | 16:27 |
| 13 | 05:33 | 19:22-20:14/52 | 06:17 | 19:14-19:47/33 | 07:07 | 18:40-19:04/24 | 07:57 | 07:52 | 08:36 |
| | 21:52 | | 21:06 | | 19:59 | | 18:50 | 16:51 | 16:27 |
| 14 | 05:34 | 19:21-20:14/53 | 06:19 | 19:14-19:45/31 | 07:09 | 18:37-19:02/25 | 07:59 | 07:53 | 08:36 |
| | 21:51 | | 21:04 | | 19:56 | | 18:48 | 16:50 | 16:27 |
| 15 | 05:35 | 19:20-20:13/53 | 06:21 | 19:15-19:44/29 | 07:11 | 18:35-19:01/26 | 08:00 | 07:55 | 08:37 |
| | 21:51 | | 21:02 | | 19:54 | | 18:46 | 16:48 | 16:27 |
| 16 | 05:37 | 19:19-20:13/54 | 06:22 | 19:15-19:42/27 | 07:12 | 18:34-18:58/24 | 08:02 | 07:57 | 08:38 |
| | 21:50 | | 21:00 | | 19:52 | | 18:43 | 16:47 | 16:27 |
| 17 | 05:38 | 19:19-20:13/54 | 06:24 | 19:15-19:42/27 | 07:14 | 18:33-18:54/21 | 08:04 | 07:58 | 08:39 |
| | 21:48 | | 20:58 | | 19:49 | | 18:41 | 16:45 | 16:27 |
| 18 | 05:39 | 19:18-20:12/54 | 06:25 | 19:16-19:40/24 | 07:15 | 18:32-18:50/18 | 08:05 | 08:00 | 08:40 |
| | 21:47 | | 20:56 | | 19:47 | | 18:39 | 16:44 | 16:28 |
| 19 | 05:40 | 19:17-20:11/54 | 06:27 | 19:17-19:39/22 | 07:17 | 18:32-18:50/18 | 08:07 | 08:02 | 08:40 |
| | 21:46 | | 20:54 | | 19:45 | | 18:37 | 16:43 | 16:28 |
| 20 | 05:42 | 19:16-20:10/54 | 06:29 | 19:12-19:37/25 | 07:19 | 18:32-18:50/18 | 08:09 | 08:04 | 08:41 |
| | 21:45 | | 20:52 | | 19:43 | | 18:35 | 16:42 | 16:28 |
| 21 | 05:43 | 19:15-20:09/54 | 06:30 | 19:10-19:35/25 | 07:20 | 18:32-18:48/16 | 08:11 | 08:05 | 08:42 |
| | 21:44 | | 20:50 | | 19:40 | | 18:33 | 16:41 | 16:29 |
| 22 | 05:44 | 19:15-20:08/53 | 06:32 | 19:07-19:35/28 | 07:22 | 18:33-18:47/14 | 08:12 | 08:07 | 08:42 |
| | 21:43 | | 20:48 | | 19:38 | | 18:31 | 16:39 | 16:29 |
| 23 | 05:46 | 19:14-20:06/52 | 06:33 | 19:06-19:35/29 | 07:24 | 18:33-18:45/12 | 08:14 | 08:09 | 08:43 |
| | 21:41 | | 20:46 | | 19:36 | | 18:29 | 16:38 | 16:30 |
| 24 | 05:47 | 19:14-20:02/48 | 06:35 | 19:05-19:36/31 | 07:25 | 18:36-18:42/6 | 08:16 | 08:10 | 08:43 |
| | 21:40 | | 20:44 | | 19:33 | | 18:27 | 16:37 | 16:30 |
| 25 | 05:48 | 19:14-19:59/45 | 06:37 | 19:04-19:35/31 | 07:27 | | 07:18 | 08:12 | 08:44 |
| | 21:39 | | 20:42 | | 19:31 | | 17:25 | 16:36 | 16:31 |
| 26 | 05:50 | 19:13-19:59/46 | 06:38 | 19:03-19:35/32 | 07:28 | | 07:19 | 08:13 | 08:44 |
| | 21:37 | | 20:39 | | 19:29 | | 17:23 | 16:35 | 16:31 |
| 27 | 05:51 | 19:12-19:59/47 | 06:40 | 19:02-19:34/32 | 07:30 | | 07:21 | 08:15 | 08:44 |
| | 21:36 | | 20:37 | | 19:26 | | 17:21 | 16:34 | 16:32 |
| 28 | 05:53 | 19:13-20:00/47 | 06:42 | 19:02-19:33/31 | 07:32 | | 07:23 | 08:16 | 08:44 |
| | 21:34 | | 20:35 | | 19:24 | | 17:19 | 16:33 | 16:33 |
| 29 | 05:54 | 19:12-19:59/47 | 06:43 | 19:02-19:31/29 | 07:33 | | 07:25 | 08:18 | 08:45 |
| | 21:33 | | 20:33 | | 19:22 | | 17:17 | 16:33 | 16:34 |
| 30 | 05:56 | 19:11-19:59/48 | 06:45 | 19:02-19:30/28 | 07:35 | | 07:27 | 08:19 | 08:45 |
| | 21:31 | | 20:31 | | 19:19 | | 17:15 | 16:32 | 16:35 |
| 31 | 05:57 | 19:12-19:59/47 | 06:46 | 19:01-19:27/26 | | | 07:28 | | 08:45 |
| | 21:30 | | 20:28 | | | | 17:13 | | 16:36 |
| Potential sun hours | 501 | | 453 | | 381 | | 332 | 267 | 244 |
| Sum of minutes with flicker | | 1402 | | 1048 | | 437 | 0 | 0 | 0 |

**Table layout: For each day in each month the following matrix apply**

| | | |
|---|---|---|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |
| | Sun set (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |

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Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar per WTG

**Calculation:** 6460 Gortloughra WF only WC **WTG:** 5 - T06

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | | April | | May | | June | |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | | 07:15 | 18:58-19:24/26 | 06:10 | 19:26-19:52/26 | 05:25 | 20:19-20:23/4 |
| | 16:37 | 17:25 | 18:16 | | 20:10 | | 21:00 | | 21:46 | |
| 2 | 08:45 | 08:16 | 07:23 | | 07:12 | 18:57-19:25/28 | 06:08 | 19:27-19:54/27 | 05:24 | 20:16-20:26/10 |
| | 16:38 | 17:26 | 18:18 | | 20:11 | | 21:02 | | 21:47 | |
| 3 | 08:44 | 08:15 | 07:21 | | 07:10 | 18:56-19:26/30 | 06:06 | 19:27-19:54/27 | 05:24 | 20:15-20:27/12 |
| | 16:39 | 17:28 | 18:19 | | 20:13 | | 21:04 | | 21:48 | |
| 4 | 08:44 | 08:13 | 07:18 | | 07:08 | 18:55-19:26/31 | 06:04 | 19:26-19:54/28 | 05:23 | 20:14-20:29/15 |
| | 16:40 | 17:30 | 18:21 | | 20:15 | | 21:05 | | 21:49 | |
| 5 | 08:44 | 08:12 | 07:16 | | 07:05 | 18:55-19:26/31 | 06:03 | 19:26-19:54/28 | 05:22 | 20:13-20:29/16 |
| | 16:41 | 17:32 | 18:23 | | 20:16 | | 21:07 | | 21:50 | |
| 6 | 08:44 | 08:10 | 07:14 | | 07:03 | 18:55-19:27/32 | 06:01 | 19:27-19:54/27 | 05:22 | 20:13-20:31/18 |
| | 16:43 | 17:34 | 18:25 | | 20:18 | | 21:08 | | 21:51 | |
| 7 | 08:43 | 08:08 | 07:12 | | 07:01 | 18:55-19:27/32 | 05:59 | 19:26-19:54/28 | 05:21 | 20:12-20:31/19 |
| | 16:44 | 17:36 | 18:27 | | 20:20 | | 21:10 | | 21:52 | |
| 8 | 08:43 | 08:07 | 07:09 | | 06:59 | 18:54-19:26/32 | 05:57 | 19:26-19:53/27 | 05:20 | 20:12-20:32/20 |
| | 16:45 | 17:37 | 18:28 | | 20:21 | | 21:12 | | 21:53 | |
| 9 | 08:42 | 08:05 | 07:07 | | 06:56 | 18:54-19:29/35 | 05:56 | 19:27-19:54/27 | 05:20 | 20:12-20:32/20 |
| | 16:47 | 17:39 | 18:30 | | 20:23 | | 21:13 | | 21:53 | |
| 10 | 08:42 | 08:03 | 07:05 | | 06:54 | 18:54-19:30/36 | 05:54 | 19:27-19:53/26 | 05:19 | 20:12-20:33/21 |
| | 16:48 | 17:41 | 18:32 | | 20:25 | | 21:15 | | 21:54 | |
| 11 | 08:41 | 08:01 | 07:03 | | 06:52 | 18:55-19:32/37 | 05:52 | 19:28-19:53/25 | 05:19 | 20:12-20:34/22 |
| | 16:49 | 17:43 | 18:34 | | 20:27 | | 21:17 | | 21:55 | |
| 12 | 08:41 | 07:59 | 07:00 | | 06:50 | 18:55-19:33/38 | 05:50 | 19:28-19:52/24 | 05:19 | 20:11-20:33/22 |
| | 16:51 | 17:45 | 18:35 | | 20:28 | | 21:18 | | 21:56 | |
| 13 | 08:40 | 07:57 | 06:58 | | 06:48 | 18:55-19:32/37 | 05:49 | 19:29-19:52/23 | 05:19 | 20:11-20:34/23 |
| | 16:52 | 17:47 | 18:37 | | 20:30 | | 21:20 | | 21:56 | |
| 14 | 08:39 | 07:56 | 06:56 | | 06:45 | 18:56-19:33/37 | 05:47 | 19:29-19:51/22 | 05:18 | 20:11-20:35/24 |
| | 16:54 | 17:49 | 18:39 | | 20:32 | | 21:21 | | 21:57 | |
| 15 | 08:38 | 07:54 | 06:54 | | 06:43 | 18:57-19:34/37 | 05:46 | 19:30-19:51/21 | 05:18 | 20:12-20:35/23 |
| | 16:55 | 17:50 | 18:41 | | 20:33 | | 21:23 | | 21:58 | |
| 16 | 08:38 | 07:52 | 06:51 | | 06:41 | 18:58-19:35/37 | 05:44 | 19:30-19:49/19 | 05:18 | 20:12-20:36/24 |
| | 16:57 | 17:52 | 18:42 | | 20:35 | | 21:24 | | 21:58 | |
| 17 | 08:37 | 07:50 | 06:49 | | 06:39 | 19:00-19:36/36 | 05:43 | 19:32-19:48/16 | 05:18 | 20:12-20:36/24 |
| | 16:59 | 17:54 | 18:44 | | 20:37 | | 21:26 | | 21:59 | |
| 18 | 08:36 | 07:48 | 06:47 | | 06:37 | 19:04-19:36/32 | 05:41 | 19:34-19:47/13 | 05:18 | 20:12-20:36/24 |
| | 17:00 | 17:56 | 18:46 | | 20:38 | | 21:27 | | 21:59 | |
| 19 | 08:35 | 07:46 | 06:44 | | 06:34 | 19:04-19:37/33 | 05:40 | 19:35-19:45/10 | 05:18 | 20:12-20:36/24 |
| | 17:02 | 17:58 | 18:47 | | 20:40 | | 21:29 | | 21:59 | |
| 20 | 08:34 | 07:44 | 06:42 | | 06:32 | 19:04-19:37/33 | 05:39 | 19:39-19:41/2 | 05:18 | 20:12-20:36/24 |
| | 17:03 | 18:00 | 18:49 | | 20:42 | | 21:30 | | 22:00 | |
| 21 | 08:33 | 07:42 | 06:40 | | 06:30 | 19:05-19:37/32 | 05:37 | | 05:18 | 20:12-20:36/24 |
| | 17:05 | 18:01 | 18:51 | | 20:43 | | 21:32 | | 22:00 | |
| 22 | 08:31 | 07:40 | 06:38 | 18:05-18:10/5 | 06:28 | 19:05-19:37/32 | 05:36 | | 05:18 | 20:13-20:37/24 |
| | 17:07 | 18:03 | 18:53 | | 20:45 | | 21:33 | | 22:00 | |
| 23 | 08:30 | 07:38 | 06:35 | 18:02-18:13/11 | 06:26 | 19:06-19:36/30 | 05:35 | | 05:19 | 20:13-20:37/24 |
| | 17:09 | 18:05 | 18:54 | | 20:47 | | 21:34 | | 22:00 | |
| 24 | 08:29 | 07:36 | 06:33 | 17:59-18:14/15 | 06:24 | 19:07-19:45/38 | 05:33 | | 05:19 | 20:13-20:37/24 |
| | 17:10 | 18:07 | 18:56 | | 20:48 | | 21:36 | | 22:00 | |
| 25 | 08:28 | 07:33 | 06:31 | 17:58-18:15/17 | 06:22 | 19:08-19:47/39 | 05:32 | | 05:19 | 20:14-20:38/24 |
| | 17:12 | 18:09 | 18:58 | | 20:50 | | 21:37 | | 22:00 | |
| 26 | 08:27 | 07:31 | 06:28 | 17:57-18:16/19 | 06:20 | 19:10-19:48/38 | 05:31 | | 05:20 | 20:14-20:38/24 |
| | 17:14 | 18:11 | 18:59 | | 20:52 | | 21:38 | | 22:00 | |
| 27 | 08:25 | 07:29 | 06:26 | 17:57-18:17/20 | 06:18 | 19:13-19:49/36 | 05:30 | | 05:20 | 20:15-20:38/23 |
| | 17:16 | 18:12 | 19:01 | | 20:54 | | 21:40 | | 22:00 | |
| 28 | 08:24 | 07:27 | 06:24 | 17:56-18:18/22 | 06:16 | 19:14-19:50/36 | 05:29 | | 05:21 | 20:14-20:38/24 |
| | 17:17 | 18:14 | 19:03 | | 20:55 | | 21:41 | | 22:00 | |
| 29 | 08:22 | | 07:21 | 18:56-19:19/23 | 06:14 | 19:15-19:51/36 | 05:28 | | 05:21 | 20:15-20:38/23 |
| | 17:19 | | 20:05 | | 20:57 | | 21:42 | | 22:00 | |
| 30 | 08:21 | | 07:19 | 18:57-19:20/23 | 06:12 | 19:17-19:52/35 | 05:27 | | 05:22 | 20:15-20:38/23 |
| | 17:21 | | 20:06 | | 20:59 | | 21:43 | | 22:00 | |
| 31 | 08:20 | | 07:17 | 18:57-19:21/24 | | | 05:26 | | | |
| | 17:23 | | 20:08 | | | | 21:45 | | | |
| Potential sun hours | 260 | 278 | 367 | | 416 | | 485 | | 498 | |
| Sum of minutes with flicker | 0 | 0 | 179 | | 1022 | | 446 | | 626 | |

**Table layout: For each day in each month the following matrix apply**

| | | |
|---|---|---|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |
| | Sun set (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |

Licensed user:
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kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar per WTG

**Calculation:** 6460 Gortloughra WF only WC **WTG:** 5 - T06

## Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | July | | August | | September | | October | November | December |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 05:22 | 20:16-20:38/22 | 05:59 | 19:38-20:03/25 | 06:48 | 18:54-19:31/37 | 07:37 | 07:30 | 08:21 |
| | 22:00 | | 21:28 | | 20:26 | | 19:17 | 17:11 | 16:31 |
| 2 | 05:23 | 20:16-20:37/21 | 06:00 | 19:38-20:04/26 | 06:50 | 18:52-19:28/36 | 07:38 | 07:32 | 08:22 |
| | 21:59 | | 21:26 | | 20:24 | | 19:15 | 17:09 | 16:30 |
| 3 | 05:24 | 20:17-20:37/20 | 06:02 | 19:37-20:04/27 | 06:51 | 18:52-19:27/35 | 07:40 | 07:34 | 08:24 |
| | 21:59 | | 21:25 | | 20:22 | | 19:12 | 17:08 | 16:30 |
| 4 | 05:24 | 20:17-20:37/20 | 06:03 | 19:36-20:03/27 | 06:53 | 18:51-19:25/34 | 07:42 | 07:36 | 08:25 |
| | 21:58 | | 21:23 | | 20:19 | | 19:10 | 17:06 | 16:29 |
| 5 | 05:25 | 20:18-20:37/19 | 06:05 | 19:37-20:04/27 | 06:54 | 18:51-19:23/32 | 07:43 | 07:37 | 08:26 |
| | 21:58 | | 21:21 | | 20:17 | | 19:08 | 17:04 | 16:29 |
| 6 | 05:26 | 20:18-20:36/18 | 06:06 | 19:36-20:03/27 | 06:56 | 18:51-19:23/32 | 07:45 | 07:39 | 08:28 |
| | 21:57 | | 21:19 | | 20:15 | | 19:06 | 17:02 | 16:28 |
| 7 | 05:27 | 20:19-20:36/17 | 06:08 | 19:36-20:04/28 | 06:58 | 18:50-19:22/32 | 07:47 | 07:41 | 08:29 |
| | 21:57 | | 21:18 | | 20:13 | | 19:03 | 17:01 | 16:28 |
| 8 | 05:28 | 20:20-20:35/15 | 06:09 | 19:36-20:03/27 | 06:59 | 18:50-19:21/31 | 07:48 | 07:43 | 08:30 |
| | 21:56 | | 21:16 | | 20:10 | | 19:01 | 16:59 | 16:28 |
| 9 | 05:29 | 20:21-20:35/14 | 06:11 | 19:36-20:03/27 | 07:01 | 18:49-19:19/30 | 07:50 | 07:44 | 08:31 |
| | 21:56 | | 21:14 | | 20:08 | | 18:59 | 16:57 | 16:27 |
| 10 | 05:30 | 20:23-20:34/11 | 06:13 | 19:35-20:02/27 | 07:03 | 18:50-19:18/28 | 07:52 | 07:46 | 08:32 |
| | 21:55 | | 21:12 | | 20:06 | | 18:57 | 16:56 | 16:27 |
| 11 | 05:31 | 20:25-20:32/7 | 06:14 | 19:36-20:02/26 | 07:04 | 18:50-19:16/26 | 07:53 | 07:48 | 08:33 |
| | 21:54 | | 21:10 | | 20:03 | | 18:54 | 16:54 | 16:27 |
| 12 | 05:32 | | 06:16 | 19:35-20:01/26 | 07:06 | 18:49-19:14/25 | 07:55 | 07:50 | 08:35 |
| | 21:53 | | 21:08 | 19:29-19:32/3 | 20:01 | | 18:52 | 16:53 | 16:27 |
| 13 | 05:33 | | 06:17 | 19:25-20:00/35 | 07:07 | 18:47-19:11/24 | 07:57 | 07:52 | 08:36 |
| | 21:52 | | 21:06 | | 19:59 | | 18:50 | 16:51 | 16:27 |
| 14 | 05:34 | | 06:19 | 19:23-19:58/35 | 07:09 | 18:47-19:09/22 | 07:59 | 07:53 | 08:36 |
| | 21:51 | | 21:04 | | 19:56 | | 18:48 | 16:50 | 16:27 |
| 15 | 05:35 | | 06:21 | 19:21-19:57/36 | 07:11 | 18:46-19:09/23 | 08:00 | 07:55 | 08:37 |
| | 21:51 | | 21:02 | | 19:54 | | 18:46 | 16:48 | 16:27 |
| 16 | 05:36 | | 06:22 | 19:18-19:56/38 | 07:12 | 18:45-19:06/21 | 08:02 | 07:57 | 08:38 |
| | 21:50 | | 21:00 | | 19:52 | | 18:43 | 16:47 | 16:27 |
| 17 | 05:38 | | 06:24 | 19:16-19:55/39 | 07:14 | 18:46-19:05/19 | 08:04 | 07:58 | 08:39 |
| | 21:48 | | 20:58 | | 19:49 | | 18:41 | 16:45 | 16:27 |
| 18 | 05:39 | | 06:25 | 19:13-19:52/39 | 07:15 | 18:45-19:03/18 | 08:05 | 08:00 | 08:40 |
| | 21:47 | | 20:56 | | 19:47 | | 18:39 | 16:44 | 16:27 |
| 19 | 05:40 | | 06:27 | 19:12-19:50/38 | 07:17 | 18:46-19:01/15 | 08:07 | 08:02 | 08:40 |
| | 21:46 | | 20:54 | | 19:45 | | 18:37 | 16:43 | 16:28 |
| 20 | 05:42 | | 06:29 | 19:10-19:41/31 | 07:19 | 18:48-19:00/12 | 08:09 | 08:04 | 08:41 |
| | 21:45 | | 20:52 | | 19:42 | | 18:35 | 16:42 | 16:28 |
| 21 | 05:43 | | 06:30 | 19:10-19:41/31 | 07:20 | 18:49-18:56/7 | 08:11 | 08:05 | 08:42 |
| | 21:44 | | 20:50 | | 19:40 | | 18:33 | 16:40 | 16:29 |
| 22 | 05:44 | | 06:32 | 19:08-19:41/33 | 07:22 | | 08:12 | 08:07 | 08:42 |
| | 21:43 | | 20:48 | | 19:38 | | 18:31 | 16:39 | 16:29 |
| 23 | 05:46 | | 06:33 | 19:08-19:41/33 | 07:24 | | 08:14 | 08:09 | 08:43 |
| | 21:41 | | 20:46 | | 19:35 | | 18:29 | 16:38 | 16:30 |
| 24 | 05:47 | 19:47-19:54/7 | 06:35 | 19:08-19:41/33 | 07:25 | | 08:16 | 08:10 | 08:43 |
| | 21:40 | | 20:44 | | 19:33 | | 18:27 | 16:37 | 16:30 |
| 25 | 05:48 | 19:44-19:56/12 | 06:37 | 19:07-19:39/32 | 07:27 | | 07:18 | 08:12 | 08:44 |
| | 21:39 | | 20:42 | | 19:31 | | 17:25 | 16:36 | 16:31 |
| 26 | 05:50 | 19:44-19:58/14 | 06:38 | 19:03-19:39/36 | 07:28 | | 07:19 | 08:13 | 08:44 |
| | 21:37 | | 20:39 | | 19:29 | | 17:23 | 16:35 | 16:31 |
| 27 | 05:51 | 19:42-19:59/17 | 06:40 | 19:00-19:37/37 | 07:30 | | 07:21 | 08:15 | 08:44 |
| | 21:36 | | 20:37 | | 19:26 | | 17:21 | 16:34 | 16:32 |
| 28 | 05:53 | 19:41-20:01/20 | 06:42 | 18:58-19:36/38 | 07:32 | | 07:23 | 08:16 | 08:44 |
| | 21:34 | | 20:35 | | 19:24 | | 17:19 | 16:33 | 16:33 |
| 29 | 05:54 | 19:40-20:01/21 | 06:43 | 18:56-19:34/38 | 07:33 | | 07:25 | 08:18 | 08:45 |
| | 21:33 | | 20:33 | | 19:22 | | 17:17 | 16:33 | 16:34 |
| 30 | 05:56 | 19:39-20:02/23 | 06:45 | 18:56-19:33/37 | 07:35 | | 07:27 | 08:19 | 08:45 |
| | 21:31 | | 20:31 | | 19:19 | | 17:15 | 16:32 | 16:35 |
| 31 | 05:57 | 19:39-20:03/24 | 06:46 | 18:54-19:31/37 | | | 07:28 | | 08:45 |
| | 21:30 | | 20:28 | | | | 17:13 | | 16:36 |
| Potential sun hours | 501 | | 453 | | 381 | | 332 | 267 | 244 |
| Sum of minutes with flicker | | 322 | | 999 | | 539 | 0 | 0 | 0 |

**Table layout: For each day in each month the following matrix apply**

| | | |
|---|---|---|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |
| | Sun set (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |

Licensed user:
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+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar per WTG

**Calculation:** 6460 Gortloughra WF only WC **WTG:** 6 - T07

## Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | March | April | | May | | June | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | 07:25 | 07:15 | | 06:10 | 06:51-07:22/31 | 05:25 | 06:32-06:35/3 |
| | 16:37 | 17:25 | 18:16 | 20:10 | | 21:00 | | 21:46 | |
| 2 | 08:45 | 08:17 | 07:23 | 07:12 | | 06:08 | 06:50-07:20/30 | 05:24 | |
| | 16:38 | 17:27 | 18:18 | 20:11 | | 21:02 | | 21:47 | |
| 3 | 08:44 | 08:15 | 07:21 | 07:10 | | 06:06 | 06:49-07:19/30 | 05:24 | |
| | 16:39 | 17:28 | 18:20 | 20:13 | | 21:04 | | 21:48 | |
| 4 | 08:44 | 08:13 | 07:18 | 07:08 | | 06:05 | 06:49-07:18/29 | 05:23 | |
| | 16:40 | 17:30 | 18:21 | 20:15 | | 21:05 | | 21:49 | |
| 5 | 08:44 | 08:12 | 07:16 | 07:06 | | 06:03 | 06:50-07:19/29 | 05:22 | |
| | 16:42 | 17:32 | 18:23 | 20:16 | | 21:07 | | 21:50 | |
| 6 | 08:44 | 08:10 | 07:14 | 07:03 | | 06:01 | 06:49-07:18/29 | 05:22 | |
| | 16:43 | 17:34 | 18:25 | 20:18 | | 21:09 | | 21:51 | |
| 7 | 08:43 | 08:08 | 07:12 | 07:01 | | 05:59 | 06:49-07:18/29 | 05:21 | |
| | 16:44 | 17:36 | 18:27 | 20:20 | | 21:10 | | 21:52 | |
| 8 | 08:43 | 08:07 | 07:10 | 06:59 | | 05:57 | 06:50-07:18/28 | 05:21 | |
| | 16:45 | 17:38 | 18:28 | 20:22 | | 21:12 | | 21:53 | |
| 9 | 08:42 | 08:05 | 07:07 | 06:57 | 19:23-19:27/4 | 05:56 | 06:28-06:36/8 | 05:20 | |
| | 16:47 | 17:39 | 18:30 | 20:23 | | 21:13 | 06:50-07:17/27 | 21:54 | |
| 10 | 08:42 | 08:03 | 07:05 | 06:54 | 19:19-19:30/11 | 05:54 | 06:26-06:38/12 | 05:20 | |
| | 16:48 | 17:41 | 18:32 | 20:25 | | 21:15 | 06:50-07:16/26 | 21:54 | |
| 11 | 08:41 | 08:01 | 07:03 | 06:52 | 19:17-19:32/15 | 05:52 | 06:25-06:40/15 | 05:19 | |
| | 16:50 | 17:43 | 18:34 | 20:27 | | 21:17 | 06:51-07:16/25 | 21:55 | |
| 12 | 08:41 | 07:59 | 07:01 | 06:50 | 19:16-19:33/17 | 05:51 | 06:24-06:40/16 | 05:19 | |
| | 16:51 | 17:45 | 18:35 | 20:28 | | 21:18 | 06:51-07:15/24 | 21:56 | |
| 13 | 08:40 | 07:57 | 06:58 | 06:48 | 19:14-19:37/23 | 05:49 | 06:23-06:41/18 | 05:19 | |
| | 16:52 | 17:47 | 18:37 | 20:30 | | 21:20 | 06:52-07:14/22 | 21:56 | |
| 14 | 08:39 | 07:56 | 06:56 | 06:45 | 19:14-19:39/25 | 05:47 | 06:22-06:41/19 | 05:18 | |
| | 16:54 | 17:49 | 18:39 | 20:32 | | 21:21 | 06:53-07:13/20 | 21:57 | |
| 15 | 08:38 | 07:54 | 06:54 | 06:43 | 19:13-19:40/27 | 05:46 | 06:22-06:42/20 | 05:18 | |
| | 16:56 | 17:51 | 18:41 | 20:33 | | 21:23 | 06:54-07:12/18 | 21:58 | |
| 16 | 08:38 | 07:52 | 06:51 | 06:41 | 19:13-19:41/28 | 05:44 | 06:22-06:43/21 | 05:18 | |
| | 16:57 | 17:52 | 18:42 | 20:35 | | 21:24 | 06:56-07:11/15 | 21:58 | |
| 17 | 08:37 | 07:50 | 06:49 | 06:39 | 19:13-19:41/28 | 05:43 | 06:21-06:42/21 | 05:18 | |
| | 16:59 | 17:54 | 18:44 | 20:37 | | 21:26 | 06:57-07:08/11 | 21:59 | |
| 18 | 08:36 | 07:48 | 06:47 | 06:37 | 07:10-07:20/10 | 05:41 | 06:22-06:43/21 | 05:18 | |
| | 17:00 | 17:56 | 18:46 | 20:38 | 19:14-19:41/27 | 21:27 | 07:01-07:05/4 | 21:59 | |
| 19 | 08:35 | 07:46 | 06:45 | 06:35 | 07:08-07:22/14 | 05:40 | 06:22-06:43/21 | 05:18 | |
| | 17:02 | 17:58 | 18:48 | 20:40 | 19:14-19:41/27 | 21:29 | | 21:59 | |
| 20 | 08:34 | 07:44 | 06:42 | 06:32 | 07:06-07:24/18 | 05:39 | 06:22-06:43/21 | 05:18 | |
| | 17:04 | 18:00 | 18:49 | 20:42 | 19:15-19:41/26 | 21:30 | | 22:00 | |
| 21 | 08:33 | 07:42 | 06:40 | 06:30 | 07:05-07:24/19 | 05:37 | 06:22-06:42/20 | 05:18 | |
| | 17:05 | 18:02 | 18:51 | 20:44 | 19:16-19:40/24 | 21:32 | | 22:00 | |
| 22 | 08:32 | 07:40 | 06:38 | 06:28 | 07:04-07:25/21 | 05:36 | 06:22-06:42/20 | 05:18 | |
| | 17:07 | 18:03 | 18:53 | 20:45 | 19:18-19:40/22 | 21:33 | | 22:00 | |
| 23 | 08:30 | 07:38 | 06:35 | 06:26 | 07:03-07:25/22 | 05:35 | 06:23-06:42/19 | 05:19 | |
| | 17:09 | 18:05 | 18:54 | 20:47 | 19:24-19:38/14 | 21:34 | | 22:00 | |
| 24 | 08:29 | 07:36 | 06:33 | 06:24 | 07:00-07:25/25 | 05:34 | 06:23-06:42/19 | 05:19 | |
| | 17:10 | 18:07 | 18:56 | 20:49 | 19:25-19:37/12 | 21:36 | | 22:00 | |
| 25 | 08:28 | 07:33 | 06:31 | 06:22 | 06:57-07:25/28 | 05:32 | 06:24-06:41/17 | 05:19 | |
| | 17:12 | 18:09 | 18:58 | 20:50 | 19:27-19:35/8 | 21:37 | | 22:00 | |
| 26 | 08:27 | 07:31 | 06:28 | 06:20 | 06:55-07:25/30 | 05:31 | 06:25-06:41/16 | 05:20 | |
| | 17:14 | 18:11 | 18:59 | 20:52 | | 21:38 | | 22:00 | |
| 27 | 08:25 | 07:29 | 06:26 | 06:18 | 06:54-07:24/30 | 05:30 | 06:25-06:40/15 | 05:20 | |
| | 17:16 | 18:12 | 19:01 | 20:54 | | 21:40 | | 22:00 | |
| 28 | 08:24 | 07:27 | 06:24 | 06:16 | 06:52-07:24/32 | 05:29 | 06:26-06:40/14 | 05:21 | |
| | 17:17 | 18:14 | 19:03 | 20:55 | | 21:41 | | 22:00 | |
| 29 | 08:22 | | 07:22 | 06:14 | 06:51-07:23/32 | 05:28 | 06:27-06:39/12 | 05:21 | |
| | 17:19 | | 20:05 | 20:57 | | 21:42 | | 22:00 | |
| 30 | 08:21 | | 07:19 | 06:12 | 06:50-07:22/32 | 05:27 | 06:28-06:38/10 | 05:22 | |
| | 17:21 | | 20:06 | 20:59 | | 21:43 | | 22:00 | |
| 31 | 08:20 | | 07:17 | | | 05:26 | 06:30-06:37/7 | | |
| | 17:23 | | 20:08 | | | 21:45 | | | |
| Potential sun hours | 260 | 278 | 367 | 416 | | 485 | | 498 | |
| Sum of minutes with flicker | 0 | 0 | 0 | 651 | | 809 | | 3 | |

**Table layout: For each day in each month the following matrix apply**

| | | |
|---|---|---|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |
| | Sun set (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |

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Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar per WTG

**Calculation:** 6460 Gortloughra WF only WC **WTG:** 6 - T07

## Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | July | | August | | September | | October | November | December |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 05:22 | | 05:59 | 06:34-06:50/16 | 06:48 | 19:16-19:31/15 | 07:37 | 07:30 | 08:21 |
| | 22:00 | | 21:28 | 07:01-07:26/25 | 20:26 | | 19:17 | 17:11 | 16:31 |
| 2 | 05:23 | | 06:00 | 06:36-06:50/14 | 06:50 | 19:17-19:28/11 | 07:38 | 07:32 | 08:22 |
| | 21:59 | | 21:26 | 07:01-07:27/26 | 20:24 | | 19:15 | 17:09 | 16:31 |
| 3 | 05:24 | | 06:02 | 06:37-06:48/11 | 06:51 | 19:21-19:25/4 | 07:40 | 07:34 | 08:24 |
| | 21:59 | | 21:25 | 07:00-07:27/27 | 20:22 | | 19:12 | 17:08 | 16:30 |
| 4 | 05:25 | | 06:03 | 06:40-06:46/6 | 06:53 | | 07:42 | 07:36 | 08:25 |
| | 21:58 | | 21:23 | 07:00-07:28/28 | 20:19 | | 19:10 | 17:06 | 16:29 |
| 5 | 05:25 | | 06:05 | 06:59-07:28/29 | 06:55 | | 07:43 | 07:37 | 08:26 |
| | 21:58 | | 21:21 | | 20:17 | | 19:08 | 17:04 | 16:29 |
| 6 | 05:26 | | 06:06 | 06:59-07:28/29 | 06:56 | | 07:45 | 07:39 | 08:28 |
| | 21:57 | | 21:19 | | 20:15 | | 19:06 | 17:02 | 16:29 |
| 7 | 05:27 | | 06:08 | 06:59-07:28/29 | 06:58 | | 07:47 | 07:41 | 08:29 |
| | 21:57 | | 21:18 | | 20:13 | | 19:03 | 17:01 | 16:28 |
| 8 | 05:28 | | 06:10 | 06:59-07:28/29 | 06:59 | | 07:48 | 07:43 | 08:30 |
| | 21:56 | | 21:16 | | 20:10 | | 19:01 | 16:59 | 16:28 |
| 9 | 05:29 | | 06:11 | 06:59-07:28/29 | 07:01 | | 07:50 | 07:45 | 08:31 |
| | 21:56 | | 21:14 | | 20:08 | | 18:59 | 16:57 | 16:28 |
| 10 | 05:30 | | 06:13 | 06:59-07:28/29 | 07:03 | | 07:52 | 07:46 | 08:32 |
| | 21:55 | | 21:12 | | 20:06 | | 18:57 | 16:56 | 16:27 |
| 11 | 05:31 | | 06:14 | 06:59-07:29/30 | 07:04 | | 07:54 | 07:48 | 08:34 |
| | 21:54 | | 21:10 | | 20:03 | | 18:54 | 16:54 | 16:27 |
| 12 | 05:32 | 06:38-06:44/6 | 06:16 | 06:59-07:31/32 | 07:06 | | 07:55 | 07:50 | 08:35 |
| | 21:53 | | 21:08 | | 20:01 | | 18:52 | 16:53 | 16:27 |
| 13 | 05:33 | 06:37-06:46/9 | 06:17 | 06:59-07:31/32 | 07:07 | | 07:57 | 07:52 | 08:36 |
| | 21:52 | | 21:06 | | 19:59 | | 18:50 | 16:51 | 16:27 |
| 14 | 05:34 | 06:36-06:47/11 | 06:19 | 07:00-07:32/32 | 07:09 | | 07:59 | 07:53 | 08:36 |
| | 21:52 | | 21:04 | | 19:57 | | 18:48 | 16:50 | 16:27 |
| 15 | 05:35 | 06:36-06:49/13 | 06:21 | 07:00-07:32/32 | 07:11 | | 08:00 | 07:55 | 08:37 |
| | 21:51 | | 21:02 | | 19:54 | | 18:46 | 16:48 | 16:27 |
| 16 | 05:37 | 06:35-06:50/15 | 06:22 | 07:02-07:32/30 | 07:12 | | 08:02 | 07:57 | 08:38 |
| | 21:50 | | 21:00 | | 19:52 | | 18:44 | 16:47 | 16:27 |
| 17 | 05:38 | 06:34-06:50/16 | 06:24 | 07:02-07:32/30 | 07:14 | | 08:04 | 07:59 | 08:39 |
| | 21:48 | | 20:58 | | 19:50 | | 18:41 | 16:46 | 16:27 |
| 18 | 05:39 | 06:34-06:51/17 | 06:26 | 07:04-07:32/28 | 07:16 | | 08:06 | 08:00 | 08:40 |
| | 21:47 | | 20:56 | 19:32-19:41/9 | 19:47 | | 18:39 | 16:44 | 16:28 |
| 19 | 05:40 | 06:33-06:51/18 | 06:27 | 07:06-07:31/25 | 07:17 | | 08:07 | 08:02 | 08:40 |
| | 21:46 | | 20:54 | 19:30-19:43/13 | 19:45 | | 18:37 | 16:43 | 16:28 |
| 20 | 05:42 | 06:33-06:51/18 | 06:29 | 07:09-07:31/22 | 07:19 | | 08:09 | 08:04 | 08:41 |
| | 21:45 | | 20:52 | 19:28-19:43/15 | 19:43 | | 18:35 | 16:42 | 16:28 |
| 21 | 05:43 | 06:33-06:53/20 | 06:30 | 07:09-07:29/20 | 07:20 | | 08:11 | 08:05 | 08:42 |
| | 21:44 | | 20:50 | 19:23-19:44/21 | 19:40 | | 18:33 | 16:41 | 16:29 |
| 22 | 05:44 | 06:33-06:53/20 | 06:32 | 07:10-07:29/19 | 07:22 | | 08:12 | 08:07 | 08:42 |
| | 21:43 | | 20:48 | 19:21-19:45/24 | 19:38 | | 18:31 | 16:39 | 16:29 |
| 23 | 05:46 | 06:32-06:53/21 | 06:34 | 07:10-07:27/17 | 07:24 | | 08:14 | 08:09 | 08:43 |
| | 21:41 | | 20:46 | 19:19-19:45/26 | 19:36 | | 18:29 | 16:38 | 16:30 |
| 24 | 05:47 | 06:32-06:53/21 | 06:35 | 07:12-07:26/14 | 07:25 | | 08:16 | 08:10 | 08:43 |
| | 21:40 | | 20:44 | 19:18-19:45/27 | 19:33 | | 18:27 | 16:37 | 16:30 |
| 25 | 05:48 | 06:32-06:53/21 | 06:37 | 07:13-07:23/10 | 07:27 | | 07:18 | 08:12 | 08:44 |
| | 21:39 | | 20:42 | 19:16-19:44/28 | 19:31 | | 17:25 | 16:36 | 16:31 |
| 26 | 05:50 | 06:32-06:53/21 | 06:38 | 19:16-19:44/28 | 07:29 | | 07:20 | 08:13 | 08:44 |
| | 21:37 | 07:10-07:18/8 | 20:39 | | 19:29 | | 17:23 | 16:35 | 16:32 |
| 27 | 05:51 | 06:32-06:53/21 | 06:40 | 19:15-19:43/28 | 07:30 | | 07:21 | 08:15 | 08:44 |
| | 21:36 | 07:07-07:20/13 | 20:37 | | 19:26 | | 17:21 | 16:34 | 16:32 |
| 28 | 05:53 | 06:33-06:53/20 | 06:42 | 19:15-19:42/27 | 07:32 | | 07:23 | 08:16 | 08:44 |
| | 21:34 | 07:06-07:22/16 | 20:35 | | 19:24 | | 17:19 | 16:34 | 16:33 |
| 29 | 05:54 | 06:33-06:52/19 | 06:43 | 19:15-19:40/25 | 07:33 | | 07:25 | 08:18 | 08:45 |
| | 21:33 | 07:04-07:23/19 | 20:33 | | 19:22 | | 17:17 | 16:33 | 16:34 |
| 30 | 05:56 | 06:34-06:52/18 | 06:45 | 19:15-19:38/23 | 07:35 | | 07:27 | 08:19 | 08:45 |
| | 21:31 | 07:04-07:25/21 | 20:31 | | 19:19 | | 17:15 | 16:32 | 16:35 |
| 31 | 05:57 | 06:34-06:51/17 | 06:47 | 19:15-19:32/17 | | | 07:28 | | 08:45 |
| | 21:30 | 07:02-07:25/23 | 20:28 | | | | 17:13 | | 16:36 |
| Potential sun hours | 501 | | 453 | | 381 | | 332 | 267 | 244 |
| Sum of minutes with flicker | | 442 | | 1011 | | 30 | 0 | 0 | 0 |

**Table layout: For each day in each month the following matrix apply**

| | | |
|---|---|---|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |
| | Sun set (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |

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Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar per WTG

**Calculation:** 6460 Gortloughra WF only WC **WTG:** 7 - T08

**Assumptions for shadow calculations**

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | | March | | April | | May | | June | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | | 07:25 | 16:49-17:17/28 | 07:15 | | 06:10 | 19:01-19:19/18 | 05:25 | 19:23-19:32/9 |
| | 16:37 | 17:25 | | 18:16 | | 20:10 | | 21:00 | | 21:46 | |
| 2 | 08:45 | 08:16 | | 07:23 | 16:49-17:20/31 | 07:12 | | 06:08 | 19:01-19:21/20 | 05:24 | 19:25-19:30/5 |
| | 16:38 | 17:27 | | 18:18 | | 20:11 | | 21:02 | | 21:47 | |
| 3 | 08:44 | 08:15 | | 07:21 | 16:49-17:21/32 | 07:10 | | 06:06 | 19:24-19:27/3 | 05:24 | |
| | 16:39 | 17:28 | | 18:20 | | 20:13 | | 21:04 | 18:59-19:22/23 | 21:48 | |
| 4 | 08:44 | 08:13 | | 07:18 | 16:49-17:22/33 | 07:08 | | 06:05 | 18:58-19:31/33 | 05:23 | |
| | 16:40 | 17:30 | | 18:21 | | 20:15 | | 21:05 | | 21:49 | |
| 5 | 08:44 | 08:12 | | 07:16 | 16:49-17:23/34 | 07:06 | | 06:03 | 18:57-19:32/35 | 05:22 | |
| | 16:42 | 17:32 | | 18:23 | | 20:16 | | 21:07 | | 21:50 | |
| 6 | 08:44 | 08:10 | | 07:14 | 16:50-17:24/34 | 07:03 | | 06:01 | 18:57-19:35/38 | 05:22 | |
| | 16:43 | 17:34 | | 18:25 | | 20:18 | | 21:08 | | 21:51 | |
| 7 | 08:43 | 08:08 | | 07:12 | 16:51-17:25/34 | 07:01 | | 05:59 | 18:56-19:35/39 | 05:21 | |
| | 16:44 | 17:36 | | 18:27 | | 20:20 | | 21:10 | | 21:52 | |
| 8 | 08:43 | 08:07 | | 07:10 | 16:52-17:26/34 | 06:59 | | 05:57 | 18:55-19:36/41 | 05:21 | |
| | 16:45 | 17:38 | | 18:28 | | 20:21 | | 21:12 | | 21:53 | |
| 9 | 08:42 | 08:05 | | 07:07 | 16:53-17:27/34 | 06:56 | | 05:56 | 18:55-19:37/42 | 05:20 | |
| | 16:47 | 17:39 | | 18:30 | | 20:23 | | 21:13 | | 21:53 | |
| 10 | 08:42 | 08:03 | | 07:05 | 16:58-17:28/30 | 06:54 | | 05:54 | 18:55-19:37/42 | 05:20 | |
| | 16:48 | 17:41 | | 18:32 | | 20:25 | | 21:15 | | 21:54 | |
| 11 | 08:41 | 08:01 | | 07:03 | 17:02-17:29/27 | 06:52 | | 05:52 | 18:55-19:38/43 | 05:19 | |
| | 16:50 | 17:43 | | 18:34 | | 20:27 | | 21:17 | | 21:55 | |
| 12 | 08:41 | 07:59 | | 07:01 | 17:04-17:29/25 | 06:50 | 19:00-19:08/8 | 05:51 | 18:55-19:38/43 | 05:19 | |
| | 16:51 | 17:45 | | 18:35 | | 20:28 | | 21:18 | | 21:56 | |
| 13 | 08:40 | 07:57 | | 06:58 | 17:04-17:30/26 | 06:48 | 18:56-19:10/14 | 05:49 | 18:55-19:39/44 | 05:19 | |
| | 16:52 | 17:47 | | 18:37 | | 20:30 | | 21:20 | | 21:56 | |
| 14 | 08:39 | 07:56 | | 06:56 | 17:05-17:31/26 | 06:45 | 18:54-19:12/18 | 05:47 | 18:55-19:38/43 | 05:18 | |
| | 16:54 | 17:49 | | 18:39 | | 20:32 | | 21:21 | | 21:57 | |
| 15 | 08:38 | 07:54 | | 06:54 | 17:06-17:31/25 | 06:43 | 18:53-19:13/20 | 05:46 | 18:56-19:39/43 | 05:18 | |
| | 16:55 | 17:51 | | 18:41 | | 20:33 | | 21:23 | | 21:58 | |
| 16 | 08:38 | 07:52 | | 06:51 | 17:08-17:31/23 | 06:41 | 18:52-19:14/22 | 05:44 | 18:56-19:38/42 | 05:18 | |
| | 16:57 | 17:52 | | 18:42 | | 20:35 | | 21:24 | | 21:58 | |
| 17 | 08:37 | 07:50 | | 06:49 | 17:10-17:32/22 | 06:39 | 18:51-19:14/23 | 05:43 | 18:56-19:39/43 | 05:18 | |
| | 16:59 | 17:54 | | 18:44 | | 20:37 | 07:13-07:23/10 | 21:26 | | 21:58 | |
| 18 | 08:36 | 07:48 | | 06:47 | 17:09-17:31/22 | 06:37 | 18:50-19:15/25 | 05:41 | 18:57-19:39/42 | 05:18 | |
| | 17:00 | 17:56 | | 18:46 | | 20:38 | 07:11-07:25/14 | 21:27 | | 21:59 | |
| 19 | 08:35 | 07:46 | | 06:45 | 17:09-17:31/22 | 06:35 | 18:50-19:15/25 | 05:40 | 18:58-19:39/41 | 05:18 | |
| | 17:02 | 17:58 | | 18:48 | | 20:40 | 07:10-07:26/16 | 21:29 | | 21:59 | |
| 20 | 08:34 | 07:44 | | 06:42 | 17:10-17:30/20 | 06:32 | 18:49-19:15/26 | 05:39 | 18:58-19:38/40 | 05:18 | |
| | 17:04 | 18:00 | | 18:49 | | 20:42 | 07:09-07:26/17 | 21:30 | | 22:00 | |
| 21 | 08:33 | 07:42 | | 06:40 | 17:10-17:30/20 | 06:30 | 18:49-19:15/26 | 05:37 | 18:59-19:38/39 | 05:18 | |
| | 17:05 | 18:02 | | 18:51 | | 20:43 | 07:08-07:27/19 | 21:32 | | 22:00 | |
| 22 | 08:31 | 07:40 | | 06:38 | 17:11-17:28/17 | 06:28 | 18:49-19:15/26 | 05:36 | 19:00-19:38/38 | 05:18 | |
| | 17:07 | 18:03 | | 18:53 | | 20:45 | 07:08-07:27/19 | 21:33 | | 22:00 | |
| 23 | 08:30 | 07:38 | | 06:35 | 17:12-17:26/14 | 06:26 | 18:50-19:14/24 | 05:35 | 19:01-19:38/37 | 05:19 | |
| | 17:09 | 18:05 | | 18:54 | | 20:47 | 07:07-07:27/20 | 21:34 | | 22:00 | |
| 24 | 08:29 | 07:36 | 16:57-17:05/8 | 06:33 | 17:15-17:23/8 | 06:24 | 18:50-19:13/23 | 05:33 | 19:02-19:37/35 | 05:19 | |
| | 17:10 | 18:07 | | 18:56 | | 20:49 | 07:07-07:26/19 | 21:36 | | 22:00 | |
| 25 | 08:28 | 07:33 | 16:54-17:08/14 | 06:31 | | 06:22 | 18:50-19:13/23 | 05:32 | 19:03-19:37/34 | 05:19 | |
| | 17:12 | 18:09 | | 18:58 | | 20:50 | 07:07-07:26/19 | 21:37 | | 22:00 | |
| 26 | 08:27 | 07:31 | 16:53-17:10/17 | 06:28 | | 06:20 | 18:51-19:11/20 | 05:31 | 19:04-19:36/32 | 05:20 | |
| | 17:14 | 18:11 | | 18:59 | | 20:52 | 07:08-07:25/17 | 21:38 | | 22:00 | |
| 27 | 08:25 | 07:29 | 16:52-17:14/22 | 06:26 | | 06:18 | 18:52-19:10/18 | 05:30 | 19:06-19:36/30 | 05:20 | |
| | 17:16 | 18:12 | | 19:01 | | 20:54 | 07:08-07:24/16 | 21:40 | | 22:00 | |
| 28 | 08:24 | 07:27 | 16:51-17:16/25 | 06:24 | | 06:16 | 18:53-19:08/15 | 05:29 | 19:17-19:35/18 | 05:21 | |
| | 17:17 | 18:14 | | 19:03 | | 20:55 | 07:09-07:23/14 | 21:41 | 19:08-19:16/8 | 22:00 | |
| 29 | 08:22 | | | 07:22 | | 06:14 | 18:55-19:06/11 | 19:08-19:13/5 | 05:28 | 19:18-19:34/16 | 05:21 |
| | 17:19 | | | 20:05 | | 20:57 | 07:10-07:21/11 | | 21:42 | | 22:00 |
| 30 | 08:21 | | | 07:19 | | 06:12 | 07:13-07:18/5 | | 05:27 | 19:19-19:33/14 | 05:22 |
| | 17:21 | | | 20:06 | | 20:59 | 19:04-19:17/13 | | 21:43 | | 22:00 |
| 31 | 08:20 | | | 07:17 | | | | | 05:26 | 19:20-19:32/12 | |
| | 17:23 | | | 20:08 | | | | | 21:45 | | |
| Potential sun hours | 260 | 278 | | 367 | | 416 | | 485 | | 498 | |
| Sum of minutes with flicker | 0 | 86 | | 621 | | 601 | | 1071 | | 14 | |

**Table layout: For each day in each month the following matrix apply**

| | | |
|---|---|---|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |
| | Sun set (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |

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Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar per WTG

**Calculation:** 6460 Gortloughra WF only WC **WTG:** 7 - T08

## Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | July | | August | | September | | October | | November | December |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 05:22 | | 05:59 | 19:05-19:48/43 | 06:48 | | 07:37 | 17:44-18:09/25 | 07:30 | 08:21 |
| | 22:00 | | 21:28 | | 20:26 | | 19:17 | | 17:11 | 16:31 |
| 2 | 05:23 | | 06:00 | 19:06-19:48/42 | 06:50 | | 07:38 | 17:42-18:07/25 | 07:32 | 08:22 |
| | 21:59 | | 21:26 | | 20:24 | | 19:15 | | 17:09 | 16:31 |
| 3 | 05:24 | | 06:02 | 19:05-19:47/42 | 06:51 | | 07:40 | 17:38-18:07/29 | 07:34 | 08:24 |
| | 21:59 | | 21:25 | | 20:22 | | 19:12 | | 17:08 | 16:30 |
| 4 | 05:25 | | 06:03 | 19:06-19:47/41 | 06:53 | | 07:42 | 17:33-18:06/33 | 07:36 | 08:25 |
| | 21:58 | | 21:23 | | 20:19 | | 19:10 | | 17:06 | 16:29 |
| 5 | 05:25 | | 06:05 | 19:06-19:46/40 | 06:55 | | 07:43 | 17:29-18:03/34 | 07:37 | 08:26 |
| | 21:58 | | 21:21 | | 20:17 | | 19:08 | | 17:04 | 16:29 |
| 6 | 05:26 | | 06:06 | 19:05-19:44/39 | 06:56 | | 07:45 | 17:27-18:02/35 | 07:39 | 08:28 |
| | 21:57 | | 21:19 | | 20:15 | | 19:06 | | 17:02 | 16:28 |
| 7 | 05:27 | | 06:08 | 19:06-19:44/38 | 06:58 | | 07:47 | 17:26-18:01/35 | 07:41 | 08:29 |
| | 21:57 | | 21:18 | | 20:13 | | 19:03 | | 17:01 | 16:28 |
| 8 | 05:28 | | 06:10 | 19:06-19:41/35 | 06:59 | | 07:48 | 17:25-18:00/35 | 07:43 | 08:30 |
| | 21:56 | | 21:16 | | 20:10 | | 19:01 | | 16:59 | 16:28 |
| 9 | 05:29 | | 06:11 | 19:08-19:39/31 | 07:01 | | 07:50 | 17:24-17:56/32 | 07:44 | 08:31 |
| | 21:56 | | 21:14 | | 20:08 | | 18:59 | | 16:57 | 16:27 |
| 10 | 05:30 | | 06:13 | 19:08-19:30/22 | 07:03 | | 07:52 | 17:23-17:56/33 | 07:46 | 08:32 |
| | 21:55 | | 21:12 | | 20:06 | | 18:57 | | 16:56 | 16:27 |
| 11 | 05:31 | 19:31-19:38/7 | 06:14 | 19:10-19:29/19 | 07:04 | | 07:53 | 17:23-17:55/32 | 07:48 | 08:33 |
| | 21:54 | | 21:10 | | 20:03 | | 18:54 | | 16:54 | 16:27 |
| 12 | 05:32 | 19:29-19:40/11 | 06:16 | 19:10-19:27/17 | 07:06 | | 07:55 | 17:23-17:53/30 | 07:50 | 08:35 |
| | 21:53 | | 21:08 | | 20:01 | | 18:52 | | 16:53 | 16:27 |
| 13 | 05:33 | 19:28-19:41/13 | 06:17 | 19:06-19:12/6 19:13-19:25/12 | 07:07 | | 07:57 | 17:23-17:49/26 | 07:52 | 08:36 |
| | 21:52 | | 21:06 | 07:20-07:27/7 | 19:59 | | 18:50 | | 16:51 | 16:27 |
| 14 | 05:34 | 19:27-19:42/15 | 06:19 | 19:02-19:14/12 | 07:09 | | 07:59 | 17:23-17:47/24 | 07:53 | 08:36 |
| | 21:51 | | 21:04 | 07:18-07:30/12 | 19:56 | | 18:48 | | 16:50 | 16:27 |
| 15 | 05:35 | 19:26-19:43/17 | 06:21 | 19:01-19:16/15 | 07:11 | | 08:00 | 17:24-17:45/21 | 07:55 | 08:37 |
| | 21:51 | 19:18-19:23/5 | 21:02 | 07:16-07:31/15 | 19:54 | | 18:46 | | 16:48 | 16:27 |
| 16 | 05:37 | 19:15-19:44/29 | 06:22 | 18:58-19:17/19 | 07:12 | | 08:02 | 17:25-17:41/16 | 07:57 | 08:38 |
| | 21:50 | | 21:00 | 07:16-07:32/16 | 19:52 | | 18:43 | | 16:47 | 16:27 |
| 17 | 05:38 | 19:15-19:46/31 | 06:24 | 18:58-19:18/20 | 07:14 | | 08:04 | 17:27-17:40/13 | 07:58 | 08:39 |
| | 21:48 | | 20:58 | 07:14-07:32/18 | 19:50 | | 18:41 | | 16:46 | 16:27 |
| 18 | 05:39 | 19:13-19:46/33 | 06:25 | 18:56-19:18/22 | 07:16 | | 08:05 | 17:29-17:35/6 | 08:00 | 08:40 |
| | 21:47 | | 20:56 | 07:14-07:33/19 | 19:47 | | 18:39 | | 16:44 | 16:28 |
| 19 | 05:40 | 19:12-19:47/35 | 06:27 | 18:55-19:19/24 | 07:17 | 18:03-18:09/6 | 08:07 | | 08:02 | 08:40 |
| | 21:46 | | 20:54 | 07:13-07:32/19 | 19:45 | | 18:37 | | 16:43 | 16:28 |
| 20 | 05:42 | 19:11-19:47/36 | 06:29 | 18:54-19:19/25 | 07:19 | 17:59-18:12/13 | 08:09 | | 08:04 | 08:41 |
| | 21:45 | | 20:52 | 07:13-07:32/19 | 19:43 | | 18:35 | | 16:42 | 16:28 |
| 21 | 05:43 | 19:10-19:47/37 | 06:30 | 18:54-19:19/25 | 07:20 | 17:57-18:13/16 | 08:11 | | 08:05 | 08:42 |
| | 21:44 | | 20:50 | 07:12-07:32/20 | 19:40 | | 18:33 | | 16:41 | 16:29 |
| 22 | 05:44 | 19:10-19:48/38 | 06:32 | 18:54-19:20/26 | 07:22 | 17:55-18:14/19 | 08:12 | | 08:07 | 08:42 |
| | 21:43 | | 20:48 | 07:13-07:31/18 | 19:38 | | 18:31 | | 16:39 | 16:29 |
| 23 | 05:46 | 19:09-19:49/40 | 06:34 | 18:53-19:19/26 | 07:24 | 17:53-18:14/21 | 08:14 | | 08:09 | 08:43 |
| | 21:41 | | 20:46 | 07:13-07:30/17 | 19:36 | | 18:29 | | 16:38 | 16:30 |
| 24 | 05:47 | 19:08-19:49/41 | 06:35 | 18:54-19:19/25 | 07:25 | 17:53-18:14/21 | 08:16 | | 08:10 | 08:43 |
| | 21:40 | | 20:44 | 07:14-07:29/15 | 19:33 | | 18:27 | | 16:37 | 16:30 |
| 25 | 05:48 | 19:08-19:49/41 | 06:37 | 18:53-19:18/25 | 07:27 | 17:53-18:14/21 | 07:18 | | 08:12 | 08:44 |
| | 21:39 | | 20:42 | 07:14-07:27/13 | 19:31 | | 17:25 | | 16:36 | 16:31 |
| 26 | 05:50 | 19:07-19:49/42 | 06:38 | 18:54-19:17/23 | 07:29 | 17:51-18:13/22 | 07:20 | | 08:13 | 08:44 |
| | 21:37 | | 20:39 | 07:17-07:26/9 | 19:29 | | 17:23 | | 16:35 | 16:32 |
| 27 | 05:51 | 19:06-19:49/43 | 06:40 | 18:54-19:16/22 | 07:30 | 17:51-18:13/22 | 07:21 | | 08:15 | 08:44 |
| | 21:36 | | 20:37 | | 19:26 | | 17:21 | | 16:34 | 16:32 |
| 28 | 05:53 | 19:07-19:50/43 | 06:42 | 18:55-19:15/20 | 07:32 | 17:48-18:13/25 | 07:23 | | 08:16 | 08:44 |
| | 21:34 | | 20:35 | | 19:24 | | 17:19 | | 16:34 | 16:33 |
| 29 | 05:54 | 19:06-19:49/43 | 06:43 | 18:55-19:13/18 | 07:33 | 17:46-18:11/25 | 07:25 | | 08:18 | 08:45 |
| | 21:33 | | 20:33 | | 19:22 | | 17:17 | | 16:33 | 16:34 |
| 30 | 05:56 | 19:05-19:49/44 | 06:45 | 18:57-19:11/14 | 07:35 | 17:44-18:10/26 | 07:27 | | 08:19 | 08:45 |
| | 21:31 | | 20:31 | | 19:19 | | 17:15 | | 16:32 | 16:35 |
| 31 | 05:57 | 19:06-19:49/43 | 06:46 | 18:59-19:07/8 | | | 07:28 | | | 08:45 |
| | 21:30 | | 20:28 | | | | 17:13 | | | 16:36 |
| Potential sun hours | 501 | | 453 | | 381 | | 332 | | 267 | 244 |
| Sum of minutes with flicker | 687 | | 1013 | | 237 | | 484 | | 0 | 0 |

**Table layout: For each day in each month the following matrix apply**

| | | |
|---|---|---|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |
| | Sun set (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |

Licensed user:
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Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar per WTG

**Calculation:** 6460 Gortloughra WF only WC **WTG:** 8 - T09

## Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | January | February | | March | | April | | May | | June | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08:45 | 08:18 | | 07:25 | 17:20-17:28/8 | 07:15 | 18:14-18:48/34 | 06:10 | | 05:25 | 19:41-20:02/21 |
| | 16:37 | 17:25 | | 18:16 | | 20:10 | | 21:00 | | 21:46 | 20:08-20:29/21 |
| 2 | 08:45 | 08:16 | | 07:23 | 17:18-17:30/12 | 07:12 | 18:16-18:49/33 | 06:08 | | 05:24 | 19:40-20:03/23 |
| | 16:38 | 17:26 | | 18:18 | | 20:11 | | 21:02 | | 21:47 | 20:08-20:29/21 |
| 3 | 08:44 | 08:15 | | 07:21 | 17:16-17:32/16 | 07:10 | 18:17-18:49/32 | 06:06 | | 05:24 | 19:39-20:03/24 |
| | 16:39 | 17:28 | | 18:20 | | 20:13 | | 21:04 | | 21:48 | 20:08-20:29/21 |
| 4 | 08:44 | 08:13 | | 07:18 | 17:16-17:33/17 | 07:08 | 18:17-18:49/32 | 06:04 | | 05:23 | 19:39-20:05/26 |
| | 16:40 | 17:30 | | 18:21 | | 20:15 | | 21:05 | | 21:49 | 20:09-20:29/20 |
| 5 | 08:44 | 08:12 | | 07:16 | 17:14-17:32/18 | 07:05 | 18:17-18:49/32 | 06:03 | | 05:22 | 19:38-20:05/27 |
| | 16:42 | 17:32 | | 18:23 | 17:01-17:12/11 | 20:16 | | 21:07 | | 21:50 | 20:09-20:29/20 |
| 6 | 08:44 | 08:10 | | 07:14 | 16:57-17:33/36 | 07:03 | 18:16-18:49/33 | 06:01 | | 05:22 | 19:38-20:06/28 |
| | 16:43 | 17:34 | | 18:25 | | 20:18 | | 21:08 | | 21:51 | 20:10-20:29/19 |
| 7 | 08:43 | 08:08 | | 07:12 | 16:55-17:34/39 | 07:01 | 18:17-18:49/32 | 05:59 | | 05:21 | 19:38-20:06/28 |
| | 16:44 | 17:36 | | 18:27 | | 20:20 | | 21:10 | | 21:52 | 20:10-20:29/19 |
| 8 | 08:43 | 08:07 | | 07:09 | 16:54-17:34/40 | 06:59 | 18:16-18:47/31 | 05:57 | | 05:20 | 19:38-20:07/29 |
| | 16:45 | 17:38 | | 18:28 | | 20:21 | | 21:12 | | 21:53 | 20:10-20:29/19 |
| 9 | 08:42 | 08:05 | | 07:07 | 16:52-17:36/44 | 06:56 | 18:16-18:47/31 | 05:56 | | 05:20 | 19:37-20:07/30 |
| | 16:47 | 17:39 | | 18:30 | | 20:23 | | 21:13 | | 21:53 | 20:10-20:28/18 |
| 10 | 08:42 | 08:03 | | 07:05 | 16:51-17:36/45 | 06:54 | 18:17-18:46/29 | 05:54 | | 05:20 | 19:37-20:08/31 |
| | 16:48 | 17:41 | | 18:32 | | 20:25 | | 21:15 | | 21:54 | 20:11-20:29/18 |
| 11 | 08:41 | 08:01 | | 07:03 | 16:50-17:37/47 | 06:52 | 18:18-18:46/28 | 05:52 | | 05:19 | 19:38-20:08/30 |
| | 16:49 | 17:43 | | 18:34 | | 20:27 | | 21:17 | | 21:55 | 20:12-20:29/17 |
| 12 | 08:41 | 07:59 | | 07:00 | 16:48-17:36/48 | 06:50 | 18:19-18:45/26 | 05:51 | | 05:19 | 19:38-20:09/31 |
| | 16:51 | 17:45 | | 18:35 | | 20:28 | | 21:18 | | 21:56 | 20:12-20:29/17 |
| 13 | 08:40 | 07:57 | | 06:58 | 16:48-17:43/55 | 06:48 | 18:19-18:42/23 | 05:49 | | 05:19 | 19:37-20:09/32 |
| | 16:52 | 17:47 | | 18:37 | | 20:30 | | 21:20 | | 21:56 | 20:12-20:28/16 |
| 14 | 08:39 | 07:56 | | 06:56 | 16:48-17:46/58 | 06:45 | 18:20-18:41/21 | 05:47 | | 05:18 | 19:37-20:09/32 |
| | 16:54 | 17:49 | | 18:39 | | 20:32 | | 21:21 | | 21:57 | 20:13-20:28/15 |
| 15 | 08:38 | 07:54 | | 06:54 | 16:47-17:46/59 | 06:43 | 18:22-18:39/17 | 05:46 | | 05:18 | 19:37-20:10/33 |
| | 16:55 | 17:50 | | 18:41 | | 20:33 | | 21:23 | | 21:58 | 20:13-20:29/16 |
| 16 | 08:38 | 07:52 | 17:02-17:12/10 | 06:51 | 16:47-17:47/60 | 06:41 | 18:25-18:35/10 | 05:44 | 20:12-20:21/9 | 05:18 | 19:38-20:10/32 |
| | 16:57 | 17:52 | | 18:42 | | 20:35 | | 21:24 | | 21:58 | 20:14-20:29/15 |
| 17 | 08:37 | 07:50 | 17:01-17:14/13 | 06:49 | 16:47-17:48/61 | 06:39 | | 05:43 | 20:11-20:23/12 | 05:18 | 19:38-20:10/32 |
| | 16:59 | 17:54 | | 18:44 | | 20:37 | | 21:26 | | 21:58 | 20:14-20:29/15 |
| 18 | 08:36 | 07:48 | 16:59-17:15/16 | 06:47 | 16:47-17:47/60 | 06:37 | | 05:41 | 20:10-20:24/14 | 05:18 | 19:38-20:11/33 |
| | 17:00 | 17:56 | | 18:46 | | 20:38 | | 21:27 | | 21:59 | 20:14-20:29/15 |
| 19 | 08:35 | 07:46 | 16:59-17:16/17 | 06:44 | 16:47-17:47/60 | 06:35 | | 05:40 | 20:09-20:26/17 | 05:18 | 19:38-20:11/33 |
| | 17:02 | 17:58 | | 18:47 | | 20:40 | | 21:29 | | 21:59 | 20:15-20:29/14 |
| 20 | 08:34 | 07:44 | 16:58-17:16/18 | 06:42 | 16:48-17:47/59 | 06:32 | | 05:39 | 20:08-20:26/18 | 05:18 | 19:38-20:11/33 |
| | 17:04 | 18:00 | | 18:49 | | 20:42 | | 21:30 | | 22:00 | 20:15-20:29/14 |
| 21 | 08:33 | 07:42 | 16:58-17:16/18 | 06:40 | 16:49-17:46/57 | 06:30 | | 05:37 | 20:07-20:26/19 | 05:18 | 19:39-20:12/33 |
| | 17:05 | 18:02 | | 18:51 | | 20:43 | | 21:32 | | 22:00 | 20:16-20:30/14 |
| 22 | 08:31 | 07:40 | 16:58-17:17/19 | 06:38 | 16:50-17:45/55 | 06:28 | | 05:36 | 20:07-20:27/20 | 05:18 | 19:39-20:12/33 |
| | 17:07 | 18:03 | | 18:53 | | 20:45 | | 21:33 | | 22:00 | 20:16-20:30/14 |
| 23 | 08:30 | 07:38 | 16:57-17:15/18 | 06:35 | 16:51-17:44/53 | 06:26 | | 05:35 | 20:07-20:28/21 | 05:19 | 19:39-20:12/33 |
| | 17:09 | 18:05 | | 18:54 | | 20:47 | | 21:34 | | 22:00 | 20:16-20:30/14 |
| 24 | 08:29 | 07:36 | 16:58-17:15/17 | 06:33 | 16:53-17:43/50 | 06:24 | | 05:33 | 20:07-20:28/21 | 05:19 | 19:39-20:12/33 |
| | 17:10 | 18:07 | | 18:56 | | 20:48 | | 21:36 | | 22:00 | 20:15-20:30/15 |
| 25 | 08:28 | 07:33 | 16:59-17:14/15 | 06:31 | 16:55-17:43/48 | 06:22 | | 05:32 | 20:07-20:28/21 | 05:19 | 19:40-20:12/32 |
| | 17:12 | 18:09 | | 18:58 | | 20:50 | | 21:37 | | 22:00 | 20:16-20:31/15 |
| 26 | 08:27 | 07:31 | 17:00-17:13/13 | 06:28 | 17:06-17:44/38 | 06:20 | | 05:31 | 20:07-20:29/22 | 05:20 | 19:40-20:12/32 |
| | 17:14 | 18:11 | | 18:59 | | 20:52 | | 21:38 | | 22:00 | 20:16-20:31/15 |
| 27 | 08:25 | 07:29 | 17:02-17:11/9 | 06:26 | 17:09-17:44/35 | 06:18 | | 05:30 | 20:07-20:29/22 | 05:20 | 19:40-20:13/33 |
| | 17:16 | 18:12 | | 19:01 | | 20:54 | | 21:40 | | 22:00 | 20:16-20:32/16 |
| 28 | 08:24 | 07:27 | | 06:24 | 17:09-17:43/34 | 06:16 | | 05:29 | 19:45-19:56/11 | 05:21 | 19:40-20:12/32 |
| | 17:17 | 18:14 | | 19:03 | | 20:55 | | 21:41 | 20:07-20:29/22 | 22:00 | 20:16-20:31/15 |
| 29 | 08:22 | | | 07:21 | 18:09-18:45/36 | 06:14 | | 05:28 | 19:43-19:58/15 | 05:21 | 19:41-20:13/32 |
| | 17:19 | | | 20:05 | | 20:57 | | 21:42 | 20:07-20:29/22 | 22:00 | 20:16-20:32/16 |
| 30 | 08:21 | | | 07:19 | 18:11-18:47/36 | 06:12 | | 05:27 | 19:42-19:59/17 | 05:22 | 19:41-20:12/31 |
| | 17:21 | | | 20:06 | | 20:59 | | 21:43 | 20:07-20:29/22 | 22:00 | 20:16-20:32/16 |
| 31 | 08:20 | | | 07:17 | 18:11-18:47/36 | | | 05:26 | 19:41-20:00/19 | | |
| | 17:23 | | | 20:08 | | | | 21:45 | 20:07-20:29/22 | | |
| Potential sun hours | 260 | 278 | | 367 | | 416 | | 485 | | 498 | |
| Sum of minutes with flicker | 0 | 183 | | 1331 | | 444 | | 366 | | 1412 | |

**Table layout: For each day in each month the following matrix apply**

| | | |
|---|---|---|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |
| | Sun set (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |

Licensed user:
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+353719161416
kfeeney / kfeeney@jodireland.com
Calculated:
10/09/2024 11:52/4.0.552

# SHADOW - Calendar per WTG

**Calculation:** 6460 Gortloughra WF only WC **WTG:** 8 - T09

## Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [VALENTIA OBS.]

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.30 | 2.04 | 2.89 | 4.92 | 5.79 | 4.99 | 4.32 | 4.35 | 3.60 | 2.54 | 1.64 | 1.06 |

Operational time

| N | NNE | NE | ENE | E | ESE | SE | SSE | S | SSW | SW | WSW | W | WNW | NW | NNW | Sum |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 136 | 297 | 373 | 423 | 216 | 252 | 408 | 617 | 382 | 612 | 1,601 | 1,598 | 456 | 331 | 428 | 630 | 8,760 |

| | July | | August | | September | | October | | November | December |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 05:22 | 19:42-20:13/31 | 05:59 | | 06:48 | 18:17-18:45/28 | 07:37 | 18:17-18:20/3 | 07:30 | 08:21 |
| | 22:00 | 20:16-20:33/17 | 21:28 | | 20:26 | | 19:17 | 17:28-18:16/48 | 17:11 | 16:31 |
| 2 | 05:23 | 19:42-20:13/31 | 06:00 | | 06:50 | 18:15-18:44/29 | 07:38 | 17:28-18:15/47 | 07:32 | 08:22 |
| | 21:59 | 20:15-20:33/18 | 21:26 | | 20:24 | | 19:15 | | 17:09 | 16:31 |
| 3 | 05:24 | 19:42-20:12/30 | 06:02 | | 06:51 | 18:14-18:45/31 | 07:40 | 17:28-18:15/47 | 07:34 | 08:24 |
| | 21:59 | 20:16-20:34/18 | 21:25 | | 20:22 | | 19:12 | | 17:08 | 16:30 |
| 4 | 05:25 | 19:43-20:12/29 | 06:03 | | 06:53 | 18:14-18:45/31 | 07:42 | 17:29-18:14/45 | 07:36 | 08:25 |
| | 21:58 | 20:16-20:34/18 | 21:23 | | 20:19 | | 19:10 | | 17:06 | 16:29 |
| 5 | 05:25 | 19:44-20:12/28 | 06:05 | | 06:55 | 18:13-18:45/32 | 07:43 | 17:29-18:12/43 | 07:37 | 08:26 |
| | 21:58 | 20:16-20:35/19 | 21:21 | | 20:17 | | 19:08 | | 17:04 | 16:29 |
| 6 | 05:26 | 19:44-20:12/28 | 06:06 | | 06:56 | 18:13-18:45/32 | 07:45 | 17:31-18:11/40 | 07:39 | 08:28 |
| | 21:57 | 20:15-20:34/19 | 21:19 | | 20:15 | | 19:06 | | 17:02 | 16:28 |
| 7 | 05:27 | 19:44-20:11/27 | 06:08 | | 06:58 | 18:12-18:44/32 | 07:47 | 17:32-18:09/37 | 07:41 | 08:29 |
| | 21:57 | 20:15-20:35/20 | 21:18 | | 20:13 | | 19:03 | | 17:01 | 16:28 |
| 8 | 05:28 | 19:45-20:11/26 | 06:09 | | 06:59 | 18:12-18:44/32 | 07:48 | 17:35-18:08/33 | 07:43 | 08:30 |
| | 21:56 | 20:15-20:36/21 | 21:16 | | 20:10 | | 19:01 | | 16:59 | 16:28 |
| 9 | 05:29 | 19:46-20:11/25 | 06:11 | | 07:01 | 18:10-18:43/33 | 07:50 | 17:49-18:07/18 | 07:44 | 08:31 |
| | 21:56 | 20:15-20:36/21 | 21:14 | | 20:08 | | 18:59 | 17:39-17:44/5 | 16:57 | 16:27 |
| 10 | 05:30 | 19:47-20:10/23 | 06:13 | | 07:03 | 18:09-18:42/33 | 07:52 | 17:50-18:06/16 | 07:46 | 08:32 |
| | 21:55 | 20:15-20:36/21 | 21:12 | | 20:06 | | 18:57 | | 16:56 | 16:27 |
| 11 | 05:31 | 19:48-20:10/22 | 06:14 | | 07:04 | 18:06-18:40/34 | 07:53 | 17:51-18:05/14 | 07:48 | 08:33 |
| | 21:54 | 20:15-20:37/22 | 21:10 | | 20:03 | | 18:54 | | 16:54 | 16:27 |
| 12 | 05:32 | 19:49-20:09/20 | 06:16 | | 07:06 | 18:04-18:40/36 | 07:55 | 17:53-18:04/11 | 07:50 | 08:34 |
| | 21:53 | 20:15-20:37/22 | 21:08 | | 20:01 | | 18:52 | | 16:53 | 16:27 |
| 13 | 05:33 | 19:50-20:08/18 | 06:17 | | 07:07 | 18:02-18:39/37 | 07:57 | 17:55-18:00/5 | 07:52 | 08:35 |
| | 21:52 | 20:15-20:37/22 | 21:06 | | 19:59 | | 18:50 | | 16:51 | 16:27 |
| 14 | 05:34 | 19:51-20:07/16 | 06:19 | | 07:09 | 18:00-18:36/36 | 07:59 | 17:37-17:41/4 | 07:53 | 08:36 |
| | 21:51 | 20:15-20:37/22 | 21:04 | | 19:56 | | 18:48 | | 16:50 | 16:27 |
| 15 | 05:35 | 19:53-20:05/12 | 06:21 | | 07:11 | 17:59-18:34/35 | 08:00 | 17:33-17:44/11 | 07:55 | 08:37 |
| | 21:51 | 20:15-20:37/22 | 21:02 | | 19:54 | | 18:46 | | 16:48 | 16:27 |
| 16 | 05:37 | 19:55-20:02/7 | 06:22 | | 07:12 | 17:57-18:32/35 | 08:02 | 17:32-17:46/14 | 07:57 | 08:38 |
| | 21:49 | 20:15-20:37/22 | 21:00 | | 19:52 | | 18:43 | | 16:47 | 16:27 |
| 17 | 05:38 | 20:16-20:38/22 | 06:24 | | 07:14 | 17:55-18:32/37 | 08:04 | 17:29-17:46/17 | 07:58 | 08:39 |
| | 21:48 | | 20:58 | | 19:49 | | 18:41 | | 16:46 | 16:27 |
| 18 | 05:39 | 20:16-20:38/22 | 06:25 | | 07:15 | 17:43-18:31/48 | 08:05 | 17:29-17:46/17 | 08:00 | 08:40 |
| | 21:47 | | 20:56 | | 19:47 | | 18:39 | | 16:44 | 16:28 |
| 19 | 05:40 | 20:16-20:38/22 | 06:27 | | 07:17 | 17:40-18:30/50 | 08:07 | 17:28-17:47/19 | 08:02 | 08:40 |
| | 21:46 | | 20:54 | | 19:45 | | 18:37 | | 16:43 | 16:28 |
| 20 | 05:42 | 20:16-20:37/21 | 06:29 | | 07:19 | 17:38-18:30/52 | 08:09 | 17:28-17:47/19 | 08:04 | 08:41 |
| | 21:45 | | 20:52 | | 19:42 | | 18:35 | | 16:42 | 16:28 |
| 21 | 05:43 | 20:17-20:37/20 | 06:30 | | 07:20 | 17:35-18:30/55 | 08:11 | 17:28-17:47/19 | 08:05 | 08:42 |
| | 21:44 | | 20:50 | | 19:40 | | 18:33 | | 16:41 | 16:29 |
| 22 | 05:44 | 20:18-20:37/19 | 06:32 | | 07:22 | 17:34-18:31/57 | 08:12 | 17:29-17:46/17 | 08:07 | 08:42 |
| | 21:43 | | 20:48 | | 19:38 | | 18:31 | | 16:39 | 16:29 |
| 23 | 05:46 | 20:18-20:37/19 | 06:34 | | 07:24 | 17:32-18:31/59 | 08:14 | 17:29-17:46/17 | 08:09 | 08:43 |
| | 21:41 | | 20:46 | | 19:36 | | 18:29 | | 16:38 | 16:30 |
| 24 | 05:47 | 20:18-20:36/18 | 06:35 | | 07:25 | 17:31-18:31/60 | 08:16 | 17:29-17:44/15 | 08:10 | 08:43 |
| | 21:40 | | 20:44 | | 19:33 | | 18:27 | | 16:37 | 16:30 |
| 25 | 05:48 | 20:20-20:36/16 | 06:37 | | 07:27 | 17:31-18:31/60 | 07:18 | 16:30-16:43/13 | 08:12 | 08:44 |
| | 21:39 | | 20:42 | | 19:31 | | 17:25 | | 16:36 | 16:31 |
| 26 | 05:50 | 20:21-20:34/13 | 06:38 | | 07:28 | 17:29-18:30/61 | 07:19 | 16:33-16:40/7 | 08:13 | 08:44 |
| | 21:37 | | 20:39 | | 19:29 | | 17:23 | | 16:35 | 16:32 |
| 27 | 05:51 | 20:22-20:32/10 | 06:40 | 18:27-18:38/11 | 07:30 | 17:29-18:29/60 | 07:21 | | 08:15 | 08:44 |
| | 21:36 | | 20:37 | | 19:26 | | 17:21 | | 16:34 | 16:32 |
| 28 | 05:53 | 20:25-20:31/6 | 06:42 | 18:24-18:41/17 | 07:32 | 17:29-18:28/59 | 07:23 | | 08:16 | 08:44 |
| | 21:34 | | 20:35 | | 19:24 | | 17:19 | | 16:33 | 16:33 |
| 29 | 05:54 | | 06:43 | 18:21-18:42/21 | 07:33 | 17:28-18:26/58 | 07:25 | | 08:18 | 08:44 |
| | 21:33 | | 20:33 | | 19:22 | | 17:17 | | 16:33 | 16:34 |
| 30 | 05:56 | | 06:45 | 18:20-18:43/23 | 07:35 | 17:28-18:24/56 | 07:27 | | 08:19 | 08:45 |
| | 21:31 | | 20:31 | | 19:19 | | 17:15 | | 16:32 | 16:35 |
| 31 | 05:57 | | 06:46 | 18:17-18:43/26 | | | 07:28 | | | 08:45 |
| | 21:30 | | 20:28 | | | | 17:13 | | | 16:36 |
| Potential sun hours | 501 | | 453 | | 381 | | 332 | | 267 | 244 |
| Sum of minutes with flicker | 905 | | 98 | | 1298 | | 601 | | 0 | 0 |

**Table layout: For each day in each month the following matrix apply**

| | | |
|---|---|---|
| Day in month | Sun rise (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |
| | Sun set (hh:mm) | First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker |

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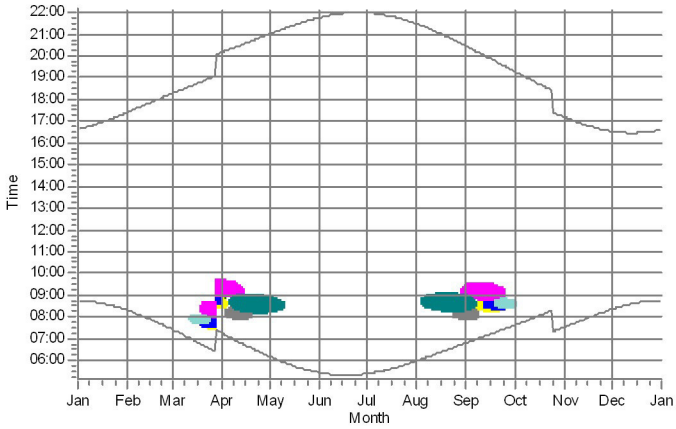
Calculated:
10/09/2024 11:52/4.0.552

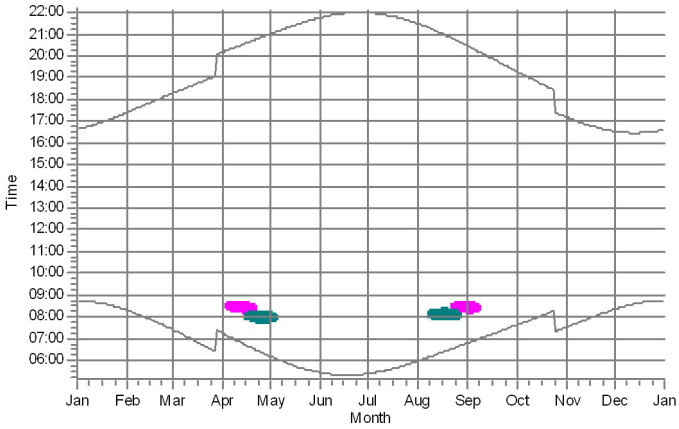
# SHADOW - Calendar per WTG, graphical

**Calculation:** 6460 Gortloughra WF only WC

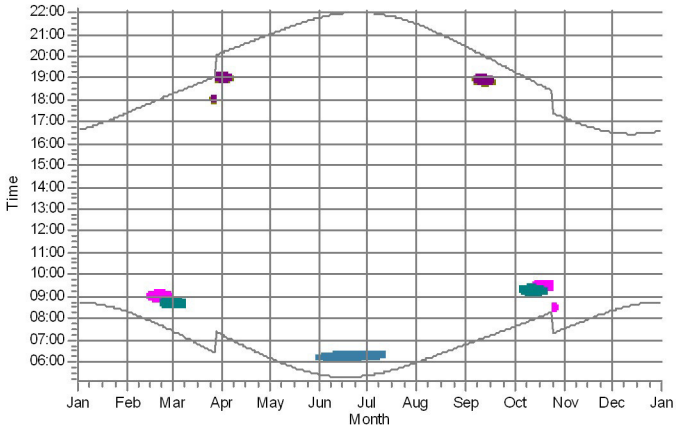
1: T01



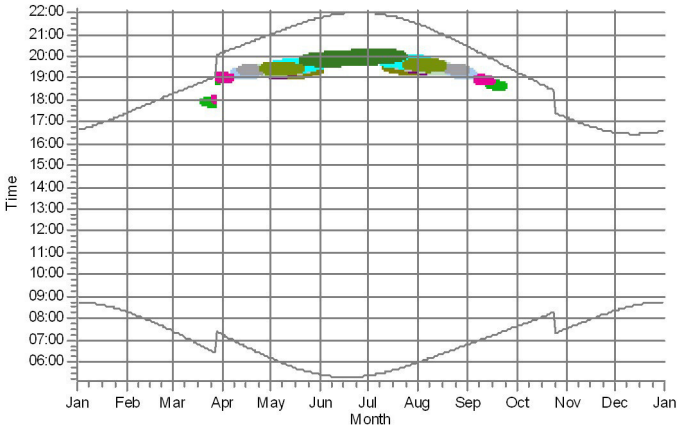

2: T02



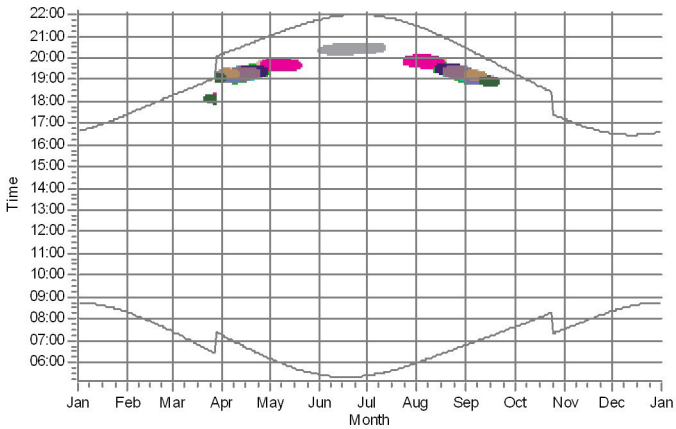

3: T03



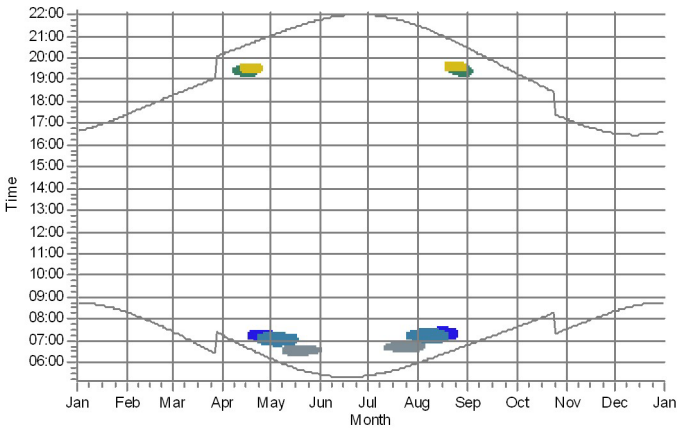

4: T04




5: T06




6: T07




Shadow receptors

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| A: H1 | J: H10 | P: H17 | V: H23 | AJ: H38 | BD: H70 | BO: H81 | |
| B: H2 | K: H11 | Q: H18 | W: H24 | AK: H39 | BE: H71 | BP: H82 | |
| C: H3 | L: H12 | R: H19 | X: H25 | AL: H40 | BF: H72 | BQ: H83 | |
| D: H4 | M: H13 | S: H20 | Y: H26 | AV: H60 | BG: H73 | BR: H84 | |
| E: H5 | N: H14 | T: H21 | AC: H30 | BB: H68 | BM: H79 | BS: H85 | |
| F: H6 | O: H15 | U: H22 | AD: H31 | BC: H69 | BN: H80 | BU: H87 | |

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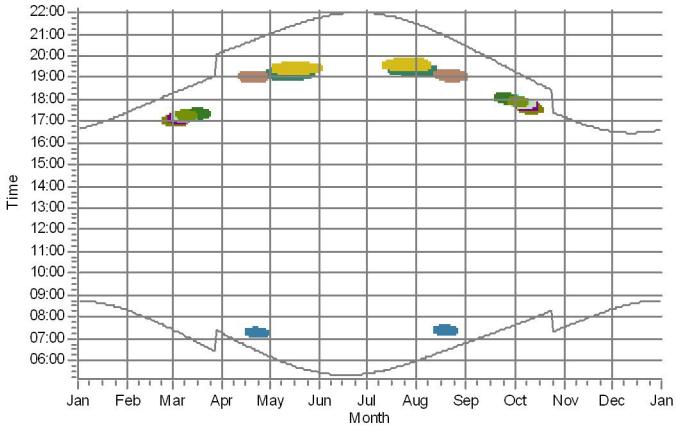
10/09/2024 11:52/4.0.552

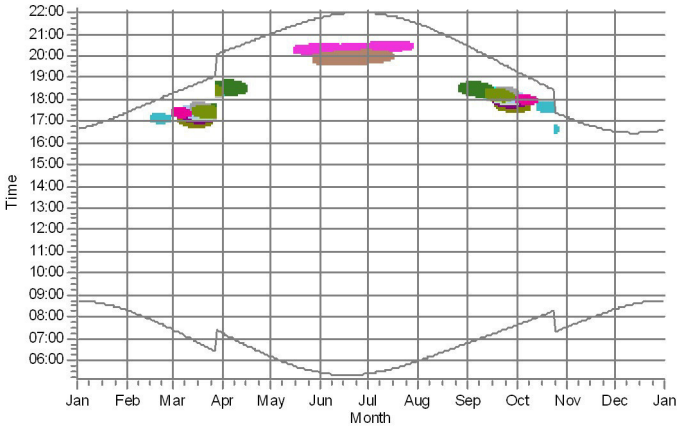
# SHADOW - Calendar per WTG, graphical

**Calculation:** 6460 Gortloughra WF only WC

7: T08




8: T09




Shadow receptors

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| J: H10 | L: H12 | N: H14 | P: H17 | AC: H30 | AE: H33 | BL: H78 | BN: H80 |
| K: H11 | M: H13 | O: H15 | S: H20 | AD: H31 | AK: H39 | BM: H79 | BO: H81 |

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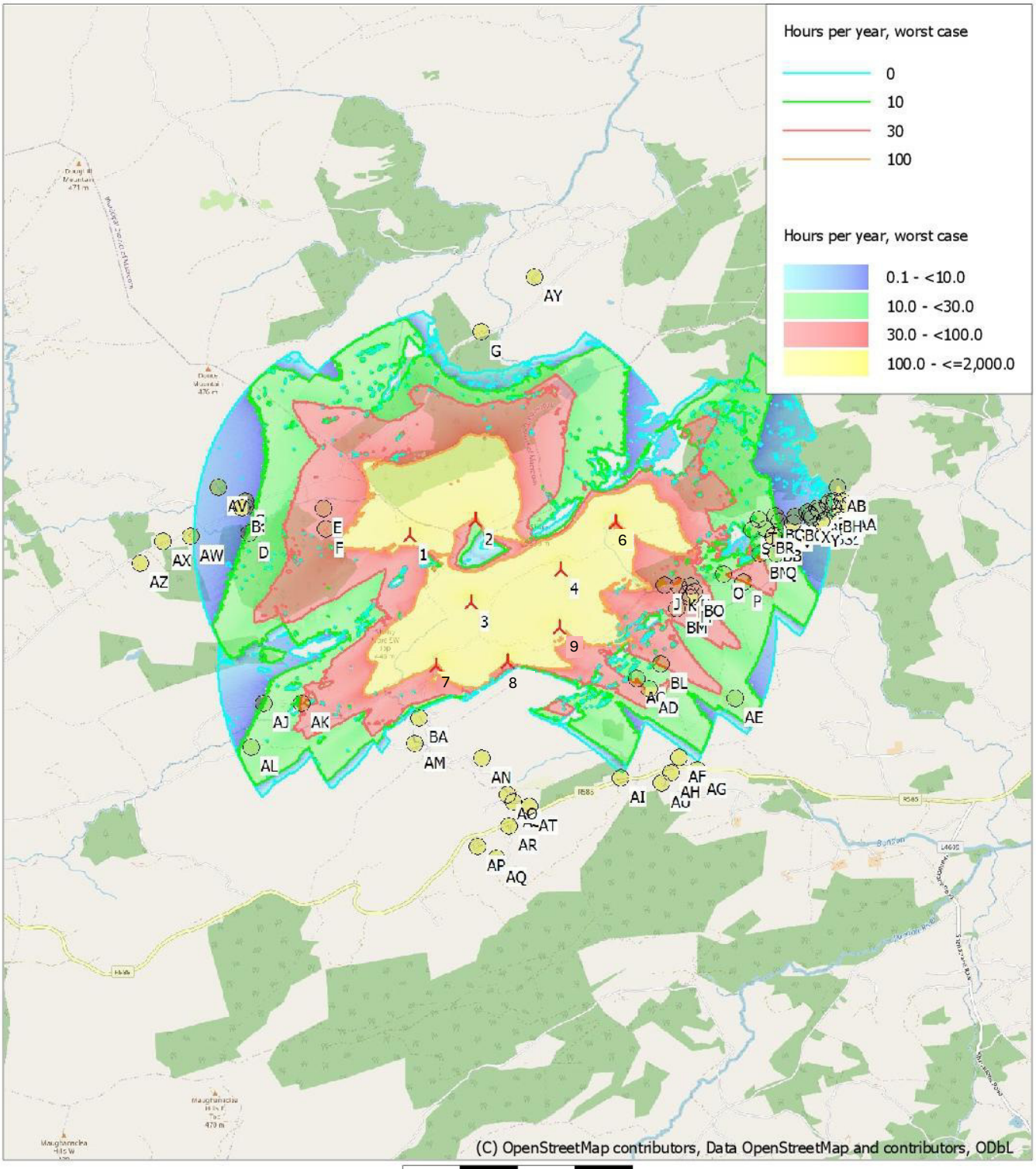
Calculated:
10/09/2024 11:52/4.0.552

## SHADOW - Map

**Calculation:** 6460 Gortloughra WF only WC




0 500 1000 1500 2000 m

Map: EMD OpenStreetMap , Print scale 1:50,000, Map center Irish ITM-IRENET95 (IE), geocentric, GRS80 East: 514,950 North: 559,570

New WTG Shadow receptor

Flicker map level: Height Contours: CONTOURLINE_6460 Gortloughra WF_1.wpo (1)

Time step: 2 minutes, Day step: 3 days, Map resolution: 10 m, Visibility resolution: 5 m, Eye height: 1.5 m