

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Main Result

Calculation: 6778 Moanmore Lower Worst Case

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
229	231	210	320	200	640	608	691	568	658	724	1,086

W	WNW	NW	NNW	Sum
671	733	661	530	8,760

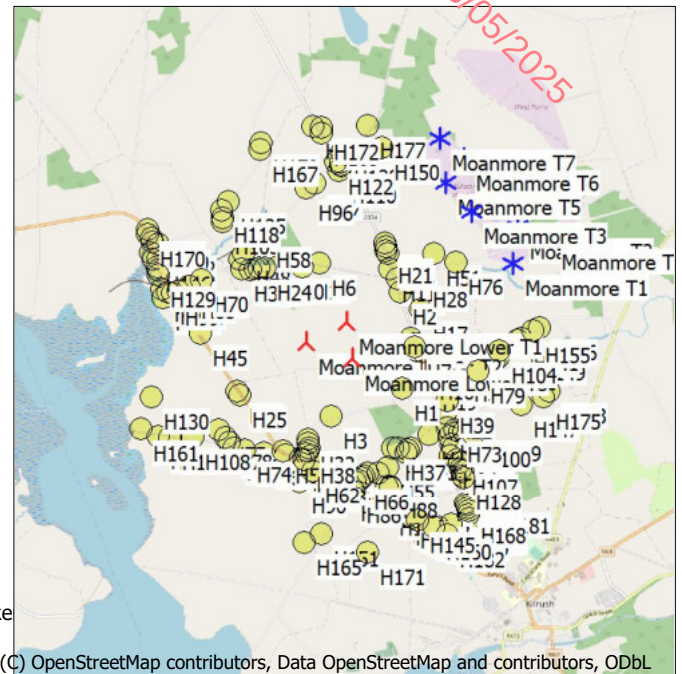
Monthly aggregation of real case reduction

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: Elevation Grid Data Object: Ballykett WF Shadow Flicker
Receptor grid resolution: 1.0 m

All coordinates are in

Irish ITM-IRENET95 (IE), geocentric, GRS80



(C) OpenStreetMap contributors, Data OpenStreetMap and contributors, ODbL

New WTG

Existing WTG

Shadow receptor

WTGs

	Easting	Northing	Z	Row data/Description	WTG type			Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Shadow data	
					Valid	Manufact.	Type-generator				Calculation distance [m]	RPM [RPM]
1	497,742	658,147	8.1	Moanmore Lower T1	Yes	VESTAS	V136-4.5-4,500	4,500	136.0	82.0	1,804	10.4
2	497,347	657,950	11.9	Moanmore Lower T2	Yes	VESTAS	V136-4.5-4,500	4,500	136.0	82.0	1,804	10.4
3	497,795	657,771	13.4	Moanmore Lower T3	Yes	VESTAS	V136-4.5-4,500	4,500	136.0	82.0	1,804	10.4
4	499,419	658,690	18.1	Moanmore T1	No	ENERCON	E-70 E4-2,000	2,000	71.0	113.5	1,642	20.0
5	499,464	659,042	21.1	Moanmore T2	No	ENERCON	E-70 E4-2,000	2,000	71.0	113.5	1,642	20.0
6	499,009	659,205	24.4	Moanmore T3	No	ENERCON	E-70 E4-2,000	2,000	71.0	113.5	1,642	20.0
7	499,781	658,938	17.5	Moanmore T4	No	ENERCON	E-70 E4-2,000	2,000	71.0	113.5	1,642	20.0
8	498,756	659,506	19.0	Moanmore T5	No	ENERCON	E-70 E4-2,000	2,000	71.0	113.5	1,642	20.0
9	498,951	659,736	20.0	Moanmore T6	No	ENERCON	E-70 E4-2,000	2,000	71.0	113.5	1,642	20.0
10	498,714	659,939	19.7	Moanmore T7	No	ENERCON	E-70 E4-2,000	2,000	71.0	113.5	1,642	20.0

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	498,280	657,469	24.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
B	H2	498,287	658,418	12.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
C	H3	497,569	657,205	21.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
D	H4	498,382	657,964	14.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
E	H5	498,410	657,916	16.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
F	H6	497,486	658,726	10.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
G	H7	498,420	657,877	17.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
H	H8	498,432	657,801	18.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
I	H9	498,431	657,843	17.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
J	H10	498,261	658,557	14.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
K	H11	498,184	658,653	14.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
L	H12	498,456	657,905	16.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
M	H13	498,486	657,830	17.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
N	H14	497,318	658,698	7.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
O	H15	498,510	657,780	18.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
P	H16	498,533	657,671	18.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5

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SHADOW - Main Result

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...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]
Q H17		498,482	658,243	15.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
R H18		498,172	658,805	17.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
S H19		498,566	657,577	19.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
T H20		497,071	658,703	11.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
U H21		498,151	658,844	17.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
V H22		498,150	658,878	17.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
W H23		498,454	658,590	13.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
X H24		496,946	658,692	10.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
Y H25		496,668	657,439	14.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
Z H26		496,635	657,469	12.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AA H27		498,140	658,917	17.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AB H28		498,492	658,591	13.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AC H29		496,881	658,695	9.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AD H30		496,848	658,686	9.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AE H31		496,798	658,676	9.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AF H32		497,329	656,988	19.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AG H33		497,332	656,948	20.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AH H34		498,181	656,888	33.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AI H35		496,711	658,683	8.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AJ H36		497,339	656,906	21.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AK H37		498,240	656,887	32.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AL H38		497,332	656,873	22.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AM H39		498,731	657,336	27.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AN H40		497,362	656,826	22.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AO H41		497,317	656,843	23.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AP H42		496,704	658,783	6.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AQ H43		498,359	656,875	32.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AR H44		498,334	656,854	32.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AS H45		496,286	658,061	6.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AT H46		498,311	656,836	32.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AU H47		498,544	657,009	29.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AV H48		496,739	658,836	5.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AW H49		498,713	657,205	28.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AX H50		498,884	657,642	27.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AY H51		498,629	658,803	17.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AZ H52		497,087	656,875	22.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BA H53		497,262	656,801	23.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BB H54		497,290	656,784	23.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BC H55		498,124	656,683	35.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BD H56		497,114	656,834	22.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BE H57		497,914	656,633	30.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BF H58		496,940	659,020	7.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BG H59		498,027	656,637	33.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BH H60		497,885	656,613	31.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BI H61		498,728	657,071	29.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BJ H62		497,376	656,675	26.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BK H63		497,443	656,650	27.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BL H64		496,886	656,865	20.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BM H65		497,473	656,635	27.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BN H66		497,857	656,591	32.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BO H67		497,502	656,615	27.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BP H68		497,832	656,572	32.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BQ H69		497,803	656,555	30.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BR H70		496,312	658,591	6.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BS H71		498,744	656,992	34.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BT H72		496,277	658,568	6.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BU H73		498,795	657,042	31.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BV H74		496,707	656,890	16.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BW H75		496,452	657,094	11.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BX H76		498,847	658,716	15.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BY H77		496,559	656,976	14.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BZ H78		496,506	657,019	12.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CA H79		499,048	657,629	28.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CB H80		496,597	656,921	16.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5

To be continued on next page...

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				[m]	[m]	[m]	[m]	[°]		[m]
CC H81		497,232	656,617	26.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CD H82		498,850	657,037	31.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CE H83		497,728	656,482	27.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CF H84		498,763	656,912	37.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CG H85		496,181	658,531	5.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CH H86		497,786	656,464	28.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CI H87		498,116	656,502	32.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CJ H88		498,155	656,508	32.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CK H89		498,889	657,037	32.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CL H90		497,247	656,569	27.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CM H91		498,149	656,490	32.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CN H92		498,785	656,875	37.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CO H93		496,134	658,563	4.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CP H94		498,752	656,793	37.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CQ H95		496,075	658,482	4.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CR H96		497,374	659,476	13.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CS H97		497,456	659,513	15.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CT H98		499,204	657,725	26.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CU H99		496,018	658,458	3.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CV H100		498,989	656,992	36.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CW H101		498,817	656,759	37.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CX H102		499,243	657,751	27.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CY H103		496,529	659,156	8.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CZ H104		499,263	657,825	26.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DA H105		495,970	658,467	3.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DB H106		498,105	656,327	28.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DC H107		498,835	656,719	38.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DD H108		496,187	657,029	11.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DE H109		499,096	657,055	35.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DF H110		497,702	659,639	14.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DG H111		496,528	659,201	8.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DH H112		495,919	658,416	4.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DI H113		498,838	656,683	39.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DJ H114		498,848	656,658	40.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DK H115		495,911	658,504	4.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DL H116		497,726	659,690	16.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DM H117		497,720	659,702	16.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DN H118		496,527	659,272	8.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DO H119		498,858	656,627	40.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DP H120		498,877	656,638	40.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DQ H121		497,712	659,720	16.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DR H122		497,666	659,725	15.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DS H123		498,239	656,248	32.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DT H124		498,867	656,595	38.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DU H125		496,593	659,367	8.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DV H126		498,275	656,236	34.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DW H127		498,357	656,259	34.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DX H128		498,877	656,564	38.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DY H129		495,877	658,649	4.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DZ H130		495,792	657,434	4.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EA H131		498,385	656,239	36.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EB H132		495,879	658,693	4.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EC H133		495,966	657,036	8.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
ED H134		498,323	656,200	34.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EE H135		499,447	657,920	25.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EF H136		495,869	658,730	4.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EG H137		498,349	656,194	35.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EH H138		497,726	659,826	17.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EI H139		498,367	656,184	35.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EJ H140		498,380	656,179	35.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EK H141		499,483	657,944	25.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EL H142		495,884	658,812	4.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EM H143		498,443	656,200	35.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EN H144		498,475	656,182	35.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5

To be continued on next page...

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Main Result

Calculation: 6778 Moanmore Lower Worst Case

...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]
EO H145		498,414	656,153	36.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EP H146		495,834	658,794	2.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EQ H147		499,465	657,289	31.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
ER H148		495,845	657,055	7.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
ES H149		499,543	657,842	25.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
ET H150		498,135	659,862	14.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EU H151		497,459	656,039	23.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EV H152		495,891	658,951	5.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EW H153		498,477	656,117	33.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EX H154		495,809	658,871	3.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EY H155		499,595	658,009	21.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EZ H156		498,888	656,317	38.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FA H157		495,831	658,975	4.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FB H158		498,896	656,287	38.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FC H159		495,816	659,005	4.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FD H160		498,569	656,079	35.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FE H161		495,676	657,117	4.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FF H162		498,907	656,261	37.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FG H163		497,537	660,013	12.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FH H164		498,615	656,073	37.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FI H165		497,275	655,954	21.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FJ H166		499,674	658,050	21.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FK H167		496,916	659,866	8.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FL H168		498,918	656,226	37.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FM H169		498,745	656,110	37.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FN H170		495,782	659,054	4.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FO H171		497,902	655,849	29.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FP H172		497,535	660,067	12.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FQ H173		495,793	659,099	4.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FR H174		498,919	656,196	38.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FS H175		499,694	657,354	34.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FT H176		498,673	656,022	40.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FU H177		497,990	660,091	13.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FV H178		497,452	660,089	13.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FW H179		496,934	659,938	10.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FX H180		498,934	656,167	39.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FY H181		499,156	656,325	44.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FZ H182		498,707	656,005	40.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
GA H183		499,750	657,404	33.5	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	62:12	97	0:59	12:22
B	H2	96:17	214	0:53	12:43
C	H3	0:00	0	0:00	0:00
D	H4	93:09	171	0:52	17:46
E	H5	86:23	163	0:50	16:53
F	H6	46:37	119	0:48	5:21
G	H7	86:53	164	0:50	17:14
H	H8	97:57	175	0:58	19:51
I	H9	88:25	170	0:51	17:46
J	H10	66:39	172	1:00	8:46
K	H11	90:02	142	1:13	9:56
L	H12	72:29	148	0:47	14:14
M	H13	70:22	144	0:47	14:20
N	H14	63:06	87	0:49	6:16
O	H15	68:50	146	0:51	14:14
P	H16	68:14	141	0:52	14:07
Q	H17	71:58	180	0:42	11:33

To be continued on next page...

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

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+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Main Result

Calculation: 6778 Moanmore Lower Worst Case

...continued from previous page

No.	Name	Shadow, worst case		Shadow, expected values	
		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]
R	H18	71:29	178	0:56	9:10
S	H19	47:14	121	0:45	9:47
T	H20	44:26	108	0:38	4:50
U	H21	50:45	146	0:53	6:39
V	H22	37:27	134	0:42	5:21
W	H23	61:17	185	0:41	8:25
X	H24	53:47	115	0:44	5:46
Y	H25	22:36	93	0:26	4:29
Z	H26	29:18	101	0:27	5:42
AA	H27	26:34	118	0:22	4:13
AB	H28	64:02	200	0:38	8:55
AC	H29	54:59	116	0:43	5:54
AD	H30	55:42	118	0:43	6:00
AE	H31	57:57	119	0:42	6:17
AF	H32	0:00	0	0:00	0:00
AG	H33	0:00	0	0:00	0:00
AH	H34	0:00	0	0:00	0:00
AI	H35	54:08	120	0:41	5:58
AJ	H36	0:00	0	0:00	0:00
AK	H37	0:00	0	0:00	0:00
AL	H38	0:00	0	0:00	0:00
AM	H39	17:12	74	0:29	3:42
AN	H40	0:00	0	0:00	0:00
AO	H41	0:00	0	0:00	0:00
AP	H42	44:37	111	0:34	4:46
AQ	H43	0:00	0	0:00	0:00
AR	H44	0:00	0	0:00	0:00
AS	H45	18:56	68	0:29	3:31
AT	H46	0:00	0	0:00	0:00
AU	H47	1:57	29	0:06	0:22
AV	H48	37:43	104	0:31	3:56
AW	H49	27:48	86	0:28	5:30
AX	H50	17:33	72	0:27	3:49
AY	H51	41:01	155	0:32	6:18
AZ	H52	0:00	0	0:00	0:00
BA	H53	0:00	0	0:00	0:00
BB	H54	0:00	0	0:00	0:00
BC	H55	0:00	0	0:00	0:00
BD	H56	0:00	0	0:00	0:00
BE	H57	0:00	0	0:00	0:00
BF	H58	22:45	68	0:28	2:16
BG	H59	0:00	0	0:00	0:00
BH	H60	0:00	0	0:00	0:00
BI	H61	12:24	68	0:16	2:24
BJ	H62	0:00	0	0:00	0:00
BK	H63	0:00	0	0:00	0:00
BL	H64	0:00	0	0:00	0:00
BM	H65	0:00	0	0:00	0:00
BN	H66	0:00	0	0:00	0:00
BO	H67	0:00	0	0:00	0:00
BP	H68	0:00	0	0:00	0:00
BQ	H69	0:00	0	0:00	0:00
BR	H70	15:16	57	0:30	2:14
BS	H71	6:25	55	0:10	1:13
BT	H72	13:45	55	0:29	2:03
BU	H73	12:29	68	0:17	2:25
BV	H74	0:00	0	0:00	0:00
BW	H75	8:05	40	0:19	1:38
BX	H76	50:55	190	0:30	8:59
BY	H77	12:03	55	0:19	2:12
BZ	H78	15:02	68	0:20	2:49
CA	H79	10:55	57	0:20	2:22
CB	H80	4:05	36	0:10	0:44

To be continued on next page...

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Main Result

Calculation: 6778 Moanmore Lower Worst Case

...continued from previous page

No.	Name	Shadow, worst case		Shadow, expected values	
		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]
CC	H81	0:00	0	0:00	0:00
CD	H82	15:02	71	0:20	2:54
CE	H83	0:00	0	0:00	0:00
CF	H84	3:40	40	0:08	0:41
CG	H85	10:52	51	0:25	1:40
CH	H86	0:00	0	0:00	0:00
CI	H87	0:00	0	0:00	0:00
CJ	H88	0:00	0	0:00	0:00
CK	H89	16:34	75	0:20	3:12
CL	H90	0:00	0	0:00	0:00
CM	H91	0:00	0	0:00	0:00
CN	H92	2:32	35	0:06	0:29
CO	H93	9:37	48	0:22	1:28
CP	H94	0:00	0	0:00	0:00
CQ	H95	8:44	45	0:22	1:22
CR	H96	7:49	50	0:13	1:41
CS	H97	10:43	67	0:13	2:11
CT	H98	6:27	42	0:16	1:18
CU	H99	7:49	41	0:21	1:15
CV	H100	10:05	62	0:16	1:57
CW	H101	0:00	0	0:00	0:00
CX	H102	5:48	41	0:15	1:08
CY	H103	5:22	30	0:17	0:36
CZ	H104	5:30	38	0:15	1:04
DA	H105	7:02	40	0:20	1:08
DB	H106	0:00	0	0:00	0:00
DC	H107	0:00	0	0:00	0:00
DD	H108	3:46	26	0:14	0:47
DE	H109	4:33	31	0:14	0:57
DF	H110	15:45	82	0:17	3:07
DG	H111	5:19	32	0:17	0:35
DH	H112	4:29	23	0:18	0:43
DI	H113	0:00	0	0:00	0:00
DJ	H114	0:00	0	0:00	0:00
DK	H115	4:17	22	0:18	0:39
DL	H116	15:58	82	0:17	3:08
DM	H117	15:45	81	0:17	3:05
DN	H118	5:33	34	0:17	0:37
DO	H119	0:00	0	0:00	0:00
DP	H120	0:00	0	0:00	0:00
DQ	H121	15:22	79	0:17	2:58
DR	H122	14:15	75	0:16	2:45
DS	H123	0:00	0	0:00	0:00
DT	H124	0:00	0	0:00	0:00
DU	H125	9:00	52	0:16	0:52
DV	H126	0:00	0	0:00	0:00
DW	H127	0:00	0	0:00	0:00
DX	H128	0:00	0	0:00	0:00
DY	H129	3:47	22	0:17	0:33
DZ	H130	4:23	25	0:17	0:57
EA	H131	0:00	0	0:00	0:00
EB	H132	3:38	21	0:16	0:32
EC	H133	8:08	48	0:14	1:28
ED	H134	0:00	0	0:00	0:00
EE	H135	3:19	30	0:11	0:38
EF	H136	3:35	22	0:16	0:32
EG	H137	0:00	0	0:00	0:00
EH	H138	15:08	78	0:18	2:46
EI	H139	0:00	0	0:00	0:00
EJ	H140	0:00	0	0:00	0:00
EK	H141	3:02	29	0:10	0:35
EL	H142	3:32	21	0:16	0:30
EM	H143	0:00	0	0:00	0:00

To be continued on next page...

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Main Result

Calculation: 6778 Moanmore Lower Worst Case

...continued from previous page

No.	Name	Shadow, worst case		Shadow, expected values	
		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]
EN	H144	0:00	0	0:00	0:00
EO	H145	0:00	0	0:00	0:00
EP	H146	3:16	21	0:16	0:28
EQ	H147	1:32	16	0:09	0:20
ER	H148	8:34	55	0:15	1:35
ES	H149	1:30	15	0:10	0:16
ET	H150	41:12	131	0:30	7:27
EU	H151	0:00	0	0:00	0:00
EV	H152	3:19	22	0:15	0:25
EW	H153	0:00	0	0:00	0:00
EX	H154	3:01	20	0:15	0:25
EY	H155	0:00	0	0:00	0:00
EZ	H156	0:00	0	0:00	0:00
FA	H157	0:00	0	0:00	0:00
FB	H158	0:00	0	0:00	0:00
FC	H159	0:00	0	0:00	0:00
FD	H160	0:00	0	0:00	0:00
FE	H161	0:00	0	0:00	0:00
FF	H162	0:00	0	0:00	0:00
FG	H163	8:36	51	0:15	1:28
FH	H164	0:00	0	0:00	0:00
FI	H165	0:00	0	0:00	0:00
FJ	H166	0:00	0	0:00	0:00
FK	H167	0:00	0	0:00	0:00
FL	H168	0:00	0	0:00	0:00
FM	H169	0:00	0	0:00	0:00
FN	H170	0:00	0	0:00	0:00
FO	H171	0:00	0	0:00	0:00
FP	H172	8:28	50	0:14	1:24
FQ	H173	0:00	0	0:00	0:00
FR	H174	0:00	0	0:00	0:00
FS	H175	0:00	0	0:00	0:00
FT	H176	0:00	0	0:00	0:00
FU	H177	23:27	97	0:23	3:32
FV	H178	7:23	46	0:13	1:13
FW	H179	0:00	0	0:00	0:00
FX	H180	0:00	0	0:00	0:00
FY	H181	0:00	0	0:00	0:00
FZ	H182	0:00	0	0:00	0:00
GA	H183	0:00	0	0:00	0:00

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

No.	Name	Worst case	Expected
		[h/year]	[h/year]
1	Moanmore Lower T1	502:53	71:28
2	Moanmore Lower T2	278:41	39:53
3	Moanmore Lower T3	387:51	62:38
4	Moanmore T1	55:05	11:12
5	Moanmore T2	55:27	11:10
6	Moanmore T3	58:41	10:45
7	Moanmore T4	27:51	5:54
8	Moanmore T5	47:51	7:54
9	Moanmore T6	29:23	5:30
10	Moanmore T7	54:51	11:21

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.

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case 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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January			February			March			April			May			June		
1	08:50		15:00 (3)	08:22		07:27		16:40 (1)	07:15		06:08		06:33 (7)	05:22		06:05 (5)		
	16:34	41	15:41 (3)	17:23		18:16	47	17:27 (1)	20:12		21:04	16	07:04 (4)	21:52	13	06:18 (5)		
2	08:50		15:00 (3)	08:21		07:25		16:41 (1)	07:13		06:06		06:34 (7)	05:21		06:06 (5)		
	16:35	41	15:41 (3)	17:25		18:18	46	17:27 (1)	20:13		21:06	11	06:45 (7)	21:53	12	06:18 (5)		
3	08:50		15:00 (3)	08:19		07:23		16:43 (1)	07:10		06:05		06:33 (7)	05:20		06:07 (5)		
	16:36	41	15:41 (3)	17:26		18:20	43	17:26 (1)	20:15		21:08	11	06:44 (7)	21:54	11	06:18 (5)		
4	08:50		15:01 (3)	08:17		07:20		16:43 (1)	07:08		06:03		06:33 (7)	05:19		06:07 (5)		
	16:37	41	15:42 (3)	17:28	5	16:58 (1)	18:21	41	17:24 (1)	20:17		21:09	11	06:44 (7)	21:55	10	06:17 (5)	
5	08:50		15:01 (3)	08:16		07:18		16:45 (1)	07:06		06:01		06:33 (7)	05:18		06:07 (5)		
	16:38	41	15:42 (3)	17:30	9	17:00 (1)	18:23	38	17:23 (1)	20:19		21:11	10	06:43 (7)	21:56	10	06:17 (5)	
6	08:49		15:03 (3)	08:14		07:16		16:46 (1)	07:03		05:59		06:34 (7)	05:18		06:08 (5)		
	16:39	39	15:42 (3)	17:32	13	17:02 (2)	18:25	35	17:21 (1)	20:20		21:13	8	06:42 (7)	21:57	9	06:17 (5)	
7	08:49		15:03 (3)	08:12		07:14		16:48 (1)	07:01		05:57		06:36 (7)	05:17		06:08 (5)		
	16:41	39	15:42 (3)	17:34	17	17:04 (2)	18:27	30	17:18 (1)	20:22		21:14	5	06:41 (7)	21:58	8	06:16 (5)	
8	08:48		15:03 (3)	08:10		07:11		16:50 (1)	06:59		05:55			05:17		06:10 (5)		
	16:42	39	15:42 (3)	17:36	20	17:06 (2)	18:29	26	17:16 (1)	20:24		21:16		21:59	6	06:16 (5)		
9	08:48		15:05 (3)	08:08		07:09		16:53 (1)	06:56		05:53			05:16		06:10 (5)		
	16:43	38	15:43 (3)	17:38	23	17:08 (2)	18:31	20	17:13 (1)	20:26		21:18		22:00	5	06:15 (5)		
10	08:47		15:05 (3)	08:07		07:07		16:44 (1)	06:54		05:52			05:16		06:12 (5)		
	16:45	38	15:43 (3)	17:40	26	17:10 (2)	18:32	9	17:07 (1)	20:27		21:19		22:00	2	06:14 (5)		
11	08:47		15:06 (3)	08:05		07:04		16:43 (1)	07:04		06:52		05:50	05:15				
	16:46	37	15:43 (3)	17:42	30	17:13 (2)	18:34		20:29		21:21			22:01				
12	08:46		15:06 (3)	08:03		07:02		16:42 (1)	07:02		06:49		05:48	05:15				
	16:48	37	15:43 (3)	17:44	33	17:15 (2)	18:36		20:31		21:23			22:02				
13	08:45		15:07 (3)	08:01		07:00		16:42 (1)	07:00		06:47		05:46	05:15				
	16:49	35	15:42 (3)	17:46	35	17:17 (2)	18:38		20:33		21:24			22:03				
14	08:44		15:08 (3)	07:59		06:57		16:41 (1)	06:57		06:45		05:45	05:14				
	16:51	34	15:42 (3)	17:48	38	17:19 (2)	18:40		20:34		21:26			22:03				
15	08:44		15:09 (3)	07:57		06:55		16:40 (1)	06:55		06:43		05:43	05:14				
	16:53	33	15:42 (3)	17:49	41	17:21 (2)	18:41		20:36		21:28			22:04				
16	08:43		15:10 (3)	07:55		06:53		16:40 (1)	06:53		06:40		05:42	05:14				
	16:54	32	15:42 (3)	17:51	43	17:23 (2)	18:43		20:38		21:29			22:04				
17	08:42		15:12 (3)	07:53		06:50		16:40 (1)	06:50		06:38		05:40	05:14				
	16:56	29	15:41 (3)	17:53	45	17:25 (2)	18:45		20:40		21:31			22:05				
18	08:41		15:13 (3)	07:51		06:48		16:40 (1)	06:48		06:36		05:39	05:14				
	16:57	28	15:41 (3)	17:55	48	17:28 (1)	18:47		20:41		21:32			22:05				
19	08:40		15:15 (3)	07:49		06:46		16:38 (1)	06:46		06:34		05:37	05:14				
	16:59	26	15:41 (3)	17:57	51	17:29 (1)	18:49		20:43		21:34			22:06				
20	08:39		15:16 (3)	07:47		06:43		16:38 (1)	06:43		06:31		05:36	05:14				
	17:01	23	15:39 (3)	17:59	53	17:31 (1)	18:50		20:45		21:35	5	06:13 (5)	22:06				
21	08:37		15:18 (3)	07:45		06:41		16:38 (1)	06:41		06:29		07:00 (4)	05:14				
	17:03	20	15:38 (3)	18:01	53	17:31 (1)	18:52		20:47	6	07:06 (4)	21:37	8	06:15 (5)	22:06			
22	08:36		15:21 (3)	07:42		06:39		16:39 (1)	06:39		06:27		06:58 (4)	05:33				
	17:04	16	15:37 (3)	18:03	52	17:31 (1)	18:54		20:48	10	07:08 (4)	21:38	10	06:16 (5)	22:06			
23	08:35		15:24 (3)	07:40		06:36		16:39 (1)	06:36		06:25		06:56 (4)	05:32				
	17:06	9	15:33 (3)	18:05	52	17:31 (1)	18:56		20:50	13	07:09 (4)	21:40	12	06:17 (5)	22:07			
24	08:34			07:38		06:34		16:38 (1)	06:34		06:23		06:56 (4)	05:30				
	17:08			18:07	52	17:30 (1)	18:57		20:52	13	07:09 (4)	21:41	12	06:16 (5)	22:07			
25	08:32			07:36		06:31		16:39 (1)	06:31		06:21		06:55 (4)	05:29				
	17:10			18:08	51	17:30 (1)	18:59		20:54	15	07:10 (4)	21:43	13	06:17 (5)	22:07			
26	08:31			07:34		06:29		16:39 (1)	06:29		06:19		06:55 (4)	05:28				
	17:12			18:10	51	17:30 (1)	19:01		20:55	15	07:10 (4)	21:44	13	06:17 (5)	22:07			
27	08:30			07:32		06:27		16:40 (1)	06:27		06:17		06:55 (4)	05:27				
	17:13			18:12	49	17:29 (1)	19:03		20:57	14	07:09 (4)	21:45	13	06:17 (5)	22:07			
28	08:28			07:29		06:24		16:40 (1)	06:24		06:14		06:55 (4)	05:26				
	17:15			18:14	48	17:28 (1)	19:05		20:59	14	07:09 (4)	21:47	14	06:18 (5)	22:06			
29	08:27					07:22			07:22		06:12		06:37 (7)	05:25				
	17:17					20:06			20:06	18	07:08 (4)	21:48	14	06:18 (5)	22:06			
30	08:25					07:20			07:20		06:10		06:35 (7)	05:24				
	17:19					20:08			20:08	18	07:06 (4)	21:49	13	06:18 (5)	22:06			
31	08:24					07:17			07:17				05:23	06:05 (5)				
	17:21					20:10			20:10				21:50	06:18 (5)				
Potential sun hours	256			276		367			418		489			503				
Total, worst case	757		938		335	136		212			86							
Sun reduction	0.16		0.21		0.24	0.35		0.37			0.30							
Oper. time red.	1.00		1.00		1.00	1.00		1.00			1.00							
Wind dir. red.	0.60		0.65		0.65	0.66		0.65			0.64							
Total reduction	0.10		0.13		0.16	0.23		0.24			0.19							
Total, real	72		125		53	32		50			16							

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case

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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

July		August		September		October		November		December	
1	05:18		05:56		06:48		07:38		07:34		16:14 (1)
	22:06		21:33		20:29		19:18		17:10	26	16:40 (2)
2	05:19		05:58		06:49		07:40		07:36		16:15 (1)
	22:05		21:31		20:27		19:15		17:08	23	16:38 (2)
3	05:20	06:16 (5)	05:59		06:51		07:42		07:37		16:16 (1)
	22:05	06:19 (5)	21:29		20:24		19:13		17:06	20	16:36 (2)
4	05:21	06:15 (5)	06:01		06:53		07:43		07:39		16:17 (1)
	22:05	06:21 (5)	21:27		20:22		19:11	16	17:48 (1)	17	16:34 (2)
5	05:21	06:15 (5)	06:03		06:54		07:45		07:41		16:19 (1)
	22:04	06:22 (5)	21:26		20:20		19:08	24	17:52 (1)	13	16:32 (2)
6	05:22	06:15 (5)	06:04		06:56		07:47		07:43		16:21 (1)
	22:04	06:23 (5)	21:24	6	06:51 (7)		19:06	28	17:54 (1)	9	16:30 (1)
7	05:23	06:15 (5)	06:06		06:44 (7)		07:49		07:45		16:23 (1)
	22:03	06:24 (5)	21:22	9	06:53 (7)		20:15	33	17:55 (1)	5	16:28 (1)
8	05:24	06:13 (5)	06:07		06:43 (7)		07:50		07:47		16:24 (1)
	22:02	06:24 (5)	21:20	10	06:53 (7)		20:12	37	17:57 (1)		16:24 (1)
9	05:25	06:13 (5)	06:09		06:43 (7)		07:52		07:48		16:24 (1)
	22:02	06:24 (5)	21:18	11	06:54 (7)		20:10	39	17:58 (1)		16:24 (1)
10	05:26	06:13 (5)	06:11		06:42 (7)		07:53		07:50		16:24 (1)
	22:01	06:25 (5)	21:16	11	06:53 (7)		20:08	42	17:59 (1)		16:24 (1)
11	05:27	06:13 (5)	06:12		06:42 (7)		07:54		07:52		16:24 (1)
	22:00	06:25 (5)	21:14	11	06:53 (7)		20:05	44	18:00 (1)		16:24 (1)
12	05:28	06:13 (5)	06:14		06:42 (7)		07:56		07:54		16:24 (1)
	21:59	06:26 (5)	21:12	17	07:13 (4)		20:03	46	18:00 (1)		16:24 (1)
13	05:29	06:14 (5)	06:16		06:44 (7)		07:59		07:56		16:24 (1)
	21:58	06:27 (5)	21:10	18	07:15 (4)		20:01	48	18:01 (1)		16:24 (1)
14	05:31	06:14 (5)	06:17		06:45 (7)		08:01		07:58		16:24 (1)
	21:57	06:27 (5)	21:08	16	07:16 (4)		19:58	49	18:01 (1)		16:24 (1)
15	05:32	06:13 (5)	06:19		07:02 (4)		08:03		07:59		16:24 (1)
	21:56	06:27 (5)	21:06	14	07:16 (4)		19:56	50	18:02 (1)		16:24 (1)
16	05:33	06:13 (5)	06:21		07:02 (4)		08:04		08:01		16:24 (1)
	21:55	06:27 (5)	21:04	15	07:17 (4)		19:53	51	18:02 (1)		16:24 (1)
17	05:34	06:13 (5)	06:22		07:01 (4)		08:06		08:03		16:24 (1)
	21:54	06:27 (5)	21:02	15	07:16 (4)		19:51	51	18:02 (1)		16:24 (1)
18	05:36	06:13 (5)	06:24		07:02 (4)		08:08		08:05		16:24 (1)
	21:53	06:27 (5)	21:00	14	07:16 (4)		19:49	52	18:02 (1)		16:24 (1)
19	05:37	06:15 (5)	06:26		07:01 (4)		08:10		08:07		16:24 (1)
	21:52	06:27 (5)	20:58	14	07:15 (4)		19:46	53	18:03 (1)	9	15:08 (3)
20	05:38	06:15 (5)	06:27		07:02 (4)		08:12		08:08		15:56 (3)
	21:50	06:26 (5)	20:56	12	07:14 (4)		19:44	53	18:02 (1)	16	15:12 (3)
21	05:40	06:15 (5)	06:29		07:03 (4)		08:13		08:10		15:54 (3)
	21:49	06:26 (5)	20:53	9	07:12 (4)		19:42	52	18:01 (1)	20	15:14 (3)
22	05:41	06:16 (5)	06:31		07:05 (4)		08:15		08:12		15:53 (3)
	21:48	06:25 (5)	20:51	5	07:10 (4)		19:39	52	18:01 (1)	23	15:16 (3)
23	05:43	06:18 (5)	06:32		07:25		08:17		08:13		15:51 (3)
	21:46	06:24 (5)	20:49		19:37		18:28	50	17:59 (1)	26	15:17 (3)
24	05:44	06:20 (5)	06:34		07:26		08:19		08:15		15:50 (3)
	21:45	06:21 (5)	20:47		19:34		18:26	47	17:56 (2)	28	15:18 (3)
25	05:45		06:36		07:28		07:21		08:17		15:50 (3)
	21:44		20:45		19:32		17:24	45	16:54 (2)	30	15:20 (3)
26	05:47		06:37		07:30		07:23		08:18		15:49 (3)
	21:42		20:42		19:30		17:22	42	16:52 (2)	32	15:21 (3)
27	05:48		06:39		07:31		07:24		08:20		15:49 (3)
	21:41		20:40		19:27		17:20	40	16:50 (2)	33	15:22 (3)
28	05:50		06:41		07:33		07:26		08:22		15:48 (3)
	21:39		20:38		19:25		17:18	37	16:48 (2)	34	15:22 (3)
29	05:51		06:43		07:35		07:28		08:23		15:48 (3)
	21:38		20:36		19:22		17:16	35	16:46 (2)	35	15:23 (3)
30	05:53		06:44		07:36		07:30		08:25		15:48 (3)
	21:36		20:33		19:20		17:14	32	16:44 (2)	37	15:25 (3)
31	05:55		06:46				07:32		16:13 (1)		16:32 (1)
	21:34		20:31				17:12	29	16:42 (2)		16:32 (1)
Potential sun hours	506		456		381		330		263		240
Total, worst case		224		207			1177		436		1269
Sun reduction		0.26		0.30			0.24		0.19		0.14
Oper. time red.		1.00		1.00			1.00		1.00		1.00
Wind dir. red.		0.64		0.66			0.65		0.62		0.60
Total reduction		0.17		0.20			0.15		0.11		0.08
Total, real		38		41			181		50		105

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case 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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:09	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:52	22:06	21:33	20:29	19:18	17:10	16:28
2	08:50	08:21	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:36	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:27	19:15	17:08	16:28
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:05	21:27	20:22	19:11	17:04	16:26
5	08:50	08:16	07:18	07:06	06:01	05:19	05:22	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:26	20:20	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:40	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:07	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:13	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	22:00	22:01	21:18	20:10	18:59	16:56	16:24
10	08:47	08:07	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:47	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:55	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:03	21:58	21:10	20:01	18:50	16:49	16:24
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:23
15	08:44	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:50	18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:54	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:46
	16:58	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:07	08:46
	16:59	17:57	18:49	20:43	21:34	22:06	21:52	20:58	19:46	18:37	16:41	16:24
20	08:39	07:47	06:43	06:32	05:36	05:14	05:38	06:27	07:20	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:34	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:48
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:42	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:49	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:33	07:25	08:17	08:13	08:49
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:57	20:52	21:41	22:07	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:46	06:36	07:28	08:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:43	22:07	21:44	20:45	19:32	18:24	16:34	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:55	21:44	22:07	21:42	20:42	19:30	18:22	16:33	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:48	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:07	21:41	20:40	19:27	18:20	16:32	16:29
28	08:28	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:22	08:50
	17:15	18:14	19:05	20:59	21:47	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:13	05:25	05:17	05:52	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:38	20:36	19:22	18:16	16:30	16:30
30	08:25		07:20	06:11	05:24	05:18	05:53	06:44	07:37	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case 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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January		February		March		April		May		June				
1	08:50	08:22			07:27		17:06 (3)	07:15		19:13 (2)	06:08	19:42 (1)	05:22		
	16:34	17:23			18:16	43	17:49 (3)	20:12	24	19:37 (2)	21:04	48	20:30 (1)	21:52	
2	08:50	08:21			07:25		17:06 (3)	07:13		19:14 (2)	06:06		19:43 (1)	05:21	
	16:35	17:25			18:18	45	17:51 (3)	20:13	22	19:36 (2)	21:06	47	20:30 (1)	21:53	
3	08:50	08:19			07:23		17:06 (3)	07:10		19:15 (2)	06:05		19:43 (1)	05:20	
	16:36	17:27			18:20	48	17:54 (3)	20:15	18	19:33 (2)	21:08	47	20:30 (1)	21:54	
4	08:50	08:17			07:20		17:04 (3)	07:08		19:18 (2)	06:03		19:43 (1)	05:19	
	16:37	17:28			18:21	51	17:55 (3)	20:17	13	19:31 (2)	21:09	46	20:29 (1)	21:55	
5	08:50	08:16			07:18		17:04 (3)	07:06		19:24 (2)	06:01		19:43 (1)	05:18	
	16:38	17:30			18:23	52	17:56 (3)	20:19	1	19:25 (2)	21:11	45	20:28 (1)	21:56	
6	08:49	08:14			07:16		17:04 (3)	07:03			05:59		19:43 (1)	05:18	
	16:39	17:32			18:25	52	17:56 (3)	20:20			21:13	45	20:28 (1)	21:57	
7	08:49	08:12			07:14		17:04 (3)	07:01			05:57		19:45 (1)	05:17	
	16:41	17:34			18:27	51	17:55 (3)	20:22			21:14	43	20:28 (1)	21:58	
8	08:48	08:10			07:11		17:04 (3)	06:59			05:55		19:45 (1)	05:17	
	16:42	17:36			18:29	51	17:55 (3)	20:24			21:16	42	20:27 (1)	21:59	
9	08:48	08:08			07:09		17:04 (3)	06:56			05:53		19:45 (1)	05:16	
	16:43	17:38			18:31	51	17:55 (3)	20:26			21:18	40	20:25 (1)	22:00	
10	08:47	08:07			07:07		17:04 (3)	06:54			05:52		19:47 (1)	05:16	
	16:45	17:40			18:32	49	17:53 (3)	20:27			21:19	38	20:25 (1)	22:00	
11	08:47	08:05			07:04		17:04 (3)	06:52			05:50		19:47 (1)	05:15	
	16:46	17:42			18:34	49	17:53 (3)	20:29			21:21	37	20:24 (1)	22:01	
12	08:46	08:03			07:02		17:04 (3)	06:49		20:00 (1)	05:48		19:48 (1)	05:15	
	16:48	17:44			18:36	48	17:52 (3)	20:31	4	20:04 (1)	21:23	35	20:23 (1)	22:02	
13	08:45	08:01			07:00		17:05 (3)	06:47		19:56 (1)	05:46		19:49 (1)	05:15	
	16:49	17:46			18:38	46	17:51 (3)	20:33	9	20:05 (1)	21:24	33	20:22 (1)	22:03	
14	08:44	07:59			06:57		17:06 (3)	06:45		19:54 (1)	05:45		19:50 (1)	05:14	
	16:51	17:48			18:40	44	17:50 (3)	20:34	13	20:07 (1)	21:26	30	20:20 (1)	22:03	
15	08:44	07:57			06:55		17:06 (3)	06:43		19:53 (1)	05:43		19:52 (1)	05:14	
	16:53	17:49			18:41	42	17:48 (3)	20:36	16	20:09 (1)	21:28	28	20:20 (1)	22:04	
16	08:43	07:55			06:53		17:08 (3)	06:40		19:51 (1)	05:42		19:54 (1)	05:14	
	16:54	17:51			18:43	39	17:47 (3)	20:38	20	20:11 (1)	21:29	24	20:18 (1)	22:04	
17	08:42	07:53			06:50		17:09 (3)	06:38		19:50 (1)	05:40		19:55 (1)	05:14	
	16:56	17:53			18:45	37	17:46 (3)	20:40	23	20:13 (1)	21:31	21	20:16 (1)	22:05	
18	08:41	07:51		17:24 (3)	06:48		17:10 (3)	06:36		19:49 (1)	05:39		19:58 (1)	05:14	
	16:57	17:55	4		17:28 (3)	18:47	34	17:44 (3)	20:41	25	20:14 (1)	21:32	16	20:14 (1)	22:05
19	08:40	07:49			17:19 (3)	06:46		17:12 (3)	06:34		19:47 (1)	05:37		20:01 (1)	05:14
	16:59	17:57	10		17:29 (3)	18:49	34	18:23 (2)	20:43	28	20:15 (1)	21:34	11	20:12 (1)	22:06
20	08:39	07:47			17:17 (3)	06:43		17:14 (3)	06:31		19:46 (1)	05:36			05:14
	17:01	17:59	14		17:31 (3)	18:50	32	18:24 (2)	20:45	31	20:17 (1)	21:35			22:06
21	08:37	07:45			17:15 (3)	06:41		17:17 (3)	06:29		19:45 (1)	05:34			05:14
	17:03	18:01	18		17:33 (3)	18:52	29	18:26 (2)	20:47	34	20:19 (1)	21:37			22:06
22	08:36	07:42			17:14 (3)	06:39		17:23 (3)	06:27		19:44 (1)	05:33			05:14
	17:04	18:03	21		17:35 (3)	18:54	20	18:28 (2)	20:48	36	20:20 (1)	21:38			22:06
23	08:35	07:40			17:13 (3)	06:36		18:13 (2)	06:25		19:44 (1)	05:32			05:15
	17:06	18:05	25		17:38 (3)	18:56	17	18:30 (2)	20:50	38	20:22 (1)	21:40			22:06
24	08:34	07:38			17:10 (3)	06:34		18:13 (2)	06:23		19:43 (1)	05:30			05:15
	17:08	18:07	29		17:39 (3)	18:57	19	18:32 (2)	20:52	41	20:24 (1)	21:41			22:07
25	08:32	07:36			17:10 (3)	06:31		18:12 (2)	06:21		19:43 (1)	05:29			05:15
	17:10	18:08	31		17:41 (3)	18:59	21	18:33 (2)	20:54	42	20:25 (1)	21:43			22:07
26	08:31	07:34			17:09 (3)	06:29		18:12 (2)	06:19		19:43 (1)	05:28			05:16
	17:12	18:10	34		17:43 (3)	19:01	23	18:35 (2)	20:55	44	20:27 (1)	21:44			22:07
27	08:30	07:32			17:08 (3)	06:27		18:12 (2)	06:17		19:42 (1)	05:27			05:16
	17:13	18:12	38		17:46 (3)	19:03	25	18:37 (2)	20:57	47	20:29 (1)	21:45			22:07
28	08:28	07:29			17:06 (3)	06:24		18:11 (2)	06:14		19:42 (1)	05:26			05:17
	17:15	18:14	41		17:47 (3)	19:05	27	18:38 (2)	20:59	48	20:30 (1)	21:47			22:06
29	08:27				07:22			19:11 (2)	06:12		19:42 (1)	05:25			05:17
	17:17				20:06	29		19:40 (2)	21:01	49	20:31 (1)	21:48			22:06
30	08:25				07:20			19:12 (2)	06:10		19:42 (1)	05:24			05:18
	17:19				20:08	28		19:40 (2)	21:02	48	20:30 (1)	21:49			22:06
31	08:24				07:17			19:12 (2)			05:23				
	17:21				20:10	26		19:38 (2)			21:50				
Potential sun hours	256	276			367		418			489		503			
Total, worst case			265		1162		674		676						
Sun reduction			0.21		0.24		0.35		0.37						
Oper. time red.			1.00		1.00		1.00		1.00						
Wind dir. red.			0.66		0.66		0.68		0.67						
Total reduction			0.14		0.16		0.24		0.25						
Total, real			36		188		161		168						

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case 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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

July		August		September		October		November		December				
1	05:18	05:56	19:59 (1)	06:48		07:38	17:44 (3)	07:34	08:26					
	22:06	21:33	35	20:34 (1)	20:29	19:18	47	18:31 (3)	17:10	16:28				
2	05:19	05:58	19:57 (1)	06:49		07:40	17:43 (3)	07:36	08:28					
	22:05	21:31	38	20:35 (1)	20:26	19:15	48	18:31 (3)	17:08	16:27				
3	05:20	05:59	19:56 (1)	06:51		07:42	17:42 (3)	07:37	08:29					
	22:05	21:29	39	20:35 (1)	20:24	19:13	49	18:31 (3)	17:06	16:27				
4	05:21	06:01	19:55 (1)	06:53		07:43	17:41 (3)	07:39	08:30					
	22:05	21:27	41	20:36 (1)	20:22	19:11	50	18:31 (3)	17:04	16:26				
5	05:21	06:03	19:54 (1)	06:54		07:45	17:41 (3)	07:41	08:32					
	22:04	21:26	42	20:36 (1)	20:20	19:08	51	18:32 (3)	17:02	16:26				
6	05:22	06:04	19:54 (1)	06:56		07:47	17:41 (3)	07:43	08:33					
	22:03	21:24	43	20:37 (1)	20:17	19:06	51	18:32 (3)	17:01	16:25				
7	05:23	06:06	19:54 (1)	06:58		07:49	17:40 (3)	07:45	08:34					
	22:03	21:22	44	20:38 (1)	20:15	19:04	51	18:31 (3)	16:59	16:25				
8	05:24	06:07	19:53 (1)	06:59		19:12 (2)	07:50	17:39 (3)	07:47	08:36				
	22:02	21:20	45	20:38 (1)	20:12	19:25 (2)	19:01	18:31 (3)	16:57	16:24				
9	05:25	06:09	19:52 (1)	07:01		19:10 (2)	07:52	17:39 (3)	07:48	08:37				
	22:01	21:18	47	20:39 (1)	20:10	19:27 (2)	18:59	18:31 (3)	16:56	16:24				
10	05:26	06:11	19:51 (1)	07:03		19:08 (2)	07:54	17:40 (3)	07:50	08:38				
	22:01	21:16	47	20:38 (1)	20:08	19:29 (2)	18:57	18:29 (3)	16:54	16:24				
11	05:27	06:12	19:51 (1)	07:04		19:05 (2)	07:56	17:40 (3)	07:52	08:39				
	22:00	21:14	48	20:39 (1)	20:05	19:30 (2)	18:54	18:27 (3)	16:52	16:24				
12	05:28	06:14	19:50 (1)	07:06		19:04 (2)	07:57	17:39 (3)	07:54	08:40				
	21:59	21:12	49	20:39 (1)	20:03	19:31 (2)	18:52	18:23 (3)	16:51	16:23				
13	05:30	06:16	19:50 (1)	07:08		19:03 (2)	07:59	17:39 (3)	07:56	08:41				
	21:58	21:10	49	20:39 (1)	20:01	19:30 (2)	18:50	18:21 (3)	16:49	16:23				
14	05:31	06:17	19:50 (1)	07:09		19:02 (2)	08:01	17:40 (3)	07:58	08:42				
	21:57	21:08	48	20:38 (1)	19:58	19:31 (2)	18:48	18:19 (3)	16:48	16:23				
15	05:32	06:19	19:50 (1)	07:11		19:01 (2)	08:03	17:41 (3)	07:59	08:43				
	21:56	21:06	47	20:37 (1)	19:56	19:29 (2)	18:45	18:17 (3)	16:46	16:23				
16	05:33	06:21	19:50 (1)	07:13		19:00 (2)	08:04	17:41 (3)	08:01	08:44				
	21:55	21:04	46	20:36 (1)	19:53	19:26 (2)	18:43	18:15 (3)	16:45	16:24				
17	05:34	06:22	19:49 (1)	07:14		19:00 (2)	08:06	17:42 (3)	08:03	08:45				
	21:54	21:02	44	20:33 (1)	19:51	19:24 (2)	18:41	18:13 (3)	16:43	16:24				
18	05:36	06:24	19:50 (1)	07:16		19:00 (2)	08:08	17:43 (3)	08:05	08:46				
	21:53	21:00	42	20:32 (1)	19:49	19:22 (2)	18:39	18:10 (3)	16:42	16:24				
19	05:37	06:26	19:49 (1)	07:18		18:59 (2)	08:10	17:43 (3)	08:07	08:46				
	21:52	20:58	40	20:29 (1)	19:46	19:19 (2)	18:37	18:07 (3)	16:40	16:24				
20	05:38	06:27	19:50 (1)	07:19		19:00 (2)	08:12	17:45 (3)	08:08	08:47				
	21:50	20:56	37	20:27 (1)	19:44	19:17 (2)	18:34	18:05 (3)	16:39	16:25				
21	05:40	06:29	19:49 (1)	07:21		19:00 (2)	08:13	17:46 (3)	08:10	08:47				
	21:49	20:53	36	20:25 (1)	19:42	19:14 (2)	18:32	18:03 (3)	16:38	16:25				
22	05:41	06:31	19:50 (1)	07:23		18:03 (3)	08:15	17:48 (3)	08:12	08:48				
	21:48	20:51	33	20:23 (1)	19:39	19:11 (2)	18:30	18:01 (3)	16:37	16:25				
23	05:43	06:32	19:51 (1)	07:25		17:59 (3)	08:17	17:51 (3)	08:13	08:49				
	21:46	20:49	30	20:21 (1)	19:37	19:09 (2)	18:28	17:59 (3)	16:36	16:26				
24	05:44	06:34	19:51 (1)	07:26		17:56 (3)	08:19	17:54 (3)	08:15	08:49				
	21:45	20:18 (1)	20:47	28	20:19 (1)	19:34	34	19:07 (2)	18:26	2	17:56 (3)	16:35	16:27	
25	05:45	20:10 (1)	06:36	19:52 (1)	07:28	17:53 (3)	07:21		08:17	08:49				
	21:44	20:24 (1)	20:45	25	20:17 (1)	19:32	34	19:04 (2)	17:24	16:33	16:27			
26	05:47	20:07 (1)	06:37	19:52 (1)	07:30	17:51 (3)	07:23		08:18	08:50				
	21:42	19	20:26 (1)	20:42	22	20:14 (1)	19:30	36	18:27 (3)	17:22	16:32	16:28		
27	05:48	20:05 (1)	06:39	19:53 (1)	07:31	17:50 (3)	07:24		08:20	08:50				
	21:41	22	20:27 (1)	20:40	19	20:12 (1)	19:27	39	18:29 (3)	17:20	16:31	16:29		
28	05:50	20:04 (1)	06:41	19:55 (1)	07:33	17:48 (3)	07:26		08:22	08:50				
	21:39	26	20:30 (1)	20:38	16	20:11 (1)	19:25	42	18:30 (3)	17:18	16:31	16:30		
29	05:51	20:02 (1)	06:43	19:55 (1)	07:35	17:46 (3)	07:28		08:23	08:50				
	21:38	28	20:30 (1)	20:36	13	20:08 (1)	19:22	44	18:30 (3)	17:16	16:30	16:30		
30	05:53	20:01 (1)	06:44	19:57 (1)	07:36	17:45 (3)	07:30		08:25	08:50				
	21:36	31	20:32 (1)	20:33	9	20:06 (1)	19:20	46	18:31 (3)	17:14	16:29	16:31		
31	05:55	19:59 (1)	06:46	19:59 (1)		07:32				08:50				
	21:34	34	20:33 (1)	20:31	4	20:03 (1)				17:12	16:32	16:32		
Potential sun hours	506		456		381		330		263	240				
Total, worst case	178		1106		644		884							
Sun reduction	0.26		0.30		0.28		0.24							
Oper. time red.	1.00		1.00		1.00		1.00							
Wind dir. red.	0.67		0.67		0.67		0.66							
Total reduction	0.18		0.20		0.19		0.16							
Total, real	32		221		122		139							

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case 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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

January		February		March		April		May		June	
1	08:50	08:22		07:27		17:30 (3)	07:15	19:20 (2)	06:08	19:54 (1)	05:22
	16:34	17:23		18:16	19	17:49 (3)	20:12	25	19:45 (2)	21:04	21:51
2	08:50	08:21		07:25		17:29 (3)	07:13		19:20 (2)	06:06	19:55 (1)
	16:35	17:25		18:18	22	17:51 (3)	20:13	27	19:47 (2)	21:06	21:53
3	08:50	08:19		07:23		17:28 (3)	07:10		19:20 (2)	06:05	19:55 (1)
	16:36	17:27		18:20	26	17:54 (3)	20:15	26	19:46 (2)	21:08	21:54
4	08:50	08:17		07:20		17:26 (3)	07:08		19:21 (2)	06:03	19:54 (1)
	16:37	17:28		18:21	29	17:55 (3)	20:17	25	19:46 (2)	21:09	21:55
5	08:50	08:15		07:18		17:25 (3)	07:06		19:22 (2)	06:01	19:54 (1)
	16:38	17:30		18:23	32	17:57 (3)	20:19	22	19:44 (2)	21:11	21:56
6	08:49	08:14		07:16		17:24 (3)	07:03		19:22 (2)	05:59	19:54 (1)
	16:39	17:32		18:25	35	17:59 (3)	20:20	20	19:42 (2)	21:13	21:57
7	08:49	08:12		07:14		17:23 (3)	07:01		19:25 (2)	05:57	19:55 (1)
	16:41	17:34		18:27	37	18:00 (3)	20:22	15	19:40 (2)	21:14	21:58
8	08:48	08:10		07:11		17:22 (3)	06:59		19:28 (2)	05:55	19:55 (1)
	16:42	17:36		18:29	41	18:03 (3)	20:24	9	19:37 (2)	21:16	21:59
9	08:48	08:08		07:09		17:22 (3)	06:56		05:53	19:55 (1)	05:16
	16:43	17:38		18:31	43	18:05 (3)	20:26		21:18	20:39 (1)	22:00
10	08:47	08:07		07:07		17:21 (3)	06:54		05:52	19:56 (1)	05:16
	16:45	17:40		18:32	45	18:06 (3)	20:27		21:19	20:39 (1)	22:00
11	08:47	08:05		07:04		17:21 (3)	06:52		05:50	19:56 (1)	05:15
	16:46	17:42		18:34	47	18:08 (3)	20:29		21:21	20:38 (1)	22:01
12	08:46	08:03		07:02		17:20 (3)	06:49		05:48	19:56 (1)	05:15
	16:48	17:44		18:36	50	18:10 (3)	20:31		21:23	20:37 (1)	22:02
13	08:45	08:01		07:00		17:20 (3)	06:47		05:46	19:57 (1)	05:15
	16:49	17:46		18:38	50	18:10 (3)	20:33		21:24	20:37 (1)	22:03
14	08:44	07:59		06:57		17:20 (3)	06:45		05:45	19:58 (1)	05:14
	16:51	17:48		18:40	50	18:10 (3)	20:34		21:26	20:36 (1)	22:03
15	08:44	07:57		06:55		17:19 (3)	06:43		05:43	19:59 (1)	05:14
	16:53	17:49		18:41	50	18:09 (3)	20:36		21:28	20:35 (1)	22:04
16	08:43	07:55		06:53		17:20 (3)	06:40		05:42	20:00 (1)	05:14
	16:54	17:51		18:43	48	18:08 (3)	20:38		21:29	20:35 (1)	22:04
17	08:42	07:53		06:50		17:20 (3)	06:38	20:10 (1)	05:40	20:00 (1)	05:14
	16:56	17:53		18:45	48	18:08 (3)	20:40	3	20:13 (1)	21:31	22:05
18	08:41	07:51		06:48		17:20 (3)	06:36		20:08 (1)	05:39	20:02 (1)
	16:57	17:55		18:47	47	18:07 (3)	20:41	6	20:14 (1)	21:32	22:05
19	08:40	07:49		06:46		17:21 (3)	06:34		20:05 (1)	05:37	20:03 (1)
	16:59	17:57		18:49	45	18:06 (3)	20:43	10	20:15 (1)	21:34	22:06
20	08:39	07:47		06:43		17:21 (3)	06:31		20:03 (1)	05:36	20:04 (1)
	17:01	17:59		18:50	43	18:04 (3)	20:45	14	20:17 (1)	21:35	22:06
21	08:37	07:45		06:41		17:22 (3)	06:29		20:02 (1)	05:34	20:05 (1)
	17:03	18:01		18:52	42	18:04 (3)	20:47	17	20:19 (1)	21:37	22:06
22	08:36	07:42		06:39		17:23 (3)	06:27		20:01 (1)	05:33	20:07 (1)
	17:04	18:03		18:54	40	18:03 (3)	20:48	19	20:20 (1)	21:38	22:06
23	08:35	07:40		06:36		17:23 (3)	06:25		19:59 (1)	05:32	20:09 (1)
	17:06	18:05		18:56	41	18:30 (2)	20:50	23	20:22 (1)	21:40	22:06
24	08:34	07:38		06:34		17:25 (3)	06:23		19:59 (1)	05:30	20:11 (1)
	17:08	18:07		18:57	41	18:32 (2)	20:52	25	20:24 (1)	21:41	22:07
25	08:32	07:36		06:31		17:26 (3)	06:21		19:58 (1)	05:29	20:14 (1)
	17:10	18:08		18:59	40	18:33 (2)	20:54	27	20:25 (1)	21:43	22:07
26	08:31	07:34		06:29		17:28 (3)	06:19		19:57 (1)	05:28	20:16
	17:12	18:10	6	17:43 (3)	39	18:35 (2)	20:55	30	20:27 (1)	21:44	22:07
27	08:30	07:32		06:27		17:31 (3)	06:17		19:56 (1)	05:27	20:16
	17:13	18:12	11	17:46 (3)	35	18:37 (2)	20:57	33	20:29 (1)	21:45	22:07
28	08:28	07:29		06:24		17:35 (3)	06:14		19:56 (1)	05:26	20:17
	17:15	18:14	15	17:47 (3)	29	18:38 (2)	20:59	34	20:30 (1)	21:47	22:06
29	08:27			07:22		19:20 (2)	06:12		19:55 (1)	05:25	20:17
	17:17			20:06	20	19:40 (2)	21:01	37	20:32 (1)	21:48	22:06
30	08:25			07:20		19:20 (2)	06:10		19:55 (1)	05:24	20:18
	17:19			20:08	22	19:42 (2)	21:02	38	20:33 (1)	21:49	22:06
31	08:24			07:17		19:19 (2)			05:23		
	17:21			20:10	24	19:43 (2)			21:50		
Potential sun hours	256	276		367		418			489		503
Total, worst case			32	1180		485			878		
Sun reduction			0.21	0.24		0.35			0.37		
Oper. time red.			1.00	1.00		1.00			1.00		
Wind dir. red.			0.66	0.67		0.68			0.68		
Total reduction			0.14	0.16		0.24			0.25		
Total, real			4	192		116			218		

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case 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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

July		August		September		October		November		December	
1	05:18		05:56	20:07 (1)	06:48		07:38	17:59 (3)	07:34	08:26	
	22:06		21:33	42	20:49 (1)	20:29	19:18	50	18:49 (3)	17:10	16:28
2	05:19		05:58		20:06 (1)	06:49	07:40		17:58 (3)	07:36	08:28
	22:05		21:31	42	20:48 (1)	20:26	19:15	49	18:47 (3)	17:08	16:27
3	05:20		05:59		20:05 (1)	06:51	07:42		17:59 (3)	07:37	08:29
	22:05		21:29	43	20:48 (1)	20:24	19:13	46	18:45 (3)	17:06	16:27
4	05:21		06:01		20:05 (1)	06:53	19:25 (2)	07:43	17:59 (3)	07:39	08:30
	22:05		21:27	44	20:49 (1)	20:22	9	19:34 (2)	19:11	17:04	16:26
5	05:21		06:03		20:04 (1)	06:54	19:22 (2)	07:45	17:59 (3)	07:41	08:32
	22:04		21:26	45	20:49 (1)	20:20	15	19:37 (2)	19:08	17:02	16:26
6	05:22		06:04		20:04 (1)	06:56	19:19 (2)	07:47	17:59 (3)	07:43	08:33
	22:03		21:24	46	20:50 (1)	20:17	19	19:38 (2)	19:06	17:01	16:25
7	05:23		06:06		20:05 (1)	06:58	19:17 (2)	07:49	17:59 (3)	07:45	08:34
	22:03		21:22	45	20:50 (1)	20:15	22	19:39 (2)	19:04	16:59	16:25
8	05:24		06:07		20:04 (1)	06:59	19:15 (2)	07:50	17:59 (3)	07:47	08:36
	22:02		21:20	46	20:50 (1)	20:12	25	19:40 (2)	19:01	16:57	16:24
9	05:25		06:09		20:04 (1)	07:01	19:14 (2)	07:52	18:00 (3)	07:48	08:37
	22:01		21:18	45	20:49 (1)	20:10	27	19:41 (2)	18:59	16:56	16:24
10	05:26		06:11		20:03 (1)	07:03	19:13 (2)	07:54	18:01 (3)	07:50	08:38
	22:01		21:16	44	20:47 (1)	20:08	28	19:41 (2)	18:57	16:54	16:24
11	05:27		06:12		20:04 (1)	07:04	19:12 (2)	07:56	18:02 (3)	07:52	08:39
	22:00		21:14	41	20:45 (1)	20:05	26	19:38 (2)	18:54	16:52	16:24
12	05:28		06:14		20:03 (1)	07:06	19:12 (2)	07:57	18:02 (3)	07:54	08:40
	21:59		21:12	40	20:43 (1)	20:03	24	19:36 (2)	18:52	16:51	16:23
13	05:30		06:16		20:03 (1)	07:08	19:10 (2)	07:59	18:04 (3)	07:56	08:41
	21:58		21:10	38	20:41 (1)	20:01	23	19:33 (2)	18:50	16:49	16:23
14	05:31		06:17		20:03 (1)	07:09	19:10 (2)	08:01	18:06 (3)	07:58	08:42
	21:57		21:08	36	20:39 (1)	19:58	21	19:31 (2)	18:48	16:48	16:23
15	05:32		06:19		20:03 (1)	07:11	18:27 (3)	08:03	18:08 (3)	07:59	08:43
	21:56		21:06	34	20:37 (1)	19:56	26	19:29 (2)	18:45	16:46	16:23
16	05:33		06:21		20:04 (1)	07:13	18:21 (3)	08:04	18:11 (3)	08:01	08:44
	21:55		21:04	32	20:36 (1)	19:53	34	19:26 (2)	18:43	16:45	16:24
17	05:34		06:22		20:04 (1)	07:14	18:17 (3)	08:06		08:03	08:45
	21:54		21:02	29	20:33 (1)	19:51	39	19:24 (2)	18:41	16:43	16:24
18	05:36		06:24		20:04 (1)	07:16	18:15 (3)	08:08		08:05	08:46
	21:53		21:00	28	20:32 (1)	19:49	40	19:22 (2)	18:39	16:42	16:24
19	05:37		06:26		20:04 (1)	07:18	18:12 (3)	08:10		08:07	08:46
	21:52	10	20:33 (1)	20:58	25	20:29 (1)	19:46	41	19:19 (2)	18:37	16:40
20	05:38		06:27		20:05 (1)	07:19	18:10 (3)	08:12		08:08	08:47
	21:50	16	20:36 (1)	20:56	22	20:27 (1)	19:44	42	19:17 (2)	18:34	16:39
21	05:40		06:29		20:05 (1)	07:21	18:09 (3)	08:13		08:10	08:47
	21:49	19	20:37 (1)	20:53	20	20:25 (1)	19:42	39	18:48 (3)	18:32	16:38
22	05:41		06:31		20:07 (1)	07:23	18:07 (3)	08:15		08:12	08:48
	21:48	23	20:39 (1)	20:51	16	20:23 (1)	19:39	41	18:48 (3)	18:30	16:37
23	05:43		06:32		20:08 (1)	07:25	18:05 (3)	08:17		08:13	08:49
	21:46	26	20:41 (1)	20:49	13	20:21 (1)	19:37	44	18:49 (3)	18:28	16:36
24	05:44		06:34		20:09 (1)	07:26	18:05 (3)	08:19		08:15	08:49
	21:45	27	20:41 (1)	20:47	10	20:19 (1)	19:34	45	18:50 (3)	18:26	16:35
25	05:45		06:36		20:11 (1)	07:28	18:03 (3)	07:21		08:17	08:49
	21:44	30	20:43 (1)	20:45	6	20:17 (1)	19:32	46	18:49 (3)	17:24	16:33
26	05:47		06:37		20:12 (1)	07:30	18:02 (3)	07:23		08:18	08:50
	21:42	32	20:44 (1)	20:42	2	20:14 (1)	19:30	48	18:50 (3)	17:22	16:32
27	05:48		06:39			07:31	18:02 (3)	07:24		08:20	08:50
	21:41	34	20:44 (1)	20:40		19:27	48	18:50 (3)	17:20	16:31	16:29
28	05:50		06:41			07:33	18:01 (3)	07:26		08:22	08:50
	21:39	36	20:46 (1)	20:38		19:25	49	18:50 (3)	17:18	16:31	16:30
29	05:51		06:43			07:35	18:00 (3)	07:28		08:23	08:50
	21:38	37	20:46 (1)	20:36		19:22	49	18:49 (3)	17:16	16:30	16:30
30	05:53		06:44			07:36	18:00 (3)	07:30		08:25	08:50
	21:36	38	20:47 (1)	20:33		19:20	49	18:49 (3)	17:14	16:29	16:31
31	05:55		06:46								08:50
	21:34	39	20:47 (1)	20:31							16:32
Potential sun hours	506		456		381		330		263		240
Total, worst case		367		834		919		488			
Sun reduction		0.26		0.30		0.28		0.24			
Oper. time red.		1.00		1.00		1.00		1.00			
Wind dir. red.		0.68		0.68		0.67		0.66			
Total reduction		0.18		0.20		0.19		0.16			
Total, real		66		167		174		77			

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case 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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

January			February		March		April		May			June		
1	08:50		10:26 (1)	08:22	07:27	07:15			06:08	06:40 (6)	05:22		05:53 (8)	
	16:34	45	11:11 (1)	17:23	18:16	20:12			21:04	10	06:50 (6)	21:52	9	06:02 (8)
2	08:50		10:27 (1)	08:21	07:25	07:13			06:07	06:41 (6)	05:21		05:52 (8)	
	16:35	44	11:11 (1)	17:25	18:18	20:13			21:06	10	06:51 (6)	21:53	10	06:02 (8)
3	08:50		10:27 (1)	08:19	07:23	07:10			06:05	06:41 (6)	05:20		05:53 (8)	
	16:36	44	11:11 (1)	17:27	18:20	20:15			21:08	9	06:50 (6)	21:54	10	06:03 (8)
4	08:50		10:28 (1)	08:17	07:21	07:08			06:03	06:42 (6)	05:19		05:52 (8)	
	16:37	43	11:11 (1)	17:28	18:21	20:17			21:09	6	06:48 (6)	21:55	11	06:03 (8)
5	08:50		10:29 (1)	08:16	07:18	07:06			06:01		05:18		05:52 (8)	
	16:38	42	11:11 (1)	17:30	18:23	20:19			21:11		21:56	11	06:03 (8)	
6	08:49		10:30 (1)	08:14	07:16	07:03			05:59		05:18		05:53 (8)	
	16:39	41	11:11 (1)	17:32	18:25	20:20			21:13		21:57	11	06:04 (8)	
7	08:49		10:31 (1)	08:12	07:14	07:01			05:57		05:17		05:52 (8)	
	16:41	40	11:11 (1)	17:34	18:27	20:22			21:15		21:58	12	06:04 (8)	
8	08:48		10:32 (1)	08:10	07:11	06:59			05:55		05:17		05:53 (8)	
	16:42	39	11:11 (1)	17:36	18:29	20:24			21:16		21:59	12	06:05 (8)	
9	08:48		10:33 (1)	08:08	07:09	06:56			05:53		05:16		05:53 (8)	
	16:44	37	11:10 (1)	17:38	18:31	20:26			21:18		22:00	12	06:05 (8)	
10	08:47		10:34 (1)	08:07	07:07	06:54			05:52		05:16		05:53 (8)	
	16:45	36	11:10 (1)	17:40	18:32	20:27			21:20		22:00	12	06:05 (8)	
11	08:47		10:35 (1)	08:05	07:04	06:52			05:50		05:15		05:53 (8)	
	16:46	34	11:09 (1)	17:42	18:34	20:29			21:21		22:01	12	06:05 (8)	
12	08:46		10:36 (1)	08:03	07:02	06:49			05:48		05:15		05:54 (8)	
	16:48	32	11:08 (1)	17:44	18:36	20:31			21:23		22:02	12	06:06 (8)	
13	08:45		10:37 (1)	08:01	07:00	06:47			05:46		05:15		05:53 (8)	
	16:49	31	11:08 (1)	17:46	18:38	20:33			21:24		22:03	12	06:05 (8)	
14	08:44		10:39 (1)	07:59	06:57	06:45			05:45		05:14		05:54 (8)	
	16:51	28	11:07 (1)	17:48	18:40	20:35			21:26		22:03	12	06:06 (8)	
15	08:44		10:41 (1)	07:57	06:55	06:43			05:43		05:14		05:54 (8)	
	16:53	24	11:05 (1)	17:50	18:41	20:36			21:28		22:04	12	06:06 (8)	
16	08:43		10:43 (1)	07:55	06:53	06:40			05:42		05:14		05:54 (8)	
	16:54	21	11:04 (1)	17:51	18:43	20:38			21:29		22:04	12	06:06 (8)	
17	08:42		10:46 (1)	07:53	06:50	06:38			05:40		05:14		05:54 (8)	
	16:56	16	11:02 (1)	17:53	18:45	20:40			21:31		22:05	12	06:06 (8)	
18	08:41		10:50 (1)	07:51	06:48	06:36			05:39		05:14		05:55 (8)	
	16:57	9	10:59 (1)	17:55	18:47	20:42			21:32		22:05	11	06:06 (8)	
19	08:40			07:49	06:46	06:34			05:37		05:14		05:55 (8)	
	16:59			17:57	18:49	20:43			21:34		22:06	12	06:07 (8)	
20	08:39			07:47	06:43	06:31			05:36		05:14		05:55 (8)	
	17:01			17:59	18:50	20:45			21:35		22:06	12	06:07 (8)	
21	08:37			07:45	06:41	06:29			05:34		05:14		05:56 (8)	
	17:03			18:01	18:52	20:47			21:37		22:06	12	06:08 (8)	
22	08:36			07:43	06:39	06:27			05:33		05:14		05:56 (8)	
	17:04			18:03	18:54	20:49			21:38		22:06	12	06:08 (8)	
23	08:35			07:40	06:36	06:25			05:32		05:15		05:56 (8)	
	17:06			18:05	18:56	20:50			21:40		22:07	12	06:08 (8)	
24	08:34			07:38	06:34	06:23			05:30		05:15		05:56 (8)	
	17:08			18:07	18:58	20:52			21:41		22:07	12	06:08 (8)	
25	08:32			07:36	06:31	06:21			05:29		05:15		05:57 (8)	
	17:10			18:08	18:59	20:54			21:43		22:07	11	06:08 (8)	
26	08:31			07:34	06:29	06:19			05:28		05:16		05:56 (8)	
	17:12			18:10	19:01	20:56			21:44		22:07	12	06:08 (8)	
27	08:30			07:32	06:27	06:17		06:43 (6)	05:27		05:16		05:57 (8)	
	17:13			18:12	19:03	20:57	6	06:49 (6)	21:45		22:07	12	06:09 (8)	
28	08:28			07:29	06:24	06:15		06:41 (6)	05:26		05:17		05:57 (8)	
	17:15			18:14	19:05	20:59	9	06:50 (6)	21:47		22:07	12	06:09 (8)	
29	08:27			07:22	06:12	06:02		06:40 (6)	05:25		05:17		05:57 (8)	
	17:17				20:06	21:01	11	06:51 (6)	21:48		22:06	12	06:09 (8)	
30	08:25				07:20	06:10		06:40 (6)	05:24		05:55 (8)	05:18		05:57 (8)
	17:19				20:08		11	06:51 (6)	21:49	5	06:00 (8)	22:06	12	06:09 (8)
31	08:24				07:17				05:23		05:54 (8)			
	17:21				20:10				21:50	7	06:01 (8)			
Potential sun hours	256			276	367	418			489			503		
Total, worst case		606					37			47			348	
Sun reduction		0.16					0.35			0.37			0.30	
Oper. time red.		1.00					1.00			1.00			1.00	
Wind dir. red.		0.63					0.66			0.65			0.63	
Total reduction		0.10					0.23			0.24			0.19	
Total, real		60					9			11			65	

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
Kathryn Feeney / kfeeney@jodireland.com
Calculated:
16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case
Assumptions for shadow calculations

Shadow receptor: F - H6

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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

July		August		September		October		November		December	
1	05:18	05:57 (8)	05:56	06:48	07:38	07:34		08:26	10:17 (1)		
	22:06	13 06:10 (8)	21:33	20:29	19:18	17:10		16:28	34 10:51 (1)		
2	05:19	05:58 (8)	05:58	06:49	07:40	07:36		08:28	10:17 (1)		
	22:05	12 06:10 (8)	21:31	20:27	19:15	17:08		16:27	36 10:53 (1)		
3	05:20	05:57 (8)	05:59	06:51	07:42	07:37		08:29	10:16 (1)		
	22:05	13 06:10 (8)	21:29	20:24	19:13	17:06		16:27	37 10:53 (1)		
4	05:21	05:58 (8)	06:01	06:53	07:43	07:39		08:31	10:16 (1)		
	22:05	12 06:10 (8)	21:27	20:22	19:11	17:04		16:26	39 10:55 (1)		
5	05:21	05:58 (8)	06:03	06:54	07:45	07:41		08:32	10:16 (1)		
	22:04	12 06:10 (8)	21:26	20:20	19:08	17:03		16:26	40 10:56 (1)		
6	05:22	05:59 (8)	06:04	06:56	07:47	07:43		08:33	10:16 (1)		
	22:04	12 06:11 (8)	21:24	20:17	19:06	17:01		16:25	41 10:57 (1)		
7	05:23	05:59 (8)	06:06	06:58	07:49	07:45		08:34	10:16 (1)		
	22:03	12 06:11 (8)	21:22	20:15	19:04	16:59		16:25	42 10:58 (1)		
8	05:24	06:00 (8)	06:07	06:59	07:50	07:47		08:36	10:15 (1)		
	22:02	11 06:11 (8)	21:20	20:13	19:01	16:57		16:24	43 10:58 (1)		
9	05:25	05:59 (8)	06:09	06:51 (6)	07:01	07:52		08:37	10:16 (1)		
	22:02	11 06:10 (8)	21:18	7 06:58 (6)	20:10	18:59		16:24	44 11:00 (1)		
10	05:26	06:00 (8)	06:11	06:49 (6)	07:03	07:54		08:38	10:16 (1)		
	22:01	10 06:10 (8)	21:16	9 06:58 (6)	20:08	18:57		16:24	44 11:00 (1)		
11	05:27	06:00 (8)	06:12	06:49 (6)	07:04	07:56		08:39	10:16 (1)		
	22:00	9 06:09 (8)	21:14	10 06:59 (6)	20:05	18:55		16:24	45 11:01 (1)		
12	05:28	06:02 (8)	06:14	06:48 (6)	07:06	07:57		08:40	10:16 (1)		
	21:59	8 06:10 (8)	21:12	11 06:59 (6)	20:03	18:52		16:24	45 11:01 (1)		
13	05:30	06:03 (8)	06:16	06:48 (6)	07:08	07:59		08:41	10:16 (1)		
	21:58	6 06:09 (8)	21:10	11 06:59 (6)	20:01	18:50		16:23	46 11:02 (1)		
14	05:31	06:04 (8)	06:17	06:48 (6)	07:09	08:01		08:42	10:17 (1)		
	21:57	4 06:08 (8)	21:08	10 06:58 (6)	19:58	18:48		16:23	46 11:03 (1)		
15	05:32		06:19	06:49 (6)	07:11	08:03		08:43	10:17 (1)		
	21:56		21:06	9 06:58 (6)	19:56	18:45		16:23	46 11:03 (1)		
16	05:33		06:21	06:51 (6)	07:13	08:05		08:44	10:18 (1)		
	21:55		21:04	6 06:57 (6)	19:54	18:43		16:24	46 11:04 (1)		
17	05:34		06:22		07:14	08:06		08:03			
	21:54		21:02		19:51	18:41		16:24	47 11:05 (1)		
18	05:36		06:24		07:16	08:08		08:05			
	21:53		21:00		19:49	18:39		16:24	47 11:05 (1)		
19	05:37		06:26		07:18	08:10		08:07			
	21:52		20:58		19:46	18:37		16:24	48 11:06 (1)		
20	05:38		06:27		07:20	08:12		08:08			
	21:50		20:56		19:44	18:34		16:25	48 11:07 (1)		
21	05:40		06:29		07:21	08:14		08:10			
	21:49		20:54		19:42	18:32		16:25	47 11:06 (1)		
22	05:41		06:31		07:23	08:15		08:12			
	21:48		20:51		19:39	18:30		16:26	47 11:07 (1)		
23	05:43		06:32		07:25	08:17		08:13			
	21:47		20:49		19:37	18:28		16:26	48 11:08 (1)		
24	05:44		06:34		07:26	08:19		08:15			
	21:45		20:47		19:34	18:26		16:35	8 16:27	48 11:08 (1)	
25	05:45		06:36		07:28	07:21		08:17	10:24 (1)	08:49	10:22 (1)
	21:44		20:45		19:32	17:24		16:33	16 10:40 (1)	16:27	47 11:09 (1)
26	05:47		06:38		07:30	07:23		08:18	10:22 (1)	08:50	10:22 (1)
	21:42		20:42		19:30	17:22		16:32	21 10:43 (1)	16:28	47 11:09 (1)
27	05:48		06:39		07:31	07:24		08:20	10:21 (1)	08:50	10:22 (1)
	21:41		20:40		19:27	17:20		16:31	24 10:45 (1)	16:29	47 11:09 (1)
28	05:50		06:41		07:33	07:26		08:22	10:19 (1)	08:50	10:23 (1)
	21:39		20:38		19:25	17:18		16:31	28 10:47 (1)	16:30	46 11:09 (1)
29	05:51		06:43		07:35	07:28		08:23	10:18 (1)	08:50	10:23 (1)
	21:38		20:36		19:22	17:16		16:30	31 10:49 (1)	16:30	47 11:10 (1)
30	05:53		06:44		07:37	07:30		08:25	10:18 (1)	08:50	10:24 (1)
	21:36		20:33		19:20	17:14		16:29	32 10:50 (1)	16:31	46 11:10 (1)
31	05:55		06:46			07:32				08:50	10:25 (1)
	21:34		20:31			17:12				16:32	45 11:10 (1)
Potential sun hours	506		456		381	330		263		240	
Total, worst case		145		75				160		1379	
Sun reduction		0.26		0.30				0.19		0.14	
Oper. time red.		1.00		1.00				1.00		1.00	
Wind dir. red.		0.63		0.66				0.63		0.63	
Total reduction		0.17		0.20				0.12		0.09	
Total, real		24		15				19		119	

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case 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
229 231 210 320 200 640 608 691 568 658 724 1,086 671 733 661 530 8,760

	January	February	March	April	May	June
1	08:50 16:34	08:22 17:23	07:27 18:16	07:15 20:12	18:41 (3) 19:45 (2)	20:05 (1) 21:04
2	08:50 16:35	08:21 17:25	07:25 18:18	07:13 20:13	18:45 (3) 19:47 (2)	20:06 (1) 21:06
3	08:50 16:38	08:19 17:27	07:23 18:20	17:51 (3) 20:15	19:25 (2) 21:08	20:05 (1) 21:54
4	08:50 16:37	08:17 17:28	07:20 18:21	17:46 (3) 20:17	19:25 (2) 21:09	20:05 (1) 21:55
5	08:50 16:38	08:15 17:30	07:18 18:23	17:44 (3) 20:19	19:26 (2) 21:11	20:04 (1) 21:56
6	08:49 16:39	08:14 17:32	07:16 18:25	17:42 (3) 20:20	19:26 (2) 21:13	20:04 (1) 21:57
7	08:49 16:41	08:12 17:34	07:14 18:27	17:40 (3) 20:22	19:27 (2) 21:14	20:04 (1) 21:58
8	08:48 16:42	08:10 17:36	07:11 18:29	17:39 (3) 20:24	19:28 (2) 21:16	20:04 (1) 21:59
9	08:48 16:43	08:08 17:38	07:09 18:31	17:38 (3) 20:26	19:28 (2) 21:18	20:04 (1) 22:00
10	08:47 16:45	08:07 17:40	07:07 18:32	17:36 (3) 20:27	19:30 (2) 21:19	20:04 (1) 22:00
11	08:47 16:46	08:05 17:42	07:04 18:34	17:35 (3) 20:29	19:33 (2) 21:21	20:04 (1) 22:01
12	08:46 16:48	08:03 17:44	07:02 18:36	17:33 (3) 20:31	19:43 (2) 21:23	20:04 (1) 22:02
13	08:45 16:49	08:01 17:46	07:00 18:38	17:33 (3) 20:33	21:24	20:05 (1) 22:03
14	08:44 16:51	07:59 17:48	06:57 18:40	17:33 (3) 20:34	05:45 21:26	20:05 (1) 22:03
15	08:44 16:53	07:57 17:49	06:55 18:41	17:31 (3) 20:36	05:43 21:28	20:05 (1) 22:04
16	08:43 16:54	07:55 17:51	06:53 18:43	17:31 (3) 20:38	05:42 21:29	20:06 (1) 22:04
17	08:42 16:56	07:53 17:53	06:50 18:45	17:31 (3) 20:40	05:40 21:31	20:06 (1) 22:05
18	08:41 16:57	07:51 17:55	06:48 18:47	17:30 (3) 20:41	05:39 21:32	20:07 (1) 22:05
19	08:40 16:59	07:49 17:57	06:46 18:49	17:30 (3) 20:43	05:37 21:34	20:08 (1) 22:06
20	08:39 17:01	07:47 17:59	06:43 18:50	17:30 (3) 20:45	05:36 21:35	20:08 (1) 22:06
21	08:37 17:03	07:45 18:01	06:41 18:52	17:30 (3) 20:47	05:34 21:37	20:09 (1) 22:06
22	08:36 17:04	07:42 18:03	06:39 18:54	17:31 (3) 20:48	20:17 (1) 21:38	20:10 (1) 22:06
23	08:35 17:06	07:40 18:05	06:36 18:56	17:30 (3) 20:50	20:15 (1) 21:40	20:11 (1) 22:06
24	08:34 17:08	07:38 18:07	06:34 18:57	17:31 (3) 20:52	20:13 (1) 21:41	20:11 (1) 22:07
25	08:32 17:10	07:36 18:08	06:31 18:59	17:31 (3) 20:54	20:12 (1) 21:43	20:12 (1) 22:07
26	08:31 17:12	07:34 18:10	06:29 19:01	17:32 (3) 20:55	20:10 (1) 21:44	20:13 (1) 22:07
27	08:30 17:13	07:32 18:12	06:27 19:03	17:33 (3) 20:57	20:09 (1) 21:45	20:15 (1) 22:07
28	08:28 17:15	07:29 18:14	06:24 19:05	17:33 (3) 20:59	20:08 (1) 21:47	20:16 (1) 22:06
29	08:27 17:17	07:22 18:06	06:12 19:04	18:35 (3) 21:01	20:07 (1) 21:48	20:18 (1) 22:06
30	08:25 17:19	07:20 18:08	06:10 19:05	18:37 (3) 21:02	20:06 (1) 21:49	20:19 (1) 22:06
31	08:24 17:21	07:17 18:10	06:08 19:06	18:38 (3) 21:03	20:33 (1) 21:50	20:21 (1) 22:06
Potential sun hours	256	276	367	418	489	503
Total, worst case			1086	414	1074	12
Sun reduction			0.24	0.35	0.37	0.30
Oper. time red.			1.00	1.00	1.00	1.00
Wind dir. red.			0.67	0.68	0.68	0.68
Total reduction			0.16	0.24	0.25	0.20
Total, real			176	99	267	2

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	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case 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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

		July		August		September		October		November		December		
1	05:18			05:56	20:15 (1)	06:48		19:32 (2)	07:38	18:13 (3)	07:34	08:26		
	22:06			21:33	44	20:59 (1)	20:29	10	19:42 (2)	19:18	37	18:50 (3)	17:10	16:28
2	05:19			05:58		20:14 (1)	06:49		19:29 (2)	07:40		18:13 (3)	07:36	08:28
	22:05			21:31	45	20:59 (1)	20:26	16	19:45 (2)	19:15	34	18:47 (3)	17:08	16:27
3	05:20			05:59		20:14 (1)	06:51		19:26 (2)	07:42		18:13 (3)	07:37	08:29
	22:05			21:29	44	20:58 (1)	20:24	20	19:46 (2)	19:13	32	18:45 (3)	17:06	16:27
4	05:21			06:01		20:14 (1)	06:53		19:25 (2)	07:43		18:14 (3)	07:39	08:30
	22:05			21:27	43	20:57 (1)	20:22	22	19:47 (2)	19:11	29	18:43 (3)	17:04	16:26
5	05:21			06:03		20:13 (1)	06:54		19:24 (2)	07:45		18:15 (3)	07:41	08:32
	22:04			21:26	42	20:55 (1)	20:20	24	19:48 (2)	19:08	26	18:41 (3)	17:02	16:26
6	05:22			06:04		20:14 (1)	06:56		19:22 (2)	07:47		18:16 (3)	07:43	08:33
	22:03			21:24	40	20:54 (1)	20:17	26	19:48 (2)	19:06	22	18:38 (3)	17:01	16:25
7	05:23			06:06		20:14 (1)	06:58		19:21 (2)	07:49		18:17 (3)	07:45	08:34
	22:03			21:22	39	20:53 (1)	20:15	27	19:48 (2)	19:04	18	18:35 (3)	16:59	16:25
8	05:24			06:07		20:14 (1)	06:59		19:20 (2)	07:50		18:18 (3)	07:47	08:36
	22:02			21:20	36	20:50 (1)	20:12	25	19:45 (2)	19:01	15	18:33 (3)	16:57	16:24
9	05:25			06:09		20:14 (1)	07:01		19:19 (2)	07:52		18:20 (3)	07:48	08:37
	22:01			21:18	35	20:49 (1)	20:10	24	19:43 (2)	18:59	11	18:31 (3)	16:56	16:24
10	05:26			06:11		20:14 (1)	07:03		18:38 (3)	07:54		18:23 (3)	07:50	08:38
	22:01			21:16	33	20:47 (1)	20:08	35	19:41 (2)	18:57	6	18:29 (3)	16:54	16:24
11	05:27		20:32 (1)	06:12		20:14 (1)	07:04		18:33 (3)	07:56			07:52	08:39
	22:00	7	20:39 (1)	21:14	31	20:45 (1)	20:05	41	19:38 (2)	18:54			16:52	16:24
12	05:28		20:29 (1)	06:14		20:14 (1)	07:06		18:31 (3)	07:57			07:54	08:40
	21:59	13	20:42 (1)	21:12	29	20:43 (1)	20:03	44	19:36 (2)	18:52			16:51	16:23
13	05:30		20:29 (1)	06:16		20:15 (1)	07:08		18:27 (3)	07:59			07:56	08:41
	21:58	16	20:45 (1)	21:10	26	20:41 (1)	20:01	46	19:33 (2)	18:50			16:49	16:23
14	05:31		20:27 (1)	06:17		20:15 (1)	07:09		18:25 (3)	08:01			07:58	08:42
	21:57	19	20:46 (1)	21:08	24	20:39 (1)	19:58	48	19:31 (2)	18:48			16:48	16:23
15	05:32		20:26 (1)	06:19		20:16 (1)	07:11		18:24 (3)	08:03			07:59	08:43
	21:56	21	20:47 (1)	21:06	21	20:37 (1)	19:56	47	19:29 (2)	18:45			16:46	16:23
16	05:33		20:25 (1)	06:21		20:17 (1)	07:13		18:22 (3)	08:04			08:01	08:44
	21:55	24	20:49 (1)	21:04	19	20:36 (1)	19:53	46	19:26 (2)	18:43			16:45	16:24
17	05:34		20:23 (1)	06:22		20:17 (1)	07:14		18:20 (3)	08:06			08:03	08:45
	21:54	26	20:49 (1)	21:02	16	20:33 (1)	19:51	46	19:24 (2)	18:41			16:43	16:24
18	05:36		20:22 (1)	06:24		20:18 (1)	07:16		18:19 (3)	08:08			08:05	08:46
	21:53	28	20:50 (1)	21:00	14	20:32 (1)	19:49	44	19:03 (3)	18:39			16:42	16:24
19	05:37		20:22 (1)	06:26		20:19 (1)	07:18		18:18 (3)	08:10			08:07	08:46
	21:52	30	20:52 (1)	20:58	10	20:29 (1)	19:46	45	19:03 (3)	18:37			16:40	16:24
20	05:38		20:21 (1)	06:27		20:21 (1)	07:19		18:17 (3)	08:12			08:08	08:47
	21:50	32	20:53 (1)	20:56	6	20:27 (1)	19:44	46	19:03 (3)	18:34			16:39	16:25
21	05:40		20:20 (1)	06:29		20:22 (1)	07:21		18:16 (3)	08:13			08:10	08:47
	21:49	33	20:53 (1)	20:53	3	20:25 (1)	19:42	48	19:04 (3)	18:32			16:38	16:25
22	05:41		20:19 (1)	06:31			07:23		18:15 (3)	08:15			08:12	08:48
	21:48	35	20:54 (1)	20:51			19:39	48	19:03 (3)	18:30			16:37	16:25
23	05:43		20:19 (1)	06:32			07:25		18:14 (3)	08:17			08:13	08:49
	21:46	36	20:55 (1)	20:49			19:37	49	19:03 (3)	18:28			16:36	16:26
24	05:44		20:18 (1)	06:34			07:26		18:14 (3)	08:19			08:15	08:49
	21:45	37	20:55 (1)	20:47			19:34	50	19:04 (3)	18:26			16:35	16:27
25	05:45		20:18 (1)	06:36			07:28		18:13 (3)	07:21			08:17	08:49
	21:44	39	20:57 (1)	20:45			19:32	50	19:03 (3)	17:24			16:33	16:27
26	05:47		20:17 (1)	06:37			07:30		18:13 (3)	07:23			08:18	08:50
	21:42	40	20:57 (1)	20:42			19:30	49	19:02 (3)	17:22			16:32	16:28
27	05:48		20:16 (1)	06:39			07:31		18:13 (3)	07:24			08:20	08:50
	21:41	41	20:57 (1)	20:40			19:27	47	19:00 (3)	17:20			16:31	16:29
28	05:50		20:17 (1)	06:41			07:33		18:13 (3)	07:26			08:22	08:50
	21:39	41	20:58 (1)	20:38			19:25	45	18:58 (3)	17:18			16:31	16:30
29	05:51		20:16 (1)	06:43			07:35		18:12 (3)	07:28			08:23	08:50
	21:37	42	20:58 (1)	20:36			19:22	43	18:55 (3)	17:16			16:30	16:30
30	05:53		20:16 (1)	06:44			07:36		18:13 (3)	07:30			08:25	08:50
	21:36	43	20:59 (1)	20:33			19:20	39	18:52 (3)	17:14			16:29	16:31
31	05:55		20:15 (1)	06:46					07:32					08:50
	21:34	44	20:59 (1)	20:31					17:12					16:32
Potential sun hours	506			456			381		330			263		240
Total, worst case	647			600			1150		230					
Sun reduction	0.26			0.30			0.28		0.24					
Oper. time red.	1.00			1.00			1.00		1.00					
Wind dir. red.	0.68			0.68			0.67		0.66					
Total reduction	0.18			0.20			0.19		0.16					
Total, real	116			120			218		36					

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
Kathryn Feeney / kfeeney@jodireland.com
Calculated:
16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

January			February			March			April			May			June		
1	08:50	16:34	08:22	17:23	18:16	07:27	18:16	18:16	07:15	18:49 (3)	06:08	20:33 (1)	05:22	20:27 (1)	20:27 (1)	20:27 (1)	20:27 (1)
2	08:50	16:35	08:21	17:25	18:18	07:23	18:23	18:23	07:13	18:50 (3)	06:06	20:32 (1)	05:21	20:27 (1)	20:27 (1)	20:27 (1)	20:27 (1)
3	08:50	16:36	08:19	17:27	18:20	07:23	18:23	18:23	07:10	18:49 (3)	06:05	20:30 (1)	05:20	20:28 (1)	20:28 (1)	20:28 (1)	20:28 (1)
4	08:50	16:37	08:17	17:28	18:21	07:20	18:21	18:21	07:08	18:50 (3)	06:03	20:29 (1)	05:19	20:28 (1)	20:28 (1)	20:28 (1)	20:28 (1)
5	08:49	16:38	08:15	17:30	18:23	07:18	18:23	18:23	07:06	18:51 (3)	06:01	20:27 (1)	05:18	20:29 (1)	20:29 (1)	20:29 (1)	20:29 (1)
6	08:49	16:39	08:14	17:32	18:25	07:16	18:25	18:25	07:03	18:51 (3)	05:59	20:26 (1)	05:18	20:30 (1)	20:30 (1)	20:30 (1)	20:30 (1)
7	08:49	16:41	08:12	17:34	18:27	07:14	18:27	18:27	07:01	18:52 (3)	05:57	20:26 (1)	05:17	20:30 (1)	20:30 (1)	20:30 (1)	20:30 (1)
8	08:48	16:42	08:10	17:36	18:29	07:11	18:29	18:29	06:59	18:54 (3)	05:55	20:25 (1)	05:17	20:31 (1)	20:31 (1)	20:31 (1)	20:31 (1)
9	08:48	16:43	08:08	17:38	18:31	07:09	18:31	18:31	06:56	18:54 (3)	05:53	20:24 (1)	05:16	20:32 (1)	20:32 (1)	20:32 (1)	20:32 (1)
10	08:47	16:45	08:07	17:40	18:32	07:07	18:32	18:32	06:54	18:56 (3)	05:52	20:24 (1)	05:16	20:32 (1)	20:32 (1)	20:32 (1)	20:32 (1)
11	08:47	16:46	08:05	17:42	18:34	07:04	18:34	18:34	06:52	18:58 (3)	05:50	20:23 (1)	05:15	20:33 (1)	20:33 (1)	20:33 (1)	20:33 (1)
12	08:46	16:48	08:03	17:44	18:36	07:02	18:36	18:36	06:49	19:01 (3)	05:48	20:22 (1)	05:15	20:33 (1)	20:33 (1)	20:33 (1)	20:33 (1)
13	08:45	16:49	08:01	17:46	18:38	07:00	18:38	18:38	06:47	19:05 (3)	05:46	20:23 (1)	05:15	20:33 (1)	20:33 (1)	20:33 (1)	20:33 (1)
14	08:44	16:51	07:59	17:48	18:40	06:57	18:40	18:40	06:45	19:38 (2)	05:45	20:22 (1)	05:14	20:34 (1)	20:34 (1)	20:34 (1)	20:34 (1)
15	08:43	16:53	07:57	17:49	18:41	06:55	18:41	18:41	06:43	19:40 (2)	05:43	20:22 (1)	05:14	20:34 (1)	20:34 (1)	20:34 (1)	20:34 (1)
16	08:43	16:54	07:55	17:51	18:43	06:53	18:43	18:43	06:40	19:59 (2)	05:42	20:23 (1)	05:14	20:35 (1)	20:35 (1)	20:35 (1)	20:35 (1)
17	08:42	16:56	07:53	17:53	18:45	06:50	18:45	18:45	06:38	19:41 (2)	05:40	20:22 (1)	05:14	20:35 (1)	20:35 (1)	20:35 (1)	20:35 (1)
18	08:41	16:57	07:51	17:55	18:47	06:48	18:47	18:47	06:36	19:57 (2)	05:39	20:22 (1)	05:14	20:35 (1)	20:35 (1)	20:35 (1)	20:35 (1)
19	08:40	16:59	07:49	17:57	18:49	06:46	18:49	18:49	06:34	19:44 (2)	05:37	20:23 (1)	05:14	20:36 (1)	20:36 (1)	20:36 (1)	20:36 (1)
20	08:39	17:01	07:47	17:59	18:50	06:43	18:50	18:50	06:31	19:55 (2)	05:36	20:22 (1)	05:14	20:36 (1)	20:36 (1)	20:36 (1)	20:36 (1)
21	08:37	17:03	07:45	18:01	18:52	06:41	18:52	18:52	06:29	19:55 (2)	05:34	20:23 (1)	05:14	20:37 (1)	20:37 (1)	20:37 (1)	20:37 (1)
22	08:36	17:04	07:42	18:03	18:54	06:39	18:54	18:54	06:27	19:55 (2)	05:33	20:23 (1)	05:14	20:37 (1)	20:37 (1)	20:37 (1)	20:37 (1)
23	08:35	17:06	07:40	18:05	18:56	06:36	18:56	18:56	06:25	19:55 (2)	05:32	20:23 (1)	05:15	20:37 (1)	20:37 (1)	20:37 (1)	20:37 (1)
24	08:34	17:08	07:38	18:07	18:57	06:34	18:57	18:57	06:23	19:55 (2)	05:30	20:23 (1)	05:15	20:37 (1)	20:37 (1)	20:37 (1)	20:37 (1)
25	08:32	17:10	07:36	18:08	18:59	06:31	18:59	18:59	06:21	19:55 (2)	05:29	20:23 (1)	05:15	20:37 (1)	20:37 (1)	20:37 (1)	20:37 (1)
26	08:31	17:12	07:34	18:10	19:01	06:29	19:01	19:01	06:19	19:55 (2)	05:28	20:24 (1)	05:16	20:37 (1)	20:37 (1)	20:37 (1)	20:37 (1)
27	08:30	17:13	07:32	18:12	19:03	06:27	19:03	19:03	06:17	19:55 (2)	05:27	20:24 (1)	05:16	20:37 (1)	20:37 (1)	20:37 (1)	20:37 (1)
28	08:28	17:15	07:29	18:14	19:05	06:24	19:05	19:05	06:14	19:55 (2)	05:26	20:24 (1)	05:17	20:37 (1)	20:37 (1)	20:37 (1)	20:37 (1)
29	08:27	17:17	07:27	18:16	19:07	06:22	19:07	19:07	06:12	19:55 (2)	05:25	20:26 (1)	05:17	20:37 (1)	20:37 (1)	20:37 (1)	20:37 (1)
30	08:25	17:19	07:25	18:18	19:09	06:20	19:09	19:09	06:10	19:55 (2)	05:24	20:26 (1)	05:18	20:37 (1)	20:37 (1)	20:37 (1)	20:37 (1)
31	08:24	17:21	07:23	18:20	19:11	06:18	19:11	19:11	06:08	19:55 (2)	05:23	20:27 (1)	05:19	20:37 (1)	20:37 (1)	20:37 (1)	20:37 (1)
Potential sun hours	256	276	367	418	489	503	503	503	503	503	503	503	503	503	503	503	503
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)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case 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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

July		August		September		October		November		December	
1	05:18	20:37 (1)	05:56	20:34 (1)	06:48	18:57 (3)	07:38	07:34	08:26		
	22:06	29	21:06 (1)	21:33	29	21:03 (1)	20:29	50	20:01 (2)	19:18	17:10
2	05:19	20:37 (1)	05:58	20:34 (1)	06:49	18:55 (3)	07:40	07:36	08:28		
	22:05	30	21:07 (1)	21:31	26	21:00 (1)	20:26	53	19:59 (2)	19:15	17:08
3	05:20	20:36 (1)	05:59	20:34 (1)	06:51	18:52 (3)	07:42	07:37	08:29		
	22:05	31	21:07 (1)	21:29	24	20:58 (1)	20:24	55	19:56 (2)	19:13	17:06
4	05:21	20:36 (1)	06:01	20:35 (1)	06:53	18:51 (3)	07:43	07:39	08:30		
	22:05	32	21:08 (1)	21:27	22	20:57 (1)	20:22	57	19:55 (2)	19:11	17:04
5	05:21	20:36 (1)	06:03	20:36 (1)	06:54	18:49 (3)	07:45	07:41	08:32		
	22:04	32	21:08 (1)	21:26	20	20:56 (1)	20:20	58	19:53 (2)	19:08	17:02
6	05:22	20:36 (1)	06:04	20:36 (1)	06:56	18:47 (3)	07:47	07:43	08:33		
	22:03	33	21:09 (1)	21:24	18	20:54 (1)	20:17	58	19:50 (2)	19:06	17:01
7	05:23	20:36 (1)	06:06	20:37 (1)	06:58	18:46 (3)	07:49	07:45	08:34		
	22:03	34	21:10 (1)	21:22	16	20:53 (1)	20:15	57	19:48 (2)	19:04	16:59
8	05:24	20:36 (1)	06:07	20:37 (1)	06:59	18:44 (3)	07:50	07:47	08:36		
	22:02	34	21:10 (1)	21:20	13	20:50 (1)	20:12	57	19:45 (2)	19:01	16:57
9	05:25	20:35 (1)	06:09	20:38 (1)	07:01	18:44 (3)	07:52	07:48	08:37		
	22:01	35	21:10 (1)	21:18	11	20:49 (1)	20:10	54	19:43 (2)	18:59	16:56
10	05:26	20:35 (1)	06:11	20:39 (1)	07:03	18:43 (3)	07:54	07:50	08:38		
	22:01	36	21:11 (1)	21:16	8	20:47 (1)	20:08	53	19:41 (2)	18:57	16:54
11	05:27	20:34 (1)	06:12	20:41 (1)	07:04	18:42 (3)	07:56	07:52	08:39		
	22:00	37	21:11 (1)	21:14	4	20:45 (1)	20:05	50	19:38 (2)	18:54	16:52
12	05:28	20:34 (1)	06:14	20:42 (1)	07:06	18:41 (3)	07:57	07:54	08:40		
	21:59	38	21:12 (1)	21:12	1	20:43 (1)	20:03	49	19:30 (3)	18:52	16:51
13	05:30	20:35 (1)	06:16		07:08	18:40 (3)	07:59	07:56	08:41		
	21:58	38	21:13 (1)	21:10		20:01	49	19:29 (3)	18:50	16:49	16:23
14	05:31	20:34 (1)	06:17		07:09	18:40 (3)	08:01	07:58	08:42		
	21:57	39	21:13 (1)	21:08		19:58	49	19:29 (3)	18:48	16:48	16:23
15	05:32	20:34 (1)	06:19		07:11	18:40 (3)	08:03	07:59	08:43		
	21:56	40	21:14 (1)	21:06		19:56	49	19:29 (3)	18:45	16:46	16:23
16	05:33	20:34 (1)	06:21		07:13	18:39 (3)	08:04	08:01	08:44		
	21:55	40	21:14 (1)	21:04		19:53	47	19:26 (3)	18:43	16:45	16:24
17	05:34	20:33 (1)	06:22		07:14	18:39 (3)	08:06	08:03	08:45		
	21:54	41	21:14 (1)	21:02		19:51	45	19:24 (3)	18:41	16:43	16:24
18	05:36	20:33 (1)	06:24		07:16	18:39 (3)	08:08	08:05	08:46		
	21:53	41	21:14 (1)	21:00		19:49	43	19:22 (3)	18:39	16:42	16:24
19	05:37	20:34 (1)	06:26		07:18	18:38 (3)	08:10	08:06	08:46		
	21:52	41	21:15 (1)	20:58		19:46	41	19:19 (3)	18:37	16:40	16:24
20	05:38	20:33 (1)	06:27		07:19	18:39 (3)	08:12	08:08	08:47		
	21:50	42	21:15 (1)	20:56		19:44	38	19:17 (3)	18:34	16:39	16:25
21	05:40	20:33 (1)	06:29		07:21	18:39 (3)	08:13	08:10	08:47		
	21:49	42	21:15 (1)	20:53		19:42	35	19:14 (3)	18:32	16:38	16:25
22	05:41	20:32 (1)	06:31		07:23	18:39 (3)	08:15	08:12	08:48		
	21:48	43	21:15 (1)	20:51		19:39	32	19:11 (3)	18:30	16:37	16:25
23	05:43	20:33 (1)	06:32		07:25	18:40 (3)	08:17	08:13	08:49		
	21:46	42	21:15 (1)	20:49		19:37	29	19:09 (3)	18:28	16:36	16:26
24	05:44	20:33 (1)	06:34		07:26	18:41 (3)	08:19	08:15	08:49		
	21:45	40	21:13 (1)	20:47		19:34	26	19:07 (3)	18:26	16:35	16:27
25	05:45	20:33 (1)	06:36		07:28	18:41 (3)	07:21	08:17	08:49		
	21:44	40	21:13 (1)	20:45		19:32	23	19:04 (3)	17:24	16:33	16:27
26	05:47	20:33 (1)	06:37	19:46 (2)	07:30	18:42 (3)	07:23	08:18	08:50		
	21:42	38	21:11 (1)	20:42	11	19:57 (2)	19:30	20	19:02 (3)	17:22	16:32
27	05:48	20:32 (1)	06:39	19:43 (2)	07:31	18:44 (3)	07:24	08:20	08:50		
	21:41	37	21:09 (1)	20:40	16	19:59 (2)	19:27	16	19:00 (3)	17:20	16:31
28	05:50	20:33 (1)	06:41	19:41 (2)	07:33	18:45 (3)	07:26	08:22	08:50		
	21:39	35	21:08 (1)	20:38	20	20:01 (2)	19:25	13	18:58 (3)	17:18	16:31
29	05:51	20:33 (1)	06:43	19:39 (2)	07:35	18:47 (3)	07:28	08:23	08:50		
	21:37	33	21:06 (1)	20:36	23	20:02 (2)	19:22	8	18:55 (3)	17:16	16:30
30	05:53	20:33 (1)	06:44	19:05 (3)	07:36	18:50 (3)	07:30	08:25	08:50		
	21:36	33	21:06 (1)	20:33	36	20:03 (2)	19:20	2	18:52 (3)	17:14	16:31
31	05:55	20:33 (1)	06:46	19:00 (3)					08:50		
	21:34	31	21:04 (1)	20:31	46	20:03 (2)			17:12		16:32
Potential sun hours	506		456		381		330		263		240
Total, worst case	1137		344		1216						
Sun reduction	0.26		0.30		0.28						
Oper. time red.	1.00		1.00		1.00						
Wind dir. red.	0.67		0.67		0.68						
Total reduction	0.18		0.20		0.19						
Total, real	202		69		233						

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
Kathryn Feeney / kfeeney@jodireland.com
Calculated:
16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

January			February			March			April			May			June		
1	08:50	16:34	08:22	17:23	18:16	07:27	18:18	18:23	07:15	20:12	51	18:42 (3)	06:08	20:16 (1)	05:22	20:22 (1)	
2	08:50	16:35	08:21	17:25	18:18	07:23	18:20	18:23	07:13	20:13	51	19:45 (2)	21:04	20:35 (1)	21:51	27	20:49 (1)
3	08:50	16:36	08:19	17:27	18:20	07:23	18:20	18:23	07:10	20:15	50	18:44 (3)	06:05	20:16 (1)	05:21	20:23 (1)	
4	08:50	16:37	08:17	17:28	18:21	07:20	18:21	18:23	07:08	20:17	49	19:47 (2)	21:06	20:37 (1)	21:53	25	20:48 (1)
5	08:49	16:38	08:15	17:30	18:23	07:18	18:23	18:23	07:06	20:19	46	18:44 (3)	06:05	20:15 (1)	05:20	20:25 (1)	
6	08:49	16:39	08:14	17:32	18:25	07:16	18:25	18:23	07:03	20:20	42	19:48 (2)	21:08	20:39 (1)	21:54	23	20:48 (1)
7	08:49	16:41	08:12	17:34	18:27	07:14	18:27	18:23	07:01	20:22	33	18:46 (3)	06:03	20:14 (1)	05:19	20:25 (1)	
8	08:48	16:42	08:10	17:36	18:29	07:11	18:29	18:23	07:01	20:22	33	19:51 (2)	21:09	20:40 (1)	21:55	22	20:47 (1)
9	08:48	16:43	08:08	17:38	18:31	07:09	18:31	18:23	07:00	20:24	26	18:49 (3)	06:01	20:13 (1)	05:18	20:26 (1)	
10	08:47	16:44	08:07	17:40	18:32	07:07	18:32	18:23	07:00	20:25	25	19:53 (2)	21:11	20:41 (1)	21:56	20	20:46 (1)
11	08:47	16:45	08:05	17:42	18:34	07:04	18:34	18:23	07:00	20:26	23	18:51 (3)	05:59	20:13 (1)	05:18	20:28 (1)	
12	08:46	16:46	08:03	17:44	18:36	07:02	18:36	18:23	07:00	20:27	21	19:54 (2)	21:13	20:43 (1)	21:57	17	20:45 (1)
13	08:45	16:47	08:01	17:46	18:38	07:00	18:38	18:23	07:00	20:28	18	18:56 (3)	05:57	20:13 (1)	05:17	20:29 (1)	
14	08:44	16:48	07:59	17:48	18:40	06:57	18:40	18:23	07:00	20:29	13	19:56 (2)	21:14	20:45 (1)	21:58	15	20:44 (1)
15	08:43	16:51	07:57	17:51	18:43	06:55	18:43	18:23	07:00	20:30	5	19:31 (2)	05:55	20:12 (1)	05:17	20:30 (1)	
16	08:43	16:53	07:57	17:53	18:45	06:53	18:45	18:23	07:00	20:31	31	19:57 (2)	21:16	20:46 (1)	21:59	14	20:44 (1)
17	08:42	16:54	07:55	17:55	18:47	06:51	18:47	18:23	07:00	20:32	33	19:31 (2)	05:53	20:12 (1)	05:16	20:32 (1)	
18	08:41	16:56	07:53	17:57	18:49	06:49	18:49	18:23	07:00	20:33	37	19:56 (2)	21:18	20:47 (1)	22:00	11	20:43 (1)
19	08:40	16:57	07:51	17:59	18:51	06:47	18:51	18:23	07:00	20:34	42	19:32 (2)	05:52	20:12 (1)	05:16	20:33 (1)	
20	08:39	17:01	07:49	18:01	18:53	06:45	18:53	18:23	07:00	20:35	44	19:55 (2)	21:19	20:50 (1)	22:00	8	20:41 (1)
21	08:37	17:03	07:47	18:03	18:55	06:43	18:55	18:23	07:00	20:36	46	19:33 (2)	05:50	20:12 (1)	05:15	20:37 (1)	
22	08:36	17:04	07:45	18:05	18:57	06:41	18:57	18:23	07:00	20:37	48	19:54 (2)	21:21	20:51 (1)	22:01	1	20:38 (1)
23	08:35	17:06	07:43	18:07	18:59	06:39	18:59	18:23	07:00	20:38	49	19:35 (2)	05:48	20:11 (1)	05:15		
24	08:34	17:08	07:41	18:09	19:01	06:37	19:01	18:23	07:00	20:39	50	19:36 (2)	05:46	20:12 (1)	05:15		
25	08:33	17:10	07:39	18:11	19:03	06:35	19:03	18:23	07:00	20:40	51	19:49 (2)	21:24	20:54 (1)	22:03		
26	08:32	17:12	07:37	18:13	19:05	06:33	19:05	18:23	07:00	20:41	52	19:40 (2)	05:45	20:12 (1)	05:14		
27	08:31	17:14	07:35	18:15	19:07	06:31	19:07	18:23	07:00	20:42	53	19:45 (2)	21:26	20:55 (1)	22:03		
28	08:30	17:16	07:33	18:17	19:09	06:29	19:09	18:23	07:00	20:43	54		05:43	20:12 (1)	05:14		
29	08:29	17:18	07:31	18:19	19:11	06:27	19:11	18:23	07:00	20:44	55		21:28	20:56 (1)	22:04		
30	08:28	17:20	07:29	18:21	19:13	06:25	19:13	18:23	07:00	20:45	56		05:42	20:13 (1)	05:14		
31	08:27	17:22	07:27	18:23	19:15	06:23	19:15	18:23	07:00	20:46	57		21:29	20:56 (1)	22:04		
Potential sun hours	256	276	367	418	505	1079	183										
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)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case 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
229 231 210 320 200 640 608 691 568 658 724 1,086 671 733 661 530 8,760

	July		August		September		October		November		December			
1	05:18		05:56		20:23 (1)	06:48	19:32 (2)	07:38	18:28 (3)	07:34	08:26			
	22:06		21:33	40	21:03 (1)	20:29	21	19:53 (2)	19:18	22	18:50 (3)	17:10	16:28	
2	05:19		05:58		20:22 (1)	06:49	19:31 (2)	07:40	18:28 (3)	07:36	08:28			
	22:05	6	20:45 (1)	21:31	38	21:00 (1)	20:26	23	19:54 (2)	19:15	19	18:47 (3)	17:08	16:27
3	05:20		05:59		20:22 (1)	06:51	19:29 (2)	07:42	18:30 (3)	07:37	08:29			
	22:05	9	20:46 (1)	21:29	36	20:58 (1)	20:24	25	19:54 (2)	19:13	15	18:45 (3)	17:06	16:27
4	05:21		06:01		20:22 (1)	06:53	19:28 (2)	07:43	18:32 (3)	07:39	08:30			
	22:05	12	20:48 (1)	21:27	35	20:57 (1)	20:22	27	19:55 (2)	19:11	11	18:43 (3)	17:04	16:26
5	05:21		06:03		20:22 (1)	06:54	18:53 (3)	07:45	18:34 (3)	07:41	08:32			
	22:04	15	20:50 (1)	21:26	33	20:55 (1)	20:20	33	19:53 (2)	19:08	7	18:41 (3)	17:02	16:26
6	05:22		06:04		20:22 (1)	06:56	18:47 (3)	07:47		07:43	08:33			
	22:03	16	20:51 (1)	21:24	32	20:54 (1)	20:17	42	19:50 (2)	19:06		17:01	16:25	
7	05:23		06:06		20:23 (1)	06:58	18:44 (3)	07:49		07:45	08:34			
	22:03	19	20:53 (1)	21:22	30	20:53 (1)	20:15	46	19:48 (2)	19:04		16:59	16:25	
8	05:24		06:07		20:23 (1)	06:59	18:41 (3)	07:50		07:47	08:36			
	22:02	21	20:54 (1)	21:20	27	20:50 (1)	20:12	48	19:45 (2)	19:01		16:57	16:24	
9	05:25		06:09		20:24 (1)	07:01	18:39 (3)	07:52		07:48	08:37			
	22:01	23	20:54 (1)	21:18	25	20:49 (1)	20:10	50	19:43 (2)	18:59		16:56	16:24	
10	05:26		06:11		20:24 (1)	07:03	18:37 (3)	07:54		07:50	08:38			
	22:01	24	20:55 (1)	21:16	23	20:47 (1)	20:08	51	19:41 (2)	18:57		16:54	16:24	
11	05:27		06:12		20:25 (1)	07:04	18:35 (3)	07:56		07:52	08:39			
	22:00	26	20:56 (1)	21:14	20	20:45 (1)	20:05	51	19:38 (2)	18:54		16:52	16:24	
12	05:28		06:14		20:25 (1)	07:06	18:33 (3)	07:57		07:54	08:40			
	21:59	28	20:57 (1)	21:12	18	20:43 (1)	20:03	51	19:36 (2)	18:52		16:51	16:23	
13	05:30		06:16		20:26 (1)	07:08	18:31 (3)	07:59		07:56	08:41			
	21:58	28	20:58 (1)	21:10	15	20:41 (1)	20:01	50	19:33 (2)	18:50		16:49	16:23	
14	05:31		06:17		20:26 (1)	07:09	18:31 (3)	08:01		07:58	08:42			
	21:57	30	20:59 (1)	21:08	13	20:39 (1)	19:58	48	19:31 (2)	18:48		16:48	16:23	
15	05:32		06:19		20:28 (1)	07:11	18:30 (3)	08:03		07:59	08:43			
	21:56	32	21:00 (1)	21:06	9	20:37 (1)	19:56	46	19:29 (2)	18:45		16:46	16:23	
16	05:33		06:21		20:29 (1)	07:13	18:28 (3)	08:04		08:01	08:44			
	21:55	32	21:00 (1)	21:04	7	20:36 (1)	19:53	47	19:15 (3)	18:43		16:45	16:24	
17	05:34		06:22		20:30 (1)	07:14	18:28 (3)	08:06		08:03	08:45			
	21:54	34	21:01 (1)	21:02	3	20:33 (1)	19:51	47	19:15 (3)	18:41		16:43	16:24	
18	05:36		06:24			07:16	18:27 (3)	08:08		08:05	08:46			
	21:53	35	21:01 (1)	21:00		19:49	49	19:16 (3)	18:39		16:42	16:24		
19	05:37		06:26			07:18	18:26 (3)	08:10		08:06	08:46			
	21:52	37	21:03 (1)	20:58		19:46	49	19:15 (3)	18:37		16:40	16:24		
20	05:38		06:27			07:19	18:26 (3)	08:12		08:08	08:47			
	21:50	37	21:03 (1)	20:56		19:44	49	19:15 (3)	18:34		16:39	16:25		
21	05:40		06:29			07:21	18:26 (3)	08:13		08:10	08:47			
	21:49	38	21:03 (1)	20:53		19:42	48	19:14 (3)	18:32		16:38	16:25		
22	05:41		06:31			07:23	18:25 (3)	08:15		08:12	08:48			
	21:48	39	21:03 (1)	20:51		19:39	46	19:11 (3)	18:30		16:37	16:25		
23	05:43		06:32			07:25	18:25 (3)	08:17		08:13	08:49			
	21:46	40	21:05 (1)	20:49		19:37	44	19:09 (3)	18:28		16:36	16:26		
24	05:44		06:34			07:26	18:25 (3)	08:19		08:15	08:49			
	21:45	41	21:05 (1)	20:47		19:34	42	19:07 (3)	18:26		16:35	16:27		
25	05:45		06:36			07:28	18:24 (3)	07:21		08:17	08:49			
	21:44	42	21:06 (1)	20:45		19:32	40	19:04 (3)	17:24		16:33	16:27		
26	05:47		06:37			07:30	18:25 (3)	07:23		08:18	08:50			
	21:42	43	21:06 (1)	20:42		19:30	37	19:02 (3)	17:22		16:32	16:28		
27	05:48		06:39			07:31	18:25 (3)	07:24		08:20	08:50			
	21:41	43	21:06 (1)	20:40		19:27	35	19:00 (3)	17:20		16:31	16:29		
28	05:50		06:41			07:33	18:26 (3)	07:26		08:22	08:50			
	21:39	43	21:06 (1)	20:38		19:25	32	18:58 (3)	17:18		16:31	16:30		
29	05:51		06:43		19:40 (2)	07:35	18:26 (3)	07:28		08:23	08:50			
	21:37	43	21:06 (1)	20:36	6	19:46 (2)	19:22	29	18:55 (3)	17:16		16:30	16:30	
30	05:53		06:44		19:37 (2)	07:36	18:27 (3)	07:30		08:25	08:50			
	21:36	43	21:06 (1)	20:33	13	19:50 (2)	19:20	25	18:52 (3)	17:14		16:29	16:31	
31	05:55		06:46		19:34 (2)			07:32			08:50			
	21:34	42	21:04 (1)	20:31	18	19:52 (2)		17:12			16:32			
Potential sun hours	506		456		381		330		263	240				
Total, worst case		921		441		1231		74						
Sun reduction		0.26		0.30		0.28		0.24						
Oper. time red.		1.00		1.00		1.00		1.00						
Wind dir. red.		0.67		0.67		0.67		0.67						
Total reduction		0.18		0.20		0.19		0.16						
Total, real		164		88		235		12						

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	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case 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
229 231 210 320 200 640 608 691 568 658 724 1,086 671 733 661 530 8,760

	January		February		March		April		May		June	
1	08:50		14:51 (3)	08:22	15:59 (1)	07:27	07:15		06:08		05:22	
	16:34	8	14:59 (3)	17:23	16:52 (2)	18:16	20:12		21:04		21:52	
2	08:50			08:21	15:59 (1)	07:25	07:13		06:06		05:21	
	16:35			17:25	16:54 (2)	18:18	20:13		21:06		21:53	
3	08:50			08:19	16:00 (1)	07:23	07:10		06:05		05:20	
	16:36			17:26	16:56 (2)	18:20	20:15		21:08		21:54	
4	08:50			08:17	16:00 (1)	07:20	07:08		06:03		05:19	
	16:37			17:28	16:58 (2)	18:21	20:17		21:09		21:55	
5	08:50			08:16	16:01 (1)	07:18	07:06		06:01		05:18	
	16:38			17:30	17:00 (2)	18:23	20:19		21:11		21:56	
6	08:49			08:14	16:01 (1)	07:16	07:03		05:59	06:29 (5)	05:18	
	16:39			17:32	17:01 (2)	18:25	20:20		21:13	4 06:33 (5)	21:57	
7	08:49		16:04 (1)	08:12	16:01 (1)	07:14	07:01		05:57		06:27 (5)	05:17
	16:41	1	16:05 (1)	17:34	17:00 (2)	18:27	20:22		21:14	9 06:36 (5)	21:58	
8	08:48		16:04 (1)	08:10	16:02 (1)	07:11	06:59		05:55		06:26 (5)	05:17
	16:42	3	16:07 (1)	17:36	17:00 (2)	18:29	20:24		21:16	11 06:37 (5)	21:59	
9	08:48		16:03 (1)	08:08	16:03 (1)	07:09	06:56	07:25 (4)	05:53		06:25 (5)	05:16
	16:43	6	16:09 (1)	17:38	16:59 (2)	18:31	20:26	6 07:31 (4)	21:18	12 06:37 (5)	22:00	
10	08:47		16:03 (1)	08:07	16:03 (1)	07:07	06:54	07:23 (4)	05:52		06:25 (5)	05:16
	16:45	7	16:10 (1)	17:40	16:58 (2)	18:32	20:27	10 07:33 (4)	21:19	13 06:38 (5)	22:00	
11	08:47		16:02 (1)	08:05	16:04 (1)	07:04	06:52	07:22 (4)	05:50		06:24 (5)	05:15
	16:46	9	16:11 (1)	17:42	16:57 (2)	18:34	20:29	12 07:34 (4)	21:21	14 06:38 (5)	22:01	
12	08:46		16:01 (1)	08:03	16:05 (1)	07:02	06:49	07:21 (4)	05:48		06:24 (5)	05:15
	16:48	12	16:13 (1)	17:44	16:55 (2)	18:36	20:31	14 07:35 (4)	21:23	13 06:37 (5)	22:02	
13	08:45		16:01 (1)	08:01	16:07 (1)	07:00	06:47	07:20 (4)	05:46		06:24 (5)	05:15
	16:49	13	16:14 (1)	17:46	16:52 (2)	18:38	20:33	14 07:34 (4)	21:24	14 06:38 (5)	22:03	
14	08:44		16:01 (1)	07:59	16:08 (1)	06:57	06:45	07:20 (4)	05:45		06:24 (5)	05:14
	16:51	15	16:16 (1)	17:48	16:43 (1)	18:40	20:34	14 07:34 (4)	21:26	13 06:37 (5)	22:03	
15	08:44		16:00 (1)	07:57	16:10 (1)	06:55	06:43	07:20 (4)	05:43		06:25 (5)	05:14
	16:53	18	16:18 (1)	17:49	16:42 (1)	18:41	20:36	14 07:34 (4)	21:28	12 06:37 (5)	22:04	
16	08:43		16:00 (1)	07:55	16:12 (1)	06:53	06:40	07:20 (4)	05:42		06:26 (5)	05:14
	16:54	20	16:20 (1)	17:51	16:40 (1)	18:43	20:38	13 07:33 (4)	21:29	11 06:37 (5)	22:04	
17	08:42		16:00 (1)	07:53	16:14 (1)	06:50	06:38	07:22 (4)	05:40		06:27 (5)	05:14
	16:56	22	16:22 (1)	17:53	16:38 (1)	18:45	20:40	10 07:32 (4)	21:31	8 06:35 (5)	22:05	
18	08:41		16:00 (1)	07:51	16:18 (1)	06:48	06:36	07:23 (4)	05:39		06:29 (5)	05:14
	16:57	24	16:24 (1)	17:55	16:35 (1)	18:47	20:41	7 07:30 (4)	21:32	5 06:34 (5)	22:05	
19	08:40		16:00 (1)	07:49	16:23 (1)	06:46	06:34		05:37		05:14	
	16:59	26	16:26 (1)	17:57	16:28 (1)	18:49	20:43		21:34		22:06	
20	08:39		15:59 (1)	07:47		06:43	06:31	06:55 (7)	05:36		05:14	
	17:01	28	16:27 (1)	17:59		18:50	20:45	6 07:01 (7)	21:35		22:06	
21	08:37		15:59 (1)	07:45		06:41	06:29	06:53 (7)	05:34		05:14	
	17:03	30	16:29 (1)	18:01		18:52	20:47	9 07:02 (7)	21:37		22:06	
22	08:36		15:59 (1)	07:42		06:39	06:27	06:52 (7)	05:33		05:14	
	17:04	33	16:32 (1)	18:03		18:54	20:48	10 07:02 (7)	21:38		22:06	
23	08:35		15:59 (1)	07:40		06:36	06:25	06:51 (7)	05:32		05:15	
	17:06	34	16:33 (1)	18:05		18:56	20:50	12 07:03 (7)	21:40		22:07	
24	08:34		15:59 (1)	07:38		06:34	06:23	06:51 (7)	05:30		05:15	
	17:08	36	16:35 (2)	18:07		18:57	20:52	11 07:02 (7)	21:41		22:07	
25	08:32		15:58 (1)	07:36		06:31	06:21	06:52 (7)	05:29		05:15	
	17:10	39	16:37 (2)	18:08		18:59	20:54	10 07:02 (7)	21:43		22:07	
26	08:31		15:59 (1)	07:34		06:29	06:19	06:53 (7)	05:28		05:16	
	17:12	41	16:40 (2)	18:10		19:01	20:55	7 07:00 (7)	21:44		22:07	
27	08:30		15:58 (1)	07:32		06:27	06:17	06:54 (7)	05:27		05:16	
	17:13	43	16:41 (2)	18:12		19:03	20:57	4 06:58 (7)	21:45		22:07	
28	08:28		15:59 (1)	07:29		06:24	06:14		05:26		05:17	
	17:15	45	16:44 (2)	18:14		19:05	20:59		21:47		22:06	
29	08:27		15:59 (1)			07:22	06:12		05:25		05:17	
	17:17	46	16:45 (2)			20:06	21:01		21:48		22:06	
30	08:25		15:58 (1)			07:20	06:10		05:24		05:18	
	17:19	49	16:47 (2)			20:08	21:02		21:49		22:06	
31	08:24		15:59 (1)			07:17			05:23			
	17:21	51	16:50 (2)			20:10			21:50			
Potential sun hours	256		276			367	418		489		503	
Total, worst case	659		858				183		139			
Sun reduction	0.16		0.21				0.35		0.37			
Oper. time red.	1.00		1.00				1.00		1.00			
Wind dir. red.	0.63		0.63				0.67		0.66			
Total reduction	0.10		0.13				0.24		0.24			
Total, real	65		111				43		33			

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	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case 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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	July		August		September		October		November		December	
1	05:18		05:56	06:34 (5)	06:48	07:21 (4)	07:38		07:34	15:33 (1)	08:26	15:44 (1)
	22:06		21:33	14 06:48 (5)	20:29	12 07:33 (4)	19:18		17:10	55 16:28 (2)	16:28	10 15:54 (1)
2	05:19		05:58	06:35 (5)	06:49	07:22 (4)	07:40		07:36	15:32 (1)	08:28	15:46 (1)
	22:05		21:31	13 06:48 (5)	20:27	10 07:32 (4)	19:15		17:08	57 16:29 (2)	16:27	7 15:53 (1)
3	05:20		05:59	06:35 (5)	06:51	07:23 (4)	07:42		07:37	15:32 (1)	08:29	15:46 (1)
	22:05		21:29	12 06:47 (5)	20:24	6 07:29 (4)	19:13		17:06	58 16:30 (2)	16:27	6 15:52 (1)
4	05:21		06:01	06:35 (5)	06:53		07:43		07:39	15:31 (1)	08:30	15:48 (1)
	22:05		21:27	12 06:47 (5)	20:22		19:11		17:04	59 16:30 (2)	16:26	4 15:52 (1)
5	05:21		06:03	06:36 (5)	06:54		07:45		07:41	15:31 (1)	08:32	15:49 (1)
	22:04		21:26	10 06:46 (5)	20:20		19:08		17:02	60 16:31 (2)	16:26	1 15:50 (1)
6	05:22		06:04	06:37 (5)	06:56		07:47		07:43	15:30 (1)	08:33	
	22:04		21:24	8 06:45 (5)	20:17		19:06		17:01	60 16:30 (2)	16:25	
7	05:23		06:06	06:41 (5)	06:58		07:49		07:45	15:30 (1)	08:34	
	22:03		21:22	1 06:42 (5)	20:15		19:04		16:59	58 16:28 (2)	16:25	
8	05:24		06:07		06:59		07:50		07:47	15:30 (1)	08:36	
	22:02		21:20		20:12		19:01		16:57	56 16:26 (2)	16:24	
9	05:25		06:09		07:01		07:52		07:48	15:30 (1)	08:37	
	22:02		21:18		20:10		18:59		16:56	54 16:24 (2)	16:24	
10	05:26		06:11		07:03		07:54		07:50	15:30 (1)	08:38	
	22:01		21:16		20:08		18:57		16:54	52 16:22 (2)	16:24	
11	05:27		06:12		07:04		07:56		07:52	15:30 (1)	08:39	14:41 (3)
	22:00		21:14		20:05		18:54		16:52	51 16:21 (2)	16:24	7 14:48 (3)
12	05:28		06:14		07:06		07:57		07:54	15:30 (1)	08:40	14:40 (3)
	21:59		21:12		20:03		18:52		16:51	49 16:19 (2)	16:23	10 14:50 (3)
13	05:29		06:16		07:08		07:59		07:56	15:31 (1)	08:41	14:40 (3)
	21:58		21:10		20:01		18:50		16:49	46 16:17 (2)	16:23	12 14:52 (3)
14	05:31		06:17		07:09		08:01		07:58	15:31 (1)	08:42	14:39 (3)
	21:57		21:08		19:58		18:48		16:48	45 16:16 (2)	16:23	14 14:53 (3)
15	05:32		06:19		07:11		08:03		07:59	15:31 (1)	08:43	14:39 (3)
	21:56		21:06		19:56		18:45		16:46	43 16:14 (2)	16:23	15 14:54 (3)
16	05:33		06:21	07:01 (7)	07:13		08:04		08:01	15:32 (1)	08:44	14:39 (3)
	21:55		21:04	5 07:06 (7)	19:53		18:43		16:45	40 16:12 (2)	16:24	16 14:55 (3)
17	05:34		06:22	06:59 (7)	07:14		08:06		08:03	15:32 (1)	08:45	14:39 (3)
	21:54		21:02	8 07:07 (7)	19:51		18:41		16:43	39 16:11 (2)	16:24	17 14:56 (3)
18	05:36		06:24	06:58 (7)	07:16		08:08		08:05	15:33 (1)	08:46	14:39 (3)
	21:53		21:00	10 07:08 (7)	19:49		18:39		16:42	36 16:09 (2)	16:24	17 14:56 (3)
19	05:37		06:26	06:57 (7)	07:18		08:10		08:07	15:34 (1)	08:46	14:39 (3)
	21:52		20:58	11 07:08 (7)	19:46		18:37		16:40	34 16:08 (1)	16:24	18 14:57 (3)
20	05:38		06:27	06:57 (7)	07:19		08:12		08:08	15:34 (1)	08:47	14:40 (3)
	21:50		20:56	11 07:08 (7)	19:44		18:34		16:39	33 16:07 (1)	16:25	18 14:58 (3)
21	05:40		06:29	06:57 (7)	07:21		08:13		08:10	15:35 (1)	08:48	14:40 (3)
	21:49		20:53	10 07:07 (7)	19:42		18:32		16:38	30 16:05 (1)	16:25	18 14:58 (3)
22	05:41		06:31	06:58 (7)	07:23		08:15		08:12	15:36 (1)	08:48	14:41 (3)
	21:48		20:51	8 07:06 (7)	19:39		18:30		16:37	28 16:04 (1)	16:25	18 14:59 (3)
23	05:43		06:32	07:00 (7)	07:25		08:17	16:51 (1)	08:13	15:36 (1)	08:49	14:41 (3)
	21:46		20:49	5 07:05 (7)	19:37		18:28	10 17:01 (1)	16:36	26 16:02 (1)	16:26	18 14:59 (3)
24	05:44		06:34		07:26		08:19	16:46 (1)	08:15	15:37 (1)	08:49	14:41 (3)
	21:45		20:47		19:34		18:26	19 17:05 (1)	16:34	24 16:01 (1)	16:27	18 14:59 (3)
25	05:45		06:36	07:26 (4)	07:28		07:21	15:43 (1)	08:17	15:38 (1)	08:49	14:43 (3)
	21:44		20:45	7 07:33 (4)	19:32		17:24	25 16:08 (1)	16:33	22 16:00 (1)	16:27	17 15:00 (3)
26	05:47	06:38 (5)	06:37	07:23 (4)	07:30		07:23	15:41 (1)	08:18	15:39 (1)	08:50	14:43 (3)
	21:42	7 06:45 (5)	20:42	11 07:34 (4)	19:30		17:22	29 16:10 (1)	16:32	20 15:59 (1)	16:28	17 15:00 (3)
27	05:48		06:37 (5)	07:22 (4)	07:31		07:24	15:39 (1)	08:20	15:40 (1)	08:50	14:44 (3)
	21:41	9 06:46 (5)	20:40	13 07:35 (4)	19:27		17:20	33 16:12 (1)	16:31	18 15:58 (1)	16:29	16 15:00 (3)
28	05:50		06:36 (5)	07:22 (4)	07:33		07:26	15:37 (1)	08:22	15:41 (1)	08:50	14:45 (3)
	21:39	11 06:47 (5)	20:38	14 07:36 (4)	19:25		17:18	36 16:13 (1)	16:31	15 15:56 (1)	16:29	15 15:00 (3)
29	05:51		06:35 (5)	07:20 (4)	07:35		07:28	15:36 (1)	08:23	15:42 (1)	08:50	14:46 (3)
	21:38	13 06:48 (5)	20:36	15 07:35 (4)	19:22		17:16	46 16:22 (2)	16:30	14 15:56 (1)	16:30	14 15:00 (3)
30	05:53		06:35 (5)	07:21 (4)	07:36		07:30	15:35 (1)	08:25	15:44 (1)	08:50	14:47 (3)
	21:36	14 06:49 (5)	20:33	14 07:35 (4)	19:20		17:14	50 16:25 (2)	16:29	11 15:55 (1)	16:31	13 15:00 (3)
31	05:55		06:35 (5)	07:20 (4)			07:32	15:34 (1)			08:50	14:49 (3)
	21:34	13 06:48 (5)	20:31	14 07:34 (4)			17:12	52 16:26 (2)			16:32	10 14:59 (3)
Potential sun hours	506		456		381		330		263		240	
Total, worst case	67		226		28		300		1193		346	
Sun reduction	0.26		0.30		0.28		0.24		0.19		0.14	
Oper. time red.	1.00		1.00		1.00		1.00		1.00		1.00	
Wind dir. red.	0.66		0.66		0.67		0.63		0.63		0.60	
Total reduction	0.17		0.20		0.19		0.15		0.12		0.08	
Total, real	12		44		5		45		139		29	

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case 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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

January		February		March		April		May		June	
1	08:50	15:10 (1)	08:22	15:32 (1)	07:27	07:15		07:42 (4)	06:08	06:42 (5)	05:22
	16:34	48	15:58 (1)	17:23	44	16:32 (2)	18:16	20:12	7	07:49 (4)	21:04
2	08:50	15:09 (1)	08:21	15:35 (1)	07:25	07:13		07:41 (4)	06:06	06:55 (5)	21:52
	16:35	49	15:58 (1)	17:25	35	16:30 (2)	18:18	20:13	10	07:51 (4)	21:06
3	08:50	15:10 (1)	08:19	15:39 (1)	07:23	07:10		07:39 (4)	06:05	06:43 (5)	21:53
	16:36	50	16:00 (1)	17:26	23	16:28 (2)	18:20	20:15	12	07:51 (4)	21:08
4	08:50	15:11 (1)	08:17		07:20	07:08		07:38 (4)	06:03	06:54 (5)	21:54
	16:37	50	16:01 (1)	17:28		18:21	20:17	13	07:51 (4)	21:09	21:55
5	08:50	15:11 (1)	08:16		07:18	07:06		07:38 (4)	06:01	06:44 (5)	21:58
	16:38	50	16:01 (1)	17:30		18:23	20:19	14	07:52 (4)	21:11	21:56
6	08:49	15:12 (1)	08:14		07:16	07:03		07:37 (4)	05:59		21:58
	16:39	51	16:04 (2)	17:32		18:25	20:20	13	07:50 (4)	21:13	21:57
7	08:49	15:12 (1)	08:12		07:14	07:01		07:38 (4)	05:57		21:57
	16:41	52	16:05 (2)	17:34		18:27	20:22	12	07:50 (4)	21:14	21:58
8	08:48	15:13 (1)	08:10		07:11	06:59		07:39 (4)	05:55		21:57
	16:42	53	16:07 (2)	17:36		18:29	20:24	10	07:49 (4)	21:16	21:59
9	08:48	15:13 (1)	08:08		07:09	06:56		07:40 (4)	05:53		21:56
	16:43	56	16:09 (2)	17:38		18:31	20:26	5	07:45 (4)	21:18	22:00
10	08:47	15:13 (1)	08:07		07:07	06:54			05:52		21:56
	16:45	57	16:10 (2)	17:40		18:32	20:27		21:19		22:00
11	08:47	15:13 (1)	08:05		07:04	06:52			05:50		21:55
	16:46	58	16:11 (2)	17:42		18:34	20:29		21:21		22:01
12	08:46	15:13 (1)	08:03		07:02	06:49			05:48		21:55
	16:48	60	16:13 (2)	17:44		18:36	20:31		21:23		22:02
13	08:45	15:14 (1)	08:01		07:00	06:47		07:10 (7)	05:46		21:55
	16:49	60	16:14 (2)	17:46		18:38	20:33	5	07:15 (7)	21:24	22:03
14	08:44	15:14 (1)	07:59		06:57	06:45		07:08 (7)	05:45		21:54
	16:51	62	16:16 (2)	17:48		18:40	20:34	8	07:16 (7)	21:26	22:03
15	08:44	15:15 (1)	07:57		06:55	06:43		07:06 (7)	05:43		21:54
	16:53	63	16:18 (2)	17:49		18:41	20:36	10	07:16 (7)	21:28	22:04
16	08:43	15:15 (1)	07:55		06:53	06:40		07:06 (7)	05:42		21:54
	16:54	65	16:20 (2)	17:51		18:43	20:38	11	07:17 (7)	21:29	22:04
17	08:42	15:16 (1)	07:53		06:50	06:38		07:06 (7)	05:40		21:54
	16:56	66	16:22 (2)	17:53		18:45	20:40	10	07:16 (7)	21:31	22:05
18	08:41	15:17 (1)	07:51		06:48	06:36		07:07 (7)	05:39		21:54
	16:57	67	16:24 (2)	17:55		18:47	20:41	8	07:15 (7)	21:32	22:05
19	08:40	15:18 (1)	07:49		06:46	06:34		07:07 (7)	05:37		21:54
	16:59	68	16:26 (2)	17:57		18:49	20:43	6	07:13 (7)	21:34	22:06
20	08:39	15:19 (1)	07:47		06:43	06:31			05:36		21:54
	17:01	69	16:28 (2)	17:59		18:50	20:45		21:35		22:06
21	08:37	15:19 (1)	07:45		06:41	06:29			05:34		21:54
	17:03	70	16:29 (2)	18:01		18:52	20:47		21:37		22:06
22	08:36	15:20 (1)	07:42		06:39	06:27			05:33		21:54
	17:04	72	16:32 (2)	18:03		18:54	20:49		21:38		22:06
23	08:35	15:20 (1)	07:40		06:36	06:25			05:32		21:55
	17:06	73	16:33 (2)	18:05		18:56	20:50		21:40		22:07
24	08:34	15:21 (1)	07:38		06:34	06:23			05:30		21:55
	17:08	73	16:35 (2)	18:07		18:57	20:52		21:41		22:07
25	08:32	15:22 (1)	07:36		06:31	06:21			05:29		21:55
	17:10	71	16:35 (2)	18:08		18:59	20:54		21:43		22:07
26	08:31	15:23 (1)	07:34		06:29	06:19		06:47 (5)	05:28		21:56
	17:12	70	16:36 (2)	18:10		19:01	20:56	5	06:52 (5)	21:44	22:07
27	08:30	15:24 (1)	07:32		06:27	06:17		06:45 (5)	05:27		21:56
	17:13	67	16:35 (2)	18:12		19:03	20:57	9	06:54 (5)	21:45	22:07
28	08:28	15:26 (1)	07:29		06:24	06:14		06:43 (5)	05:26		21:57
	17:15	63	16:35 (2)	18:14		19:05	20:59	11	06:54 (5)	21:47	22:06
29	08:27	15:27 (1)			07:22	06:12		06:42 (5)	05:25		21:57
	17:17	60	16:34 (2)		20:06	21:01	13	06:55 (5)	21:48		22:06
30	08:25	15:29 (1)			07:20	06:10		06:42 (5)	05:24		21:58
	17:19	56	16:34 (2)		20:08	21:02	13	06:55 (5)	21:49		22:06
31	08:24	15:30 (1)			07:17				05:23		
	17:21	51	16:33 (2)		20:10				21:50		
Potential sun hours	256		276		367	418		489		503	
Total, worst case	1880		102			205		53			
Sun reduction	0.16		0.21			0.35		0.37			
Oper. time red.	1.00		1.00			1.00		1.00			
Wind dir. red.	0.62		0.62			0.67		0.66			
Total reduction	0.10		0.13			0.24		0.24			
Total, real	183		13			49		13			

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
Kathryn Feeney / kfeeney@jodireland.com
Calculated:
16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case 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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	July	August	September	October	November	December
1	05:18	05:56	06:48	07:38	07:34	08:26
	22:06	21:33	20:29	19:18	17:10	16:28
2	05:19	05:58	06:49	07:40	07:36	08:28
	22:05	21:31	20:27	19:15	17:08	16:27
3	05:20	05:59	06:51	07:38 (4)	07:37	08:29
	22:05	21:29	20:24	5 07:43 (4)	19:13	17:06
4	05:21	06:01	06:53	07:36 (4)	07:39	08:30
	22:05	21:27	20:22	10 07:46 (4)	19:11	17:04
5	05:21	06:03	06:54	07:35 (4)	07:45	08:32
	22:04	21:26	20:20	12 07:47 (4)	19:08	17:02
6	05:22	06:04	06:56	07:33 (4)	07:47	08:33
	22:04	21:24	20:17	13 07:46 (4)	19:06	17:01
7	05:23	06:06	06:56 (5)	07:33 (4)	07:49	08:34
	22:03	21:22	4 07:00 (5)	20:15	16:59	15:18 (1)
8	05:24	06:07	06:53 (5)	07:32 (4)	07:50	08:36
	22:02	21:20	8 07:01 (5)	20:12	16:57	15:18 (1)
9	05:25	06:09	06:53 (5)	07:33 (4)	07:52	08:37
	22:02	21:18	10 07:03 (5)	20:10	16:56	15:18 (1)
10	05:26	06:11	06:51 (5)	07:34 (4)	07:54	08:38
	22:01	21:16	12 07:03 (5)	20:08	16:54	15:18 (1)
11	05:27	06:12	06:51 (5)	07:34 (4)	07:56	08:39
	22:00	21:14	13 07:04 (5)	20:05	16:52	15:18 (1)
12	05:28	06:14	06:50 (5)	8 07:42 (4)	07:57	08:40
	21:59	21:12	13 07:03 (5)	20:03	18:52	16:23
13	05:29	06:16	06:51 (5)	07:59	07:56	08:41
	21:58	21:10	12 07:03 (5)	20:01	18:50	16:23
14	05:31	06:17	06:50 (5)	08:01	07:58	08:42
	21:57	21:08	12 07:02 (5)	19:58	18:48	16:23
15	05:32	06:19	06:51 (5)	08:03	07:59	08:43
	21:56	21:06	11 07:02 (5)	19:56	18:45	16:23
16	05:33	06:21	06:53 (5)	08:04	08:01	08:44
	21:55	21:04	8 07:01 (5)	19:53	18:43	16:24
17	05:34	06:22	06:54 (5)	08:06	08:03	08:45
	21:54	21:02	4 06:58 (5)	19:51	18:41	16:24
18	05:36	06:24	07:16	08:08	08:05	08:46
	21:53	21:00	19:49	18:39	16:42	16:24
19	05:37	06:26	07:18	08:10	08:07	08:46
	21:52	20:58	19:46	18:37	16:40	16:24
20	05:38	06:27	07:19	08:12	08:08	08:47
	21:50	20:56	19:44	18:34	16:39	16:25
21	05:40	06:29	07:21	08:13	08:10	08:48
	21:49	20:53	19:42	18:32	16:38	16:25
22	05:41	06:31	07:23	08:15	08:12	08:48
	21:48	20:51	19:39	18:30	16:37	16:25
23	05:43	06:32	07:25	08:17	08:13	08:49
	21:46	20:49	19:37	18:28	16:36	16:26
24	05:44	06:34	07:11 (7)	08:19	08:15	08:49
	21:45	20:47	6 07:17 (7)	19:34	18:26	16:34
25	05:45	06:36	07:10 (7)	07:21	08:17	08:49
	21:44	20:45	8 07:18 (7)	19:32	17:24	16:33
26	05:47	06:37	07:08 (7)	07:23	08:18	08:50
	21:42	20:42	10 07:18 (7)	19:30	17:22	16:32
27	05:48	06:39	07:08 (7)	07:31	08:20	08:50
	21:41	20:40	10 07:18 (7)	19:27	17:20	16:31
28	05:50	06:41	07:08 (7)	07:33	08:22	08:50
	21:39	20:38	10 07:18 (7)	19:25	17:18	16:31
29	05:51	06:43	07:09 (7)	07:35	08:23	08:50
	21:38	20:36	8 07:17 (7)	19:22	17:16	16:30
30	05:53	06:44	07:11 (7)	07:36	08:25	08:50
	21:36	20:33	4 07:15 (7)	19:20	17:14	16:29
31	05:55	06:46		07:32		08:50
	21:34	20:31		17:12		16:32
Potential sun hours	506	456	381	330	263	240
Total, worst case		163	98		1416	1485
Sun reduction		0.30	0.28		0.19	0.14
Oper. time red.		1.00	1.00		1.00	1.00
Wind dir. red.		0.66	0.68		0.62	0.61
Total reduction		0.20	0.19		0.12	0.08
Total, real		32	19		163	125

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case 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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January		February		March				April				May				June	
1	08:50	16:34	08:22	17:23	18:16	07:27	17:43 (3)	07:15	19:22 (2)	06:08	19:56 (1)	05:22						
2	08:50	16:35	08:21	17:25	18:18	07:25	17:41 (3)	07:13	19:23 (2)	06:06	19:56 (1)	05:21						
3	08:50	16:36	08:19	17:27	18:20	07:23	17:39 (3)	07:10	19:22 (2)	06:05	19:56 (1)	05:20						
4	08:50	16:37	08:17	17:28	18:21	07:20	17:37 (3)	07:08	19:23 (2)	06:03	19:56 (1)	05:19						
5	08:50	16:38	08:15	17:30	18:23	07:18	17:35 (3)	07:05	19:24 (2)	06:01	19:56 (1)	05:18						
6	08:49	16:39	08:14	17:32	18:25	07:16	17:34 (3)	07:03	19:25 (2)	05:59	19:56 (1)	05:18						
7	08:49	16:41	08:12	17:34	18:27	07:14	17:33 (3)	07:01	19:27 (2)	05:57	19:57 (1)	05:17						
8	08:48	16:42	08:10	17:36	18:29	07:11	17:32 (3)	06:59	19:30 (2)	05:55	19:57 (1)	05:17						
9	08:48	16:43	08:08	17:38	18:31	07:09	17:31 (3)	06:56	19:38 (2)	05:53	19:58 (1)	05:16						
10	08:47	16:45	08:07	17:40	18:32	07:07	17:30 (3)	06:54		05:52	19:59 (1)	05:16						
11	08:47	16:46	08:05	17:42	18:34	07:04	17:30 (3)	06:52		05:50	19:59 (1)	05:15						
12	08:46	16:48	08:03	17:44	18:36	07:02	17:28 (3)	06:49		05:48	19:59 (1)	05:15						
13	08:45	16:49	08:01	17:46	18:38	07:00	17:28 (3)	06:47		05:46	20:01 (1)	05:15						
14	08:44	16:51	07:59	17:48	18:40	06:57	17:28 (3)	06:45		05:45	20:01 (1)	05:14						
15	08:43	16:53	07:57	17:49	18:41	06:55	17:27 (3)	06:43		05:43	20:03 (1)	05:14						
16	08:43	16:54	07:55	17:51	18:43	06:53	17:28 (3)	06:40		05:42	20:05 (1)	05:14						
17	08:42	16:56	07:53	17:53	18:45	06:50	17:28 (3)	06:38	20:09 (1)	05:40	20:06 (1)	05:14						
18	08:41	16:57	07:51	17:55	18:47	06:48	17:28 (3)	06:36	20:13 (1)	05:39	20:08 (1)	05:14						
19	08:40	16:59	07:49	17:57	18:49	06:46	17:28 (3)	06:34	20:07 (1)	05:39	20:08 (1)	05:14						
20	08:39	17:01	07:47	18:00	18:52	06:43	17:28 (3)	06:31	20:14 (1)	05:37	20:10 (1)	05:14						
21	08:37	17:03	07:45	18:01	18:52	06:41	17:28 (3)	06:29	20:15 (1)	05:36	20:11 (1)	05:14						
22	08:36	17:04	07:42	18:03	18:54	06:39	17:28 (3)	06:27	20:17 (1)	05:35	20:12 (1)	05:14						
23	08:35	17:06	07:40	18:05	18:56	06:36	17:30 (3)	06:25	20:02 (1)	05:34	20:09 (1)	05:14						
24	08:34	17:08	07:38	18:07	18:57	06:34	17:30 (3)	06:23	20:00 (1)	05:32	20:08 (1)	05:13						
25	08:32	17:10	07:36	18:08	18:59	06:31	17:31 (3)	06:21	20:22 (1)	05:30	20:10 (1)	05:13						
26	08:31	17:12	07:34	18:10	19:01	06:29	17:32 (3)	06:19	19:59 (1)	05:29	20:09 (1)	05:13						
27	08:30	17:13	07:32	18:12	19:03	06:27	17:33 (2)	06:17	20:25 (1)	05:27	20:11 (1)	05:13						
28	08:28	17:15	07:29	18:14	19:05	06:24	17:34 (2)	06:14	19:58 (1)	05:26	20:12 (1)	05:13						
29	08:27	17:17	07:27	18:16	19:06	06:22	17:35 (2)	06:12	20:20 (1)	05:24	20:13 (1)	05:13						
30	08:25	17:19	07:25	18:18	19:08	06:20	17:36 (2)	06:10	20:32 (1)	05:23	20:14 (1)	05:13						
31	08:24	17:21	07:23	18:20	19:10	06:18	17:37 (2)	06:08	20:33 (1)	05:21	20:15 (1)	05:13						
Potential sun hours	256	276	367				418			489		503						
Total, worst case					1028		474			658								
Sun reduction					0.24		0.35			0.37								
Oper. time red.					1.00		1.00			1.00								
Wind dir. red.					0.66		0.68			0.68								
Total reduction					0.16		0.24			0.25								
Total, real					167		113			163								

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

		July		August		September		October		November		December	
1	05:18			05:56	20:11 (1)	06:48		07:38	18:08 (3)	07:34	08:26		
	22:06			21:33	34	20:45 (1)	20:29	19:18	42	18:50 (3)	17:10	16:28	
2	05:19			05:58		20:09 (1)	06:49	07:40		18:07 (3)	07:36	08:28	
	22:05			21:31	36	20:45 (1)	20:26	19:15	40	18:47 (3)	17:08	16:27	
3	05:20			05:59		20:08 (1)	06:51	07:42		18:08 (3)	07:37	08:29	
	22:05			21:29	38	20:46 (1)	20:24	19:13	37	18:45 (3)	17:06	16:27	
4	05:21			06:01		20:08 (1)	06:53	19:27 (2)	07:43	18:08 (3)	07:39	08:30	
	22:05			21:27	39	20:47 (1)	20:22	8	19:35 (2)	19:11	35	18:43 (3)	17:04
5	05:21			06:03		20:07 (1)	06:54	19:24 (2)	07:45	18:09 (3)	07:41	08:32	
	22:04			21:26	39	20:46 (1)	20:20	15	19:39 (2)	19:08	32	18:41 (3)	17:02
6	05:22			06:04		20:07 (1)	06:56	19:21 (2)	07:47	18:09 (3)	07:43	08:33	
	22:03			21:24	40	20:47 (1)	20:17	19	19:40 (2)	19:06	29	18:38 (3)	17:01
7	05:23			06:06		20:07 (1)	06:58	19:19 (2)	07:49	18:09 (3)	07:45	08:34	
	22:03			21:22	41	20:48 (1)	20:15	22	19:41 (2)	19:04	26	18:35 (3)	16:59
8	05:24			06:07		20:06 (1)	06:59	19:17 (2)	07:50	18:10 (3)	07:47	08:36	
	22:02			21:20	42	20:48 (1)	20:12	24	19:41 (2)	19:01	23	18:33 (3)	16:57
9	05:25			06:09		20:06 (1)	07:01	19:16 (2)	07:52	18:11 (3)	07:48	08:37	
	22:01			21:18	42	20:48 (1)	20:10	26	19:42 (2)	18:59	20	18:31 (3)	16:56
10	05:26			06:11		20:05 (1)	07:03	19:16 (2)	07:54	18:12 (3)	07:50	08:38	
	22:01			21:16	42	20:47 (1)	20:08	25	19:41 (2)	18:57	17	18:29 (3)	16:54
11	05:27			06:12		20:05 (1)	07:04	19:14 (2)	07:56	18:14 (3)	07:52	08:39	
	22:00			21:14	40	20:45 (1)	20:05	24	19:38 (2)	18:54	13	18:27 (3)	16:52
12	05:28			06:14		20:04 (1)	07:06	19:14 (2)	07:57	18:15 (3)	07:54	08:40	
	21:59			21:12	39	20:43 (1)	20:03	22	19:36 (2)	18:52	8	18:23 (3)	16:51
13	05:30			06:16		20:04 (1)	07:08	19:13 (2)	07:59	18:18 (3)	07:56	08:41	
	21:58			21:10	37	20:41 (1)	20:01	20	19:33 (2)	18:50	3	18:21 (3)	16:49
14	05:31			06:17		20:04 (1)	07:09	19:13 (2)	08:01		07:58	08:42	
	21:57			21:08	35	20:39 (1)	19:58	18	19:31 (2)	18:48		16:48	16:23
15	05:32			06:19		20:04 (1)	07:11	18:30 (3)	08:03		07:59	08:43	
	21:56			21:06	33	20:37 (1)	19:56	32	19:29 (2)	18:45		16:46	16:23
16	05:33			06:21		20:05 (1)	07:13	18:25 (3)	08:04		08:01	08:44	
	21:55			21:04	31	20:36 (1)	19:53	36	19:26 (2)	18:43		16:45	16:24
17	05:34			06:22		20:04 (1)	07:14	18:23 (3)	08:06		08:03	08:45	
	21:54			21:02	29	20:33 (1)	19:51	38	19:24 (2)	18:41		16:43	16:24
18	05:36			06:24		20:05 (1)	07:16	18:21 (3)	08:08		08:05	08:46	
	21:53			21:00	27	20:32 (1)	19:49	39	19:22 (2)	18:39		16:42	16:24
19	05:37			06:26		20:05 (1)	07:18	18:18 (3)	08:10		08:06	08:46	
	21:52			20:58	24	20:29 (1)	19:46	39	19:19 (2)	18:37		16:40	16:24
20	05:38			06:27		20:06 (1)	07:19	18:17 (3)	08:12		08:08	08:47	
	21:50			20:56	21	20:27 (1)	19:44	38	19:17 (2)	18:34		16:39	16:25
21	05:40			06:29		20:06 (1)	07:21	18:16 (3)	08:13		08:10	08:47	
	21:49			20:53	19	20:25 (1)	19:42	39	18:55 (3)	18:32		16:38	16:25
22	05:41			06:31		20:07 (1)	07:23	18:14 (3)	08:15		08:12	08:48	
	21:48			20:51	16	20:23 (1)	19:39	41	18:55 (3)	18:30		16:37	16:25
23	05:43			06:32		20:08 (1)	07:25	18:13 (3)	08:17		08:13	08:49	
	21:46	5	20:30 (1)	20:49	13	20:21 (1)	19:37	42	18:55 (3)	18:28		16:36	16:26
24	05:44			06:34		20:08 (1)	07:26	18:12 (3)	08:19		08:15	08:49	
	21:45	13	20:34 (1)	20:47	11	20:19 (1)	19:34	44	18:56 (3)	18:26		16:35	16:27
25	05:45			06:36		20:10 (1)	07:28	18:10 (3)	07:21		08:17	08:49	
	21:44	18	20:37 (1)	20:45	7	20:17 (1)	19:32	45	18:55 (3)	17:24		16:33	16:27
26	05:47			06:37		20:11 (1)	07:30	18:10 (3)	07:23		08:18	08:50	
	21:42	21	20:38 (1)	20:42	3	20:14 (1)	19:30	46	18:56 (3)	17:22		16:32	16:28
27	05:48			06:39			07:31	18:10 (3)	07:24		08:20	08:50	
	21:41	24	20:39 (1)	20:40			19:27	46	18:56 (3)	17:20		16:31	16:29
28	05:50			06:41			07:33	18:09 (3)	07:26		08:22	08:50	
	21:39	26	20:41 (1)	20:38			19:25	47	18:56 (3)	17:18		16:31	16:30
29	05:51			06:43			07:35	18:08 (3)	07:28		08:23	08:50	
	21:37	29	20:42 (1)	20:36			19:22	47	18:55 (3)	17:16		16:30	16:30
30	05:53			06:44			07:36	18:08 (3)	07:30		08:25	08:50	
	21:36	31	20:43 (1)	20:33			19:20	44	18:52 (3)	17:14		16:29	16:31
31	05:55			06:46					07:32			08:50	
	21:34	33	20:44 (1)	20:31					17:12			16:32	
Potential sun hours	506			456			381		330		263	240	
Total, worst case		200		778			886		325				
Sun reduction		0.26		0.30			0.28		0.24				
Oper. time red.		1.00		1.00			1.00		1.00				
Wind dir. red.		0.68		0.68			0.67		0.66				
Total reduction		0.18		0.20			0.19		0.16				
Total, real		36		156			168		51				

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

January			February			March			April			May			June		
1	08:50	16:34	08:22	17:23	18:16	07:27	18:16	07:15	18:49 (3)	06:08	20:14 (1)	05:22					
2	08:50	16:35	08:21	17:25	18:18	07:23	18:23	07:13	18:50 (3)	06:06	20:15 (1)	05:21					
3	08:50	16:36	08:19	17:27	18:20	07:23	18:23	07:10	18:51 (3)	06:05	20:14 (1)	05:20					
4	08:50	16:37	08:17	17:28	18:21	07:20	18:21	07:08	18:53 (3)	06:03	20:13 (1)	05:19					
5	08:49	16:38	08:15	17:30	18:23	07:18	18:23	07:05	18:55 (3)	06:01	20:13 (1)	05:18					
6	08:49	16:39	08:14	17:32	18:25	07:16	18:25	07:03	18:56 (3)	05:59	20:12 (1)	05:18					
7	08:49	16:41	08:12	17:34	18:27	07:14	18:27	07:01	19:00 (3)	05:57	20:12 (1)	05:17					
8	08:48	16:42	08:10	17:36	18:29	07:11	18:29	06:59	19:03 (2)	05:55	20:12 (1)	05:17					
9	08:48	16:43	08:08	17:38	18:31	07:09	18:31	06:56	19:06 (2)	05:53	20:12 (1)	05:16					
10	08:47	16:45	08:07	17:40	18:32	07:07	18:32	06:54	19:09 (2)	05:52	20:12 (1)	05:16					
11	08:47	16:46	08:05	17:42	18:34	07:04	18:34	06:52	19:12 (2)	05:50	20:12 (1)	05:15					
12	08:46	16:48	08:03	17:44	18:36	07:02	18:36	06:49	19:15 (2)	05:48	20:12 (1)	05:15					
13	08:45	16:49	08:01	17:46	18:38	07:00	18:38	06:47	19:18 (2)	05:46	20:12 (1)	05:15					
14	08:44	16:51	07:59	17:48	18:40	06:57	18:40	06:45	19:21 (2)	05:45	20:12 (1)	05:14					
15	08:43	16:53	07:57	17:49	18:41	06:55	18:41	06:43	19:24 (2)	05:43	20:13 (1)	05:14					
16	08:43	16:54	07:55	17:51	18:43	06:53	18:43	06:40	19:27 (2)	05:42	20:14 (1)	05:14					
17	08:42	16:56	07:53	17:53	18:45	06:50	18:45	06:38	19:30 (2)	05:40	20:14 (1)	05:14					
18	08:41	16:57	07:51	17:55	18:47	06:48	18:47	06:36	19:33 (2)	05:39	20:15 (1)	05:14					
19	08:40	16:59	07:49	17:57	18:49	06:46	18:49	06:34	19:36 (2)	05:37	20:16 (1)	05:14					
20	08:39	17:01	07:47	17:59	18:50	06:43	18:50	06:31	19:39 (2)	05:36	20:16 (1)	05:14					
21	08:37	17:03	07:45	18:01	18:52	06:41	18:52	06:29	19:42 (2)	05:34	20:17 (1)	05:14					
22	08:36	17:04	07:42	18:03	18:54	06:39	18:54	06:27	19:45 (2)	05:33	20:18 (1)	05:14					
23	08:35	17:06	07:40	18:05	18:56	06:36	18:56	06:25	19:48 (2)	05:32	20:19 (1)	05:15					
24	08:34	17:08	07:38	18:07	18:57	06:34	18:57	06:23	19:51 (2)	05:30	20:19 (1)	05:15					
25	08:32	17:10	07:36	18:08	18:59	06:31	18:59	06:21	19:54 (2)	05:29	20:20 (1)	05:15					
26	08:31	17:12	07:34	18:10	19:01	06:29	19:01	06:19	19:57 (2)	05:28	20:21 (1)	05:16					
27	08:30	17:13	07:32	18:12	19:03	06:27	19:03	06:17	19:59 (2)	05:27	20:22 (1)	05:16					
28	08:28	17:15	07:29	18:14	19:05	06:24	19:05	06:14	20:02 (2)	05:26	20:23 (1)	05:17					
29	08:27	17:17	07:27	18:16	19:07	06:22	19:07	06:12	20:05 (2)	05:25	20:24 (1)	05:17					
30	08:25	17:19	07:25	18:18	19:09	06:20	19:09	06:10	20:08 (2)	05:24	20:25 (1)	05:18					
31	08:24	17:21	07:23	18:20	19:11	06:18	19:11	06:08	20:11 (2)	05:23	20:26 (1)	05:18					
Potential sun hours	256	276	367					418		489		503					
Total, worst case					695			491		915							
Sun reduction					0.24			0.35		0.37							
Oper. time red.					1.00			1.00		1.00							
Wind dir. red.					0.67			0.68		0.67							
Total reduction					0.16			0.24		0.25							
Total, real					114			117		227							

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case 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
229 231 210 320 200 640 608 691 568 658 724 1,086 671 733 661 530 8,760

July		August		September		October		November		December	
1	05:18		05:56	20:23 (1)	06:48		19:34 (2)	07:38		18:39 (3)	07:34
	22:06		21:33	40	21:03 (1)	20:29	20	19:54 (2)	19:18	11	18:50 (3)
2	05:19		05:58		20:22 (1)	06:49		19:33 (2)	07:40		18:40 (3)
	22:05		21:31	38	21:00 (1)	20:26	22	19:55 (2)	19:15	7	18:47 (3)
3	05:20		05:59		20:22 (1)	06:51		19:31 (2)	07:42		18:43 (3)
	22:05		21:29	36	20:58 (1)	20:24	24	19:55 (2)	19:13	2	18:45 (3)
4	05:21		06:01		20:22 (1)	06:53		19:30 (2)	07:43		18:45 (3)
	22:05		21:27	35	20:57 (1)	20:22	25	19:55 (2)	19:11		17:04
5	05:21		06:03		20:22 (1)	06:54		18:58 (3)	07:45		17:04
	22:04		21:26	33	20:55 (1)	20:20	33	19:53 (2)	19:08		17:02
6	05:22		06:04		20:22 (1)	06:56		18:53 (3)	07:47		17:03
	22:03		21:24	32	20:54 (1)	20:17	40	19:50 (2)	19:06		17:01
7	05:23		06:06		20:22 (1)	06:58		18:50 (3)	07:49		17:04
	22:03		21:22	31	20:53 (1)	20:15	44	19:48 (2)	19:04		16:59
8	05:24		06:07		20:22 (1)	06:59		18:47 (3)	07:50		16:57
	22:02		21:20	28	20:50 (1)	20:12	46	19:45 (2)	19:01		16:57
9	05:25		06:09		20:23 (1)	07:01		18:45 (3)	07:52		16:57
	22:01		21:18	26	20:49 (1)	20:10	47	19:43 (2)	18:59		16:56
10	05:26		06:11		20:22 (1)	07:03		18:44 (3)	07:54		16:56
	22:01		21:16	25	20:47 (1)	20:08	47	19:41 (2)	18:57		16:54
11	05:27		06:12		20:23 (1)	07:04		18:41 (3)	07:56		16:52
	22:00		21:14	22	20:45 (1)	20:05	47	19:38 (2)	18:54		16:52
12	05:28		20:39 (1)	06:14		20:23 (1)	07:06		18:40 (3)	07:57	16:54
	21:59	5	20:44 (1)	21:12	20	20:43 (1)	20:03	47	19:36 (2)	18:52	16:51
13	05:30		20:37 (1)	06:16		20:24 (1)	07:08		18:38 (3)	07:59	16:56
	21:58	11	20:48 (1)	21:10	17	20:41 (1)	20:01	46	19:33 (2)	18:50	16:49
14	05:31		20:35 (1)	06:17		20:24 (1)	07:09		18:38 (3)	08:01	16:58
	21:57	15	20:50 (1)	21:08	15	20:39 (1)	19:58	43	19:31 (2)	18:48	16:48
15	05:32		20:34 (1)	06:19		20:25 (1)	07:11		18:37 (3)	08:03	16:59
	21:56	17	20:51 (1)	21:06	12	20:37 (1)	19:56	43	19:20 (3)	18:45	16:46
16	05:33		20:32 (1)	06:21		20:27 (1)	07:13		18:36 (3)	08:04	16:46
	21:55	21	20:53 (1)	21:04	9	20:36 (1)	19:53	44	19:20 (3)	18:43	16:45
17	05:34		20:31 (1)	06:22		20:27 (1)	07:14		18:35 (3)	08:06	16:43
	21:54	23	20:54 (1)	21:02	6	20:33 (1)	19:51	45	19:20 (3)	18:41	16:43
18	05:36		20:30 (1)	06:24		20:29 (1)	07:16		18:35 (3)	08:08	16:43
	21:53	25	20:55 (1)	21:00	3	20:32 (1)	19:49	45	19:20 (3)	18:39	16:42
19	05:37		20:30 (1)	06:26		07:18			18:34 (3)	08:10	16:40
	21:52	26	20:56 (1)	20:58		19:46		45	19:19 (3)	18:37	16:40
20	05:38		20:29 (1)	06:27		07:19			18:34 (3)	08:12	16:39
	21:50	28	20:57 (1)	20:56		19:44		43	19:17 (3)	18:34	16:39
21	05:40		20:28 (1)	06:29		07:21			18:34 (3)	08:13	16:38
	21:49	30	20:58 (1)	20:53		19:42		40	19:14 (3)	18:32	16:38
22	05:41		20:27 (1)	06:31		07:23			18:33 (3)	08:15	16:38
	21:48	31	20:58 (1)	20:51		19:39		38	19:11 (3)	18:30	16:37
23	05:43		20:27 (1)	06:32		07:25			18:33 (3)	08:17	16:37
	21:46	32	20:59 (1)	20:49		19:37		36	19:09 (3)	18:28	16:36
24	05:44		20:26 (1)	06:34		07:26			18:34 (3)	08:19	16:35
	21:45	34	21:00 (1)	20:47		19:34		33	19:07 (3)	18:26	16:35
25	05:45		20:26 (1)	06:36		07:28			18:33 (3)	07:21	16:34
	21:44	35	21:01 (1)	20:45		19:32		31	19:04 (3)	17:24	16:33
26	05:47		20:25 (1)	06:37		07:30			18:34 (3)	07:23	16:33
	21:42	36	21:01 (1)	20:42		19:30		28	19:02 (3)	17:22	16:32
27	05:48		20:24 (1)	06:39		07:31			18:35 (3)	07:24	16:32
	21:41	37	21:01 (1)	20:40		19:27		25	19:00 (3)	17:20	16:31
28	05:50		20:24 (1)	06:41		07:33			18:36 (3)	07:26	16:31
	21:39	38	21:02 (1)	20:38		19:25		22	18:58 (3)	17:18	16:31
29	05:51		20:23 (1)	06:43		07:35			18:36 (3)	07:28	16:30
	21:37	39	21:02 (1)	20:36		19:22		19	18:55 (3)	17:16	16:30
30	05:53		20:24 (1)	06:44		07:36			18:37 (3)	07:30	16:29
	21:36	39	21:03 (1)	20:33	12	19:51 (2)	19:20	15	18:52 (3)	17:14	16:29
31	05:55		20:23 (1)	06:46		07:32					16:29
	21:34	40	21:03 (1)	20:31	16	19:52 (2)					16:29
Potential sun hours	506		456			381			330		263
Total, worst case		562		456		1083		20			240
Sun reduction		0.26		0.30		0.28		0.24			
Oper. time red.		1.00		1.00		1.00		1.00			
Wind dir. red.		0.67		0.68		0.67		0.67			
Total reduction		0.18		0.20		0.19		0.16			
Total, real		100		91		207		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	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case 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
229 231 210 320 200 640 608 691 568 658 724 1,086 671 733 661 530 8,760

	January	February	March	April	May	June
1	08:50	08:22	07:27	07:15	19:00 (3)	06:08
	16:34	17:23	18:16	20:12	43	19:43 (3)
2	08:50	08:21	07:25	07:13	19:00 (3)	06:06
	16:35	17:25	18:18	20:13	44	19:47 (2)
3	08:50	08:19	07:23	07:10	18:59 (3)	06:05
	16:36	17:27	18:20	20:15	46	19:48 (2)
4	08:50	08:17	07:20	07:08	19:00 (3)	06:03
	16:37	17:28	18:21	20:17	49	19:51 (2)
5	08:49	08:15	07:18	07:05	19:01 (3)	06:01
	16:38	17:30	18:23	20:19	50	19:53 (2)
6	08:49	08:14	07:16	07:03	19:01 (3)	05:59
	16:39	17:32	18:25	20:20	50	19:54 (2)
7	08:49	08:12	07:14	07:01	19:02 (3)	05:57
	16:41	17:34	18:27	20:22	51	19:56 (2)
8	08:48	08:10	07:11	06:59	19:03 (3)	05:55
	16:42	17:36	18:29	20:24	50	19:57 (2)
9	08:48	08:08	07:09	06:56	19:03 (3)	05:53
	16:43	17:38	18:31	20:26	50	19:58 (2)
10	08:47	08:07	07:07	06:54	19:05 (3)	05:52
	16:45	17:40	18:32	20:27	47	20:00 (2)
11	08:47	08:05	07:04	06:52	19:07 (3)	05:50
	16:46	17:42	18:34	20:29	45	20:02 (2)
12	08:46	08:03	07:02	06:49	19:10 (3)	05:48
	16:48	17:44	18:36	20:31	40	20:04 (2)
13	08:45	08:01	07:00	06:47	19:14 (3)	05:46
	16:49	17:46	18:38	20:33	30	20:03 (2)
14	08:44	07:59	06:57	06:45	19:42 (2)	05:45
	16:51	17:48	18:40	20:34	20	20:02 (2)
15	08:43	07:57	06:55	06:43	19:43 (2)	05:43
	16:53	17:49	18:41	20:36	17	20:00 (2)
16	08:43	07:55	06:53	06:40	19:45 (2)	05:42
	16:54	17:51	18:43	20:38	13	19:58 (2)
17	08:42	07:53	06:50	18:17 (3)	06:38	19:49 (2)
	16:56	17:53	18:45	18:20 (3)	20:40	6
18	08:41	07:51	06:48	18:13 (3)	06:36	19:55 (2)
	16:57	17:55	18:47	18:21 (3)	20:41	21:31
19	08:40	07:49	06:46	18:11 (3)	06:34	05:39
	16:59	17:57	18:49	18:23 (3)	20:43	21:32
20	08:39	07:47	06:43	18:09 (3)	06:31	05:37
	17:01	17:59	18:50	18:24 (3)	20:45	21:34
21	08:37	07:45	06:41	18:07 (3)	06:29	05:36
	17:03	18:01	18:52	18:26 (3)	20:47	21:35
22	08:36	07:42	06:39	18:06 (3)	06:27	05:34
	17:04	18:03	18:54	18:28 (3)	20:48	21:36
23	08:35	07:40	06:36	18:04 (3)	06:25	05:32
	17:06	18:05	18:56	18:30 (3)	20:50	21:40
24	08:34	07:38	06:34	18:04 (3)	06:23	05:30
	17:08	18:07	18:57	18:32 (3)	20:52	21:41
25	08:32	07:36	06:31	18:02 (3)	06:21	05:29
	17:10	18:08	18:59	18:33 (3)	20:54	05:28
26	08:31	07:34	06:29	18:02 (3)	06:19	05:27
	17:12	18:10	19:01	18:35 (3)	20:55	21:44
27	08:30	07:32	06:27	18:01 (3)	06:17	05:27
	17:13	18:12	19:03	18:37 (3)	20:57	05:26
28	08:28	07:29	06:24	18:00 (3)	06:14	05:26
	17:15	18:14	19:05	18:38 (3)	20:59	21:47
29	08:27		07:22	19:00 (3)	06:12	05:25
	17:17		20:06	19:40 (3)	21:01	21:48
30	08:25		07:20	19:00 (3)	06:10	05:24
	17:19		20:08	19:42 (3)	21:02	21:49
31	08:24		07:17	18:59 (3)		05:23
	17:21		20:10	19:43 (3)		21:50
Potential sun hours	256	276	367	418		489
Total, worst case			397		654	
Sun reduction			0.24		0.35	
Oper. time red.			1.00		1.00	
Wind dir. red.			0.68		0.67	
Total reduction			0.17		0.24	
Total, real			66		157	

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	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case 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
229 231 210 320 200 640 608 691 568 658 724 1,086 671 733 661 530 8,760

July		August		September		October		November		December	
1	05:18		05:56	20:33 (1)	06:48	19:06 (3)	07:38	07:34	08:26		
	22:06		21:33	30	21:03 (1)	20:29	45	20:01 (2)	19:18	17:10	16:28
2	05:19		05:58		20:32 (1)	06:49		19:04 (3)	07:40	07:36	08:28
	22:05		21:31	28	21:00 (1)	20:26	47	19:59 (2)	19:15	17:08	16:27
3	05:20		05:59		20:32 (1)	06:51		19:01 (3)	07:42	07:37	08:29
	22:05		21:29	26	20:58 (1)	20:24	50	19:56 (2)	19:13	17:06	16:27
4	05:21	20:46 (1)	06:01		20:33 (1)	06:53		19:00 (3)	07:43	07:39	08:30
	22:05	7	20:53 (1)	21:27	24	20:57 (1)	20:22	51	19:55 (2)	19:11	17:04
5	05:21		20:45 (1)	06:03		20:32 (1)	06:54		18:59 (3)	07:45	08:32
	22:04	10	20:55 (1)	21:26	23	20:55 (1)	20:20	51	19:53 (2)	19:08	17:02
6	05:22		20:44 (1)	06:04		20:33 (1)	06:56		18:57 (3)	07:47	08:33
	22:03	13	20:57 (1)	21:24	21	20:54 (1)	20:17	50	19:50 (2)	19:06	17:01
7	05:23		20:43 (1)	06:06		20:34 (1)	06:58		18:56 (3)	07:49	08:34
	22:03	15	20:58 (1)	21:22	19	20:53 (1)	20:15	50	19:48 (2)	19:04	16:59
8	05:24		20:42 (1)	06:07		20:34 (1)	06:59		18:54 (3)	07:50	08:36
	22:02	18	21:00 (1)	21:20	16	20:50 (1)	20:12	49	19:45 (2)	19:01	16:57
9	05:25		20:40 (1)	06:09		20:35 (1)	07:01		18:54 (3)	07:52	08:37
	22:01	20	21:00 (1)	21:18	14	20:49 (1)	20:10	47	19:43 (2)	18:59	16:56
10	05:26		20:40 (1)	06:11		20:35 (1)	07:03		18:53 (3)	07:54	08:38
	22:01	21	21:01 (1)	21:16	12	20:47 (1)	20:08	45	19:41 (2)	18:57	16:54
11	05:27		20:39 (1)	06:12		20:37 (1)	07:04		18:52 (3)	07:56	08:39
	22:00	23	21:02 (1)	21:14	8	20:45 (1)	20:05	43	19:35 (3)	18:54	16:52
12	05:28		20:38 (1)	06:14		20:37 (1)	07:06		18:52 (3)	07:57	08:40
	21:59	25	21:03 (1)	21:12	6	20:43 (1)	20:03	44	19:36 (3)	18:52	16:51
13	05:30		20:39 (1)	06:16		20:39 (1)	07:08		18:50 (3)	07:59	08:41
	21:58	25	21:04 (1)	21:10	2	20:41 (1)	20:01	43	19:33 (3)	18:50	16:49
14	05:31		20:38 (1)	06:17		07:09			18:50 (3)	08:01	07:58
	21:57	27	21:05 (1)	21:08		19:58	41	19:31 (3)	18:48	16:48	16:23
15	05:32		20:37 (1)	06:19		07:11			18:50 (3)	08:03	07:59
	21:56	29	21:06 (1)	21:06		19:56	39	19:29 (3)	18:45	16:46	16:23
16	05:33		20:37 (1)	06:21		07:13			18:50 (3)	08:04	08:01
	21:55	29	21:06 (1)	21:04		19:53	36	19:26 (3)	18:43	16:45	16:24
17	05:34		20:36 (1)	06:22		07:14			18:50 (3)	08:06	08:03
	21:54	31	21:07 (1)	21:02		19:51	34	19:24 (3)	18:41	16:43	16:24
18	05:36		20:35 (1)	06:24		07:16			18:50 (3)	08:08	08:05
	21:53	32	21:07 (1)	21:00		19:49	32	19:22 (3)	18:39	16:42	16:24
19	05:37		20:36 (1)	06:26		07:18			18:50 (3)	08:10	08:06
	21:52	32	21:08 (1)	20:58		19:46	29	19:19 (3)	18:37	16:40	16:24
20	05:38		20:35 (1)	06:27		07:19			18:51 (3)	08:12	08:08
	21:50	34	21:09 (1)	20:56		19:44	26	19:17 (3)	18:34	16:39	16:25
21	05:40		20:34 (1)	06:29		07:21			18:52 (3)	08:13	08:10
	21:49	35	21:09 (1)	20:53		19:42	22	19:14 (3)	18:32	16:38	16:25
22	05:41		20:34 (1)	06:31		07:23			18:52 (3)	08:15	08:12
	21:48	35	21:09 (1)	20:51		19:39	19	19:11 (3)	18:30	16:37	16:25
23	05:43		20:34 (1)	06:32		07:25			18:53 (3)	08:17	08:13
	21:46	36	21:10 (1)	20:49		19:37	16	19:09 (3)	18:28	16:36	16:26
24	05:44		20:33 (1)	06:34		07:26			18:54 (3)	08:19	08:15
	21:45	37	21:10 (1)	20:47		19:34	13	19:07 (3)	18:26	16:35	16:27
25	05:45		20:34 (1)	06:36		07:28			18:55 (3)	07:21	08:17
	21:44	37	21:11 (1)	20:45		19:32	9	19:04 (3)	17:24	16:33	16:27
26	05:47		20:33 (1)	06:37		07:30			18:57 (3)	07:23	08:18
	21:42	38	21:11 (1)	20:42	7	19:57 (2)	5	19:02 (3)	17:22	16:32	16:28
27	05:48		20:32 (1)	06:39		19:47 (2)			07:24	08:20	08:50
	21:41	37	21:09 (1)	20:40	13	20:00 (2)			17:20	16:31	16:29
28	05:50		20:33 (1)	06:41		19:45 (2)			07:26	08:22	08:50
	21:39	35	21:08 (1)	20:38	17	20:02 (2)			17:18	16:31	16:30
29	05:51		20:32 (1)	06:43		19:42 (2)			07:28	08:23	08:50
	21:37	34	21:06 (1)	20:36	21	20:03 (2)			17:16	16:30	16:30
30	05:53		20:33 (1)	06:44		19:14 (3)			07:30	08:25	08:50
	21:36	33	21:06 (1)	20:33	32	20:04 (2)			17:14	16:29	16:31
31	05:55		20:32 (1)	06:46		19:09 (3)			07:32		08:50
	21:34	32	21:04 (1)	20:31	40	20:03 (2)			17:12		16:32
Potential sun hours	506		456		381			330	263	240	
Total, worst case	780		359		936						
Sun reduction	0.26		0.30		0.28						
Oper. time red.	1.00		1.00		1.00						
Wind dir. red.	0.67		0.67		0.68						
Total reduction	0.18		0.20		0.19						
Total, real	139		72		180						

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	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: P - H16

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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

January			February			March			April			May			June		
1	08:50	16:34	08:22	17:23	18:16	07:27	18:16	18:16	07:15	20:12	10	19:35 (3)	06:08	21:04	05:22	20:45 (1)	21:18 (1)
2	08:50	16:35	08:21	17:25	18:18	07:23	18:23	18:23	07:13	20:13	14	19:47 (3)	06:06	21:06	05:21	20:45 (1)	21:19 (1)
3	08:50	16:36	08:19	17:27	18:20	07:20	18:20	18:20	07:10	20:15	17	19:31 (3)	06:05	21:08	05:20	20:46 (1)	21:21 (1)
4	08:50	16:37	08:17	17:28	18:21	07:16	18:21	18:21	07:08	20:17	21	19:48 (3)	06:03	21:09	05:19	20:46 (1)	21:21 (1)
5	08:49	16:38	08:15	17:30	18:23	07:14	18:23	18:23	07:05	20:19	24	19:51 (3)	06:01	21:11	05:18	20:45 (1)	21:20 (1)
6	08:49	16:39	08:14	17:32	18:25	07:11	18:25	18:25	07:03	20:20	27	19:53 (3)	05:59	21:13	05:18	20:46 (1)	21:21 (1)
7	08:49	16:41	08:12	17:34	18:27	07:09	18:27	18:27	07:01	20:22	30	19:54 (3)	05:57	21:14	05:17	20:46 (1)	21:21 (1)
8	08:48	16:42	08:10	17:36	18:29	07:07	18:29	18:29	06:59	20:24	31	19:56 (3)	05:55	21:16	05:17	20:47 (1)	21:21 (1)
9	08:48	16:43	08:08	17:38	18:31	07:04	18:31	18:31	06:56	20:26	33	19:57 (3)	05:53	21:18	05:16	20:48 (1)	21:21 (1)
10	08:47	16:45	08:06	17:40	18:32	07:02	18:32	18:32	06:54	20:27	36	19:58 (3)	05:52	21:19	05:16	20:48 (1)	21:21 (1)
11	08:47	16:46	08:05	17:42	18:34	07:00	18:34	18:34	06:52	20:29	38	20:00 (2)	21:19	22:00	05:15	20:48 (1)	21:21 (1)
12	08:46	16:48	08:03	17:44	18:36	06:58	18:36	18:36	06:50	20:31	40	20:02 (2)	21:21	22:01	05:15	20:49 (1)	21:21 (1)
13	08:45	16:49	08:01	17:46	18:38	06:55	18:38	18:38	06:47	20:33	42	20:04 (2)	21:23	22:02	05:15	20:49 (1)	21:21 (1)
14	08:44	16:51	07:59	17:48	18:40	06:53	18:40	18:40	06:45	20:34	44	20:05 (2)	21:24	22:03	05:14	20:49 (1)	21:21 (1)
15	08:43	16:53	07:57	17:49	18:41	06:51	18:41	18:41	06:43	20:36	46	20:07 (2)	21:26	22:04	05:14	20:49 (1)	21:21 (1)
16	08:43	16:54	07:55	17:51	18:43	06:49	18:43	18:43	06:41	20:38	47	20:09 (2)	21:28	22:05	05:14	20:50 (1)	21:21 (1)
17	08:42	16:56	07:53	17:53	18:45	06:47	18:45	18:45	06:38	20:40	49	20:11 (2)	21:29	22:06	05:14	20:50 (1)	21:21 (1)
18	08:41	16:57	07:51	17:55	18:47	06:45	18:47	18:47	06:36	20:42	51	20:13 (2)	21:31	22:07	05:14	20:50 (1)	21:21 (1)
19	08:40	16:59	07:49	17:57	18:49	06:43	18:49	18:49	06:34	20:44	53	20:15 (2)	21:33	22:08	05:14	20:50 (1)	21:21 (1)
20	08:39	17:01	07:47	17:59	18:50	06:41	18:50	18:50	06:32	20:46	55	20:17 (2)	21:35	22:09	05:14	20:50 (1)	21:21 (1)
21	08:37	17:03	07:45	18:01	18:52	06:39	18:52	18:52	06:29	20:48	57	20:19 (2)	21:37	22:10	05:14	20:51 (1)	21:21 (1)
22	08:36	17:04	07:42	18:03	18:54	06:37	18:54	18:54	06:27	20:50	59	20:21 (2)	21:39	22:11	05:14	20:51 (1)	21:21 (1)
23	08:35	17:06	07:40	18:05	18:56	06:35	18:56	18:56	06:25	20:52	61	20:23 (2)	21:41	22:12	05:14	20:51 (1)	21:21 (1)
24	08:34	17:08	07:38	18:07	18:57	06:33	18:57	18:57	06:23	20:54	63	20:25 (2)	21:43	22:13	05:14	20:51 (1)	21:21 (1)
25	08:32	17:10	07:36	18:08	18:59	06:31	18:59	18:59	06:21	20:56	65	20:27 (2)	21:45	22:14	05:14	20:51 (1)	21:21 (1)
26	08:31	17:12	07:34	18:10	19:01	06:29	19:01	19:01	06:19	20:58	67	20:29 (2)	21:47	22:15	05:14	20:51 (1)	21:21 (1)
27	08:30	17:13	07:32	18:12	19:03	06:27	19:03	19:03	06:17	21:00	69	20:31 (2)	21:49	22:16	05:14	20:51 (1)	21:21 (1)
28	08:28	17:15	07:29	18:14	19:05	06:25	19:05	19:05	06:15	21:02	71	20:33 (2)	21:51	22:17	05:14	20:51 (1)	21:21 (1)
29	08:27	17:17	07:27	18:16	19:06	06:23	19:06	19:06	06:13	21:04	73	20:35 (2)	21:53	22:18	05:14	20:51 (1)	21:21 (1)
30	08:25	17:19	07:25	18:18	19:08	06:21	19:08	19:08	06:11	21:06	75	20:37 (2)	21:55	22:19	05:14	20:51 (1)	21:21 (1)
31	08:24	17:21	07:23	18:20	19:10	06:19	19:10	19:10	06:09	21:08	77	20:39 (2)	21:57	22:20	05:14	20:51 (1)	21:21 (1)
Potential sun hours	256	276	367	418	488	503	984	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
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)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: P - H16

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
229 231 210 320 200 640 608 691 568 658 724 1,086 671 733 661 530 8,760

July		August		September		October		November		December	
1	05:18	20:52 (1)	05:56	21:00 (1)	06:48	19:23 (3)	07:38	07:34	08:26		
2	22:06	33 21:25 (1)	21:33	3 21:03 (1)	20:29	38 20:01 (2)	19:18	17:10	16:28		
3	05:19	20:53 (1)	05:58		06:49	19:23 (3)	07:40	07:35	08:28		
4	22:05	33 21:26 (1)	21:31		20:26	36 19:59 (2)	19:15	17:08	16:27		
5	05:20	20:52 (1)	05:59		06:51	19:23 (3)	07:42	07:37	08:29		
6	22:05	34 21:26 (1)	21:29		20:24	33 19:56 (3)	19:13	17:06	16:27		
7	05:21	20:52 (1)	06:01		06:53	19:23 (3)	07:43	07:39	08:30		
8	22:05	34 21:26 (1)	21:27		20:22	32 19:55 (3)	19:11	17:04	16:26		
9	05:21	20:53 (1)	06:03		06:54	19:23 (3)	07:45	07:41	08:32		
10	22:04	34 21:27 (1)	21:26		20:20	30 19:53 (3)	19:08	17:02	16:26		
11	05:22	20:53 (1)	06:04		06:56	19:23 (3)	07:47	07:43	08:33		
12	22:03	34 21:27 (1)	21:24		20:17	27 19:50 (3)	19:06	17:01	16:25		
13	05:23	20:53 (1)	06:06		06:58	19:24 (3)	07:49	07:45	08:34		
14	22:03	35 21:28 (1)	21:22		20:15	24 19:48 (3)	19:04	16:59	16:25		
15	05:24	20:53 (1)	06:07		06:59	19:24 (3)	07:50	07:47	08:36		
16	22:02	35 21:28 (1)	21:20		20:12	21 19:45 (3)	19:01	16:57	16:24		
17	05:25	20:52 (1)	06:09		07:01	19:25 (3)	07:52	07:48	08:37		
18	22:01	35 21:27 (1)	21:18		20:10	18 19:43 (3)	18:59	16:56	16:24		
19	05:26	20:52 (1)	06:11		07:03	19:26 (3)	07:54	07:50	08:38		
20	22:01	35 21:27 (1)	21:16		20:08	15 19:41 (3)	18:57	16:54	16:24		
21	05:27	20:52 (1)	06:12		07:04	19:27 (3)	07:56	07:52	08:39		
22	22:00	34 21:26 (1)	21:14		20:05	11 19:38 (3)	18:54	16:52	16:24		
23	05:28	20:52 (1)	06:14		07:06	19:29 (3)	07:57	07:54	08:40		
24	21:59	33 21:25 (1)	21:12		20:03	7 19:36 (3)	18:52	16:51	16:23		
25	05:30	20:53 (1)	06:16		07:08	19:30 (3)	07:59	07:56	08:41		
26	21:58	32 21:25 (1)	21:10		20:01	3 19:33 (3)	18:50	16:49	16:23		
27	05:31	20:53 (1)	06:17		07:09		08:01	07:58	08:42		
28	21:57	31 21:24 (1)	21:08		19:58		18:48	16:48	16:23		
29	05:32	20:53 (1)	06:19		07:11		08:03	07:59	08:43		
30	21:56	30 21:23 (1)	21:06		19:56		18:45	16:46	16:23		
31	05:33	20:53 (1)	06:21		19:46 (3)	07:13	08:04	08:01	08:44		
32	21:55	29 21:22 (1)	21:04	8	19:54 (3)	19:53	18:43	16:45	16:24		
33	05:34	20:53 (1)	06:22		19:41 (3)	07:14	08:06	08:03	08:45		
34	21:54	28 21:21 (1)	21:02	16	19:57 (3)	19:51	18:41	16:43	16:24		
35	05:36	20:53 (1)	06:24		19:38 (3)	07:16	08:08	08:05	08:46		
36	21:53	27 21:20 (1)	21:00	31	20:17 (2)	19:49	18:39	16:42	16:24		
37	05:37	20:54 (1)	06:26		19:36 (3)	07:18	08:10	08:06	08:46		
38	21:52	26 21:20 (1)	20:58	40	20:19 (2)	19:46	18:37	16:40	16:24		
39	05:38	20:53 (1)	06:27		19:34 (3)	07:19	08:12	08:08	08:47		
40	21:50	25 21:18 (1)	20:56	46	20:20 (2)	19:44	18:34	16:39	16:25		
41	05:40	20:53 (1)	06:29		19:32 (3)	07:21	08:13	08:10	08:47		
42	21:49	24 21:17 (1)	20:53	49	20:21 (2)	19:42	18:32	16:38	16:25		
43	05:41	20:53 (1)	06:31		19:31 (3)	07:23	08:15	08:12	08:48		
44	21:48	22 21:15 (1)	20:51	51	20:22 (2)	19:39	18:30	16:37	16:25		
45	05:43	20:54 (1)	06:32		19:30 (3)	07:25	08:17	08:13	08:49		
46	21:46	21 21:15 (1)	20:49	51	20:21 (2)	19:37	18:28	16:36	16:26		
47	05:44	20:54 (1)	06:34		19:28 (3)	07:26	08:19	08:15	08:49		
48	21:45	19 21:13 (1)	20:47	51	20:19 (2)	19:34	18:26	16:35	16:27		
49	05:45	20:55 (1)	06:36		19:28 (3)	07:28	07:21	08:17	08:49		
50	21:44	18 21:13 (1)	20:45	49	20:17 (2)	19:32	17:24	16:33	16:27		
51	05:47	20:55 (1)	06:37		19:26 (3)	07:30	07:23	08:18	08:50		
52	21:42	16 21:11 (1)	20:42	48	20:14 (2)	19:30	17:22	16:32	16:28		
53	05:48	20:55 (1)	06:39		19:26 (3)	07:31	07:24	08:20	08:50		
54	21:41	14 21:09 (1)	20:40	46	20:12 (2)	19:27	17:20	16:31	16:29		
55	05:50	20:57 (1)	06:41		19:25 (3)	07:33	07:26	08:22	08:50		
56	21:39	11 21:08 (1)	20:38	46	20:11 (2)	19:25	17:18	16:31	16:30		
57	05:51	20:57 (1)	06:43		19:24 (3)	07:35	07:28	08:23	08:50		
58	21:37	9 21:06 (1)	20:36	44	20:08 (2)	19:22	17:16	16:30	16:30		
59	05:53	20:58 (1)	06:44		19:24 (3)	07:36	07:30	08:25	08:50		
60	21:36	7 21:05 (1)	20:33	42	20:06 (2)	19:20	17:14	16:29	16:31		
61	05:55	20:58 (1)	06:46		19:23 (3)		07:32		08:50		
62	21:34	6 21:04 (1)	20:31	40	20:03 (2)		17:12		16:32		
Potential sun hours	506		456		381		330	263	240		
Total, worst case	804		661		295						
Sun reduction	0.26		0.30		0.28						
Oper. time red.	1.00		1.00		1.00						
Wind dir. red.	0.66		0.68		0.68						
Total reduction	0.18		0.20		0.19						
Total, real	141		132		57						

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	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** Q - 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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January			February			March			April			May			June		
1	08:50			08:22	16:21 (3)	07:27		17:38 (2)	07:15		19:00 (1)	06:08			05:22	06:05 (7)		
	16:34			17:23	31	16:52 (3)	18:16	11	17:49 (2)	20:12	3	19:03 (1)	21:04		21:52	22	06:30 (4)	
2	08:50			08:21	16:20 (3)	07:25		17:38 (2)	07:13			06:06		05:21		06:06 (7)		
	16:35			17:25	34	16:54 (3)	18:18	13	17:51 (2)	20:13			21:06		21:53	20	06:30 (4)	
3	08:50			08:19	16:20 (3)	07:23		17:38 (2)	07:10			06:05		05:20		06:08 (7)		
	16:36			17:26	35	16:55 (3)	18:20	16	17:54 (2)	20:15			21:08		21:54	17	06:30 (4)	
4	08:50			08:17	16:21 (3)	07:20		17:37 (2)	07:08			06:03		05:19		06:17 (4)		
	16:37			17:28	37	16:58 (3)	18:21	18	17:55 (2)	20:17			21:09		21:55	12	06:29 (4)	
5	08:50			08:16	16:21 (3)	07:18		17:37 (2)	07:05			06:01		05:18		06:18 (4)		
	16:38			17:30	39	17:00 (3)	18:23	20	17:57 (2)	20:19			21:11		21:56	11	06:29 (4)	
6	08:49			08:14	16:21 (3)	07:16		17:37 (2)	07:03			05:59		05:18		06:19 (4)		
	16:39			17:32	39	17:00 (3)	18:25	22	17:59 (2)	20:20			21:13		21:57	10	06:29 (4)	
7	08:49			08:12	16:21 (3)	07:14		17:37 (2)	07:01			05:57		05:17		06:19 (4)		
	16:41			17:34	39	17:00 (3)	18:27	23	18:00 (2)	20:22			21:14		21:58	9	06:28 (4)	
8	08:48			08:10	16:22 (3)	07:11		17:38 (2)	06:59			05:55		05:17		06:21 (4)		
	16:42			17:36	38	17:00 (3)	18:29	25	18:03 (1)	20:24			21:16		21:59	6	06:27 (4)	
9	08:48			08:08	16:22 (3)	07:09		17:39 (2)	06:56			05:53		05:16		06:21 (4)		
	16:43			17:38	38	17:00 (3)	18:31	26	18:05 (1)	20:26			21:18		22:00	5	06:26 (4)	
10	08:47			08:07	16:23 (3)	07:07		17:39 (2)	06:54			05:52		05:16				
	16:45			17:40	36	16:59 (3)	18:32	27	18:06 (1)	20:27			21:19		22:00			
11	08:47			08:05	16:23 (3)	07:04		17:41 (2)	06:52			05:50		05:15				
	16:46			17:42	35	16:58 (3)	18:34	27	18:08 (1)	20:29			21:21		22:01			
12	08:46			08:03	16:24 (3)	07:02		17:43 (2)	06:49			05:48		05:15				
	16:48			17:44	34	16:58 (3)	18:36	27	18:10 (1)	20:31			21:23		22:02			
13	08:45			08:01	16:25 (3)	07:00		17:48 (1)	06:47			05:46		05:15				
	16:49			17:46	32	16:57 (3)	18:38	24	18:12 (1)	20:33			21:24		22:03			
14	08:44			07:59	16:26 (3)	06:57		17:47 (1)	06:45			05:45		05:14				
	16:51			17:48	30	16:56 (3)	18:40	27	18:14 (1)	20:34			21:26		22:03			
15	08:44			07:57	16:28 (3)	06:55		17:46 (1)	06:43			05:43		05:14				
	16:53			17:49	27	16:55 (3)	18:41	29	18:15 (1)	20:36			21:28		22:04			
16	08:43			07:55	16:30 (3)	06:53		17:45 (1)	06:40			05:42		06:19 (4)		05:14		
	16:54			17:51	23	16:53 (3)	18:43	32	18:17 (1)	20:38			21:29	6	06:25 (4)	22:04		
17	08:42			07:53	16:32 (3)	06:50		17:45 (1)	06:38			05:40		06:17 (4)		05:14		
	16:56			17:53	19	16:51 (3)	18:45	35	18:20 (1)	20:40			21:31	9	06:26 (4)	22:05		
18	08:41			07:51	16:36 (3)	06:48		17:44 (1)	06:36			05:39		06:07 (7)		05:14		
	16:57			17:55	12	16:48 (3)	18:47	37	18:21 (1)	20:41			21:32	14	06:28 (4)	22:05		
19	08:40			07:49		06:46		17:44 (1)	06:34			05:37		06:04 (7)		05:14		
	16:59			17:57		18:49	39	18:23 (1)	20:43			21:34	21	06:28 (4)		22:06		
20	08:39		16:26 (3)	07:47		06:43		17:43 (1)	06:31			05:36		06:03 (7)		05:14		
	17:01	1	16:27 (3)	17:59		18:50	41	18:24 (1)	20:45			21:35	24	06:29 (4)		22:06		
21	08:37		16:25 (3)	07:45		06:41		17:44 (1)	06:29			05:34		06:03 (7)		05:14		
	17:03	4	16:29 (3)	18:01		18:52	41	18:25 (1)	20:47			21:37	26	06:30 (4)		22:06		
22	08:36		16:25 (3)	07:42		06:39		17:44 (1)	06:27			05:33		06:03 (7)		05:14		
	17:04	7	16:32 (3)	18:03		18:54	41	18:25 (1)	20:48			21:38	27	06:30 (4)		22:06		
23	08:35		16:23 (3)	07:40		06:36		17:44 (1)	06:25			05:32		06:03 (7)		05:15		
	17:06	10	16:33 (3)	18:05		18:56	40	18:24 (1)	20:50			21:40	28	06:31 (4)		22:06		
24	08:34		16:23 (3)	07:38		06:34		17:45 (1)	06:23			05:30		06:02 (7)		05:15		
	17:08	13	16:36 (3)	18:07		18:57	38	18:23 (1)	20:52			21:41	28	06:30 (4)		22:07		
25	08:32		16:22 (3)	07:36		06:31		17:44 (1)	06:21			05:29		06:02 (7)		05:15		
	17:10	15	16:37 (3)	18:08		18:59	37	18:21 (1)	20:54			21:43	28	06:30 (4)		22:07		
26	08:31		16:22 (3)	07:34		17:42 (2)	06:29	17:45 (1)	06:19			05:28		06:02 (7)		05:16		
	17:12	18	16:40 (3)	18:10	1	17:43 (2)	19:01	18:21 (1)	20:55			21:44	28	06:30 (4)		22:07		
27	08:30		16:21 (3)	07:32		17:41 (2)	06:27	17:47 (1)	06:17			05:27		06:02 (7)		05:16		
	17:13	20	16:41 (3)	18:12	5	17:46 (2)	19:03	18:19 (1)	20:57			21:45	28	06:30 (4)		22:07		
28	08:28		16:22 (3)	07:29		17:39 (2)	06:24	17:47 (1)	06:14			05:26		06:02 (7)		05:17		
	17:15	22	16:44 (3)	18:14	8	17:47 (2)	19:05	18:17 (1)	20:59			21:47	28	06:30 (4)		22:06		
29	08:27		16:21 (3)			07:22		18:49 (1)	06:12			05:25		06:03 (7)		05:17		
	17:17	24	16:45 (3)			07:20	27	19:16 (1)	21:01			21:48	27	06:30 (4)		22:06		
30	08:25		16:20 (3)			07:20		18:51 (1)	06:10			05:24		06:04 (7)		05:18		
	17:19	27	16:47 (3)			07:20	22	19:13 (1)	21:02			21:49	26	06:31 (4)		22:06		
31	08:24		16:21 (3)			07:17		18:53 (1)				05:23		06:05 (7)				
	17:21	29	16:50 (3)			20:10	17	19:10 (1)				21:50	25	06:31 (4)				
Potential sun hours	256			276		367		418				489			503			
Total, worst case		190		592		880			3			373				112		
Sun reduction		0.16		0.21		0.24			0.35			0.37				0.30		
Oper. time red.		1.00		1.00		1.00			1.00			1.00				1.00		
Wind dir. red.		0.62		0.63		0.67			0.67			0.64				0.65		
Total reduction		0.10		0.13		0.16			0.24			0.24				0.19		
Total, real		19		77		143			1			88				22		

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: Q - 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
229 231 210 320 200 640 608 691 568 658 724 1,086 671 733 661 530 8,760

July		August		September		October		November		December	
1	05:18		05:56	06:48		07:38		18:24 (2)	07:34	15:52 (3)	08:26
	22:06		21:33	20:29		19:18	26	18:50 (1)	17:10	16:29 (3)	16:28
2	05:19		05:58	06:49		07:40		18:20 (2)	07:36	15:52 (3)	08:28
	22:05		21:31	20:26		19:15	27	18:47 (1)	17:08	16:29 (3)	16:27
3	05:20		05:59	06:51		07:42		18:18 (2)	07:37	15:51 (3)	08:29
	22:05	3	06:30 (4)	21:29	20:24	19:13	27	18:45 (1)	17:06	16:30 (3)	16:27
4	05:21		06:26 (4)	06:01	06:53	07:43		18:16 (2)	07:39	15:51 (3)	08:30
	22:05	6	06:32 (4)	21:27	20:22	19:11	27	18:43 (1)	17:04	16:30 (3)	16:26
5	05:21		06:26 (4)	06:03	06:54	07:45		18:15 (2)	07:41	15:51 (3)	08:32
	22:04	8	06:34 (4)	21:26	20:20	19:08	26	18:41 (1)	17:02	16:30 (3)	16:26
6	05:22		06:26 (4)	06:04	06:56	07:47		18:14 (2)	07:43	15:51 (3)	08:33
	22:03	9	06:35 (4)	21:24	20:17	19:06	24	18:38 (2)	17:01	16:30 (3)	16:25
7	05:23		06:25 (4)	06:06	06:58	07:49		18:13 (2)	07:45	15:51 (3)	08:34
	22:03	11	06:36 (4)	21:22	20:15	19:04	22	18:35 (2)	16:59	16:28 (3)	16:25
8	05:24		06:24 (4)	06:07	06:59	07:50		18:12 (2)	07:47	15:51 (3)	08:36
	22:02	11	06:35 (4)	21:20	20:12	19:01	21	18:33 (2)	16:57	16:26 (3)	16:24
9	05:25		06:15 (7)	06:09	07:01	07:52		18:12 (2)	07:48	15:51 (3)	08:37
	22:01	14	06:36 (4)	21:18	20:10	18:59	19	18:31 (2)	16:56	16:24 (3)	16:24
10	05:26		06:14 (7)	06:11	07:03	07:54		18:12 (2)	07:50	15:51 (3)	08:38
	22:01	19	06:37 (4)	21:16	20:08	18:57	17	18:29 (2)	16:54	16:22 (3)	16:24
11	05:27		06:13 (7)	06:12	07:04	07:56		18:12 (2)	07:52	15:52 (3)	08:39
	22:00	21	06:37 (4)	21:14	20:05	18:54	15	18:27 (2)	16:52	16:21 (3)	16:24
12	05:28		06:12 (7)	06:14	07:06	18:46 (1)	07:57	18:11 (2)	07:54	15:52 (3)	08:40
	21:59	24	06:38 (4)	21:12	20:03	19:01 (1)	18:52	18:23 (2)	16:51	16:19 (3)	16:23
13	05:29		06:13 (7)	06:16	07:08	18:42 (1)	07:59	18:12 (2)	07:56	15:53 (3)	08:41
	21:58	24	06:39 (4)	21:10	20:01	19:03 (1)	18:50	18:21 (2)	16:49	16:17 (3)	16:23
14	05:31		06:12 (7)	06:17	07:09	18:40 (1)	08:01	18:12 (2)	07:58	15:54 (3)	08:42
	21:57	28	06:40 (4)	21:08	19:58	19:06 (1)	18:48	18:19 (2)	16:48	16:16 (3)	16:23
15	05:32		06:12 (7)	06:19	07:11	18:38 (1)	08:03	18:13 (2)	07:59	15:54 (3)	08:43
	21:56	28	06:40 (4)	21:06	19:56	19:07 (1)	18:45	18:17 (2)	16:46	16:14 (3)	16:23
16	05:33		06:12 (7)	06:21	07:13	18:35 (1)	08:04		08:01	15:55 (3)	08:44
	21:55	28	06:40 (4)	21:04	19:53	19:08 (1)	18:43		16:45	16:12 (3)	16:24
17	05:34		06:12 (7)	06:22	07:14	18:34 (1)	08:06		08:03	15:56 (3)	08:45
	21:54	28	06:40 (4)	21:02	19:51	19:09 (1)	18:41		16:43	16:11 (3)	16:24
18	05:36		06:11 (7)	06:24	07:16	18:33 (1)	08:08		08:05	15:57 (3)	08:46
	21:53	29	06:40 (4)	21:00	19:49	19:10 (1)	18:39		16:42	16:09 (3)	16:24
19	05:37		06:12 (7)	06:26	07:18	18:31 (1)	08:10		08:07	15:58 (3)	08:46
	21:52	29	06:41 (4)	20:58	19:46	19:09 (1)	18:37		16:40	16:08 (3)	16:24
20	05:38		06:12 (7)	06:27	07:19	18:30 (1)	08:12		08:08	16:00 (3)	08:47
	21:50	28	06:40 (4)	20:56	19:44	19:10 (1)	18:34		16:39	16:07 (3)	16:25
21	05:40		06:12 (7)	06:29	07:21	18:30 (1)	08:13		08:10	16:01 (3)	08:48
	21:49	28	06:40 (4)	20:53	19:42	19:11 (1)	18:32		16:38	16:05 (3)	16:25
22	05:41		06:12 (7)	06:31	07:23	18:28 (1)	08:15		08:12	16:03 (3)	08:48
	21:48	28	06:40 (4)	20:51	19:39	19:10 (1)	18:30		16:37	16:04 (3)	16:25
23	05:43		06:14 (7)	06:32	07:25	18:28 (1)	08:17		08:13		08:49
	21:46	24	06:40 (4)	20:49	19:37	19:09 (1)	18:28		16:36		16:26
24	05:44		06:14 (7)	06:34	07:26	18:28 (1)	08:19		08:15		08:49
	21:45	22	06:39 (4)	20:47	19:34	19:07 (1)	18:26	14	17:18 (3)	16:34	16:27
25	05:45		06:15 (7)	06:36	07:28	18:27 (1)	07:21		16:01 (3)	08:17	08:49
	21:44	18	06:38 (4)	20:45	19:32	19:04 (1)	17:24	20	16:21 (3)	16:33	16:27
26	05:47		06:27 (4)	06:37	07:30	18:27 (1)	07:23		15:59 (3)	08:18	08:50
	21:42	11	06:38 (4)	20:42	19:30	19:02 (1)	17:22	24	16:23 (3)	16:32	16:28
27	05:48		06:28 (4)	06:39	07:31	18:27 (1)	07:24		15:57 (3)	08:20	08:50
	21:41	8	06:36 (4)	20:40	19:27	19:00 (1)	17:20	27	16:24 (3)	16:31	16:29
28	05:50		06:31 (4)	06:41	07:33	18:27 (1)	07:26		15:56 (3)	08:22	08:50
	21:39	3	06:34 (4)	20:38	19:25	18:58 (1)	17:18	30	16:26 (3)	16:31	16:29
29	05:51		06:43	07:35	18:27 (1)	07:28		15:55 (3)	08:23		08:50
	21:38		20:36	19:22	18:55 (1)	17:16	32	16:27 (3)	16:30		16:30
30	05:53		06:44	07:36	18:27 (1)	07:30		15:54 (3)	08:25		08:50
	21:36		20:33	19:20	18:52 (1)	17:14	33	16:27 (3)	16:29		16:31
31	05:55		06:46			07:32		15:53 (3)			08:50
	21:34		20:31			17:12	35	16:28 (3)			16:32
Potential sun hours	506		456	381		330		263		240	
Total, worst case		490		626		498		554			
Sun reduction		0.26		0.28		0.24		0.19			
Oper. time red.		1.00		1.00		1.00		1.00			
Wind dir. red.		0.65		0.67		0.65		0.62			
Total reduction		0.17		0.19		0.15		0.12			
Total, real		84		119		77		65			

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	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: R - 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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

January		February		March		April		May		June	
1	08:50	14:48 (1)	08:22	07:27		07:15		06:08		05:22	06:16 (6)
	16:34	56	15:58 (2)	17:23	18:16	20:12		21:04		21:52	19 06:35 (6)
2	08:50	14:48 (1)	08:21	07:25		07:13		06:06		05:21	06:16 (6)
	16:35	55	15:58 (2)	17:25	18:18	20:13		21:06		21:53	19 06:35 (6)
3	08:50	14:49 (1)	08:19	07:23		07:10		06:05		05:20	06:16 (6)
	16:36	56	16:00 (2)	17:26	18:20	20:15		21:08		21:54	19 06:35 (6)
4	08:50	14:50 (1)	08:17	07:20		07:08	07:31 (7)	06:03		05:19	06:16 (6)
	16:37	56	16:02 (2)	17:28	18:21	20:17	4 07:35 (7)	21:09		21:55	19 06:35 (6)
5	08:50	14:51 (1)	08:16	07:18		07:06	07:29 (7)	06:01		05:18	06:16 (6)
	16:38	54	16:02 (2)	17:30	18:23	20:19	7 07:36 (7)	21:11		21:56	19 06:35 (6)
6	08:49	14:52 (1)	08:14	07:16		07:03	07:26 (7)	05:59		05:18	06:17 (6)
	16:39	55	16:04 (2)	17:32	18:25	20:20	10 07:36 (7)	21:13		21:57	18 06:35 (6)
7	08:49	14:53 (1)	08:12	07:14		07:01	07:26 (7)	05:57		05:17	06:17 (6)
	16:41	54	16:05 (2)	17:34	18:27	20:22	10 07:36 (7)	21:14		21:58	18 06:35 (6)
8	08:48	14:55 (1)	08:10	07:11		06:59	07:26 (7)	05:55		05:17	06:18 (6)
	16:42	54	16:07 (2)	17:36	18:29	20:24	10 07:36 (7)	21:16		21:59	17 06:35 (6)
9	08:48	14:56 (1)	08:08	07:09		06:56	07:26 (7)	05:53		05:16	06:18 (6)
	16:43	52	16:08 (2)	17:38	18:31	20:26	8 07:34 (7)	21:18		22:00	16 06:34 (6)
10	08:47	14:57 (1)	08:07	07:07		06:54	07:28 (7)	05:52		05:16	06:18 (6)
	16:45	50	16:08 (2)	17:40	18:32	20:27	4 07:32 (7)	21:20		22:00	17 06:35 (6)
11	08:47	14:58 (1)	08:05	07:04		06:52		05:50		05:15	06:19 (6)
	16:46	48	16:08 (2)	17:42	18:34	20:29		21:21		22:01	16 06:35 (6)
12	08:46	15:00 (1)	08:03	07:02		06:49		05:48		05:15	06:20 (6)
	16:48	43	16:07 (2)	17:44	18:36	20:31		21:23		22:02	15 06:35 (6)
13	08:45	15:02 (1)	08:01	07:00		06:47		05:46		05:15	06:19 (6)
	16:49	39	16:07 (2)	17:46	18:38	20:33		21:24		22:03	15 06:34 (6)
14	08:44	15:05 (1)	07:59	06:57		06:45		05:45		05:14	06:20 (6)
	16:51	32	16:07 (2)	17:48	18:40	20:34		21:26		22:03	15 06:35 (6)
15	08:44	15:45 (2)	07:57	06:55		06:43	07:09 (5)	05:43		05:14	06:21 (6)
	16:53	22	16:07 (2)	17:49	18:41	20:36	8 07:17 (5)	21:28		22:04	14 06:35 (6)
16	08:43	15:46 (2)	07:55	06:53		06:40	07:07 (5)	05:42		05:14	06:21 (6)
	16:54	21	16:07 (2)	17:51	18:43	20:38	11 07:18 (5)	21:29		22:04	14 06:35 (6)
17	08:42	15:47 (2)	07:53	06:50		06:38	07:07 (5)	05:40		05:14	06:21 (6)
	16:56	19	16:06 (2)	17:53	18:45	20:40	12 07:19 (5)	21:31		22:05	14 06:35 (6)
18	08:41	15:49 (2)	07:51	06:48		06:36	07:06 (5)	05:39		05:14	06:22 (6)
	16:57	17	16:06 (2)	17:55	18:47	20:41	13 07:19 (5)	21:32		22:05	13 06:35 (6)
19	08:40	15:51 (2)	07:49	06:46		06:34	07:05 (5)	05:37		05:14	06:22 (6)
	16:59	14	16:05 (2)	17:57	18:49	20:43	13 07:18 (5)	21:34	8 06:28 (6)	22:06	13 06:35 (6)
20	08:39	15:54 (2)	07:47	06:43		06:31	07:05 (5)	05:36		06:18 (6)	05:14 06:22 (6)
	17:01	10	16:04 (2)	17:59	18:50	20:45	13 07:18 (5)	21:35	11 06:29 (6)	22:06	13 06:35 (6)
21	08:37	15:58 (2)	07:45	06:41		06:29	07:06 (5)	05:34		06:18 (6)	05:14 06:23 (6)
	17:03	1	15:59 (2)	18:01	18:52	7 07:14 (4)	11 07:17 (5)	21:37	13 06:31 (6)	22:06	13 06:36 (6)
22	08:36		07:42	06:39		07:05 (4)	07:07 (5)	05:33		06:17 (6)	05:14 06:23 (6)
	17:04		18:03	18:54	11 07:16 (4)	20:49	8 07:15 (5)	21:38	15 06:32 (6)	22:06	13 06:36 (6)
23	08:35		07:40	06:36		07:04 (4)	07:09 (5)	05:32		06:17 (6)	05:15 06:23 (6)
	17:06		18:05	18:56	12 07:16 (4)	20:50	4 07:13 (5)	21:40	16 06:33 (6)	22:07	13 06:36 (6)
24	08:34		07:38	06:34		07:03 (4)		06:23		06:15 (6)	05:15 06:23 (6)
	17:08		18:07	18:57	14 07:17 (4)	20:52		21:41	17 06:32 (6)	22:07	13 06:36 (6)
25	08:32		07:36	06:31		07:03 (4)		06:21		06:15 (6)	05:15 06:23 (6)
	17:10		18:08	18:59	14 07:17 (4)	20:54		21:43	18 06:33 (6)	22:07	14 06:37 (6)
26	08:31		07:34	06:29		07:03 (4)		06:19		06:15 (6)	05:16 06:23 (6)
	17:12		18:10	19:01	12 07:15 (4)	20:56		21:44	18 06:33 (6)	22:07	14 06:37 (6)
27	08:30		07:32	06:27		07:04 (4)		06:17		06:15 (6)	05:16 06:24 (6)
	17:13		18:12	19:03	11 07:15 (4)	20:57		21:45	19 06:34 (6)	22:07	14 06:38 (6)
28	08:28		07:29	06:24		07:04 (4)		06:14		06:15 (6)	05:17 06:23 (6)
	17:15		18:14	19:05	8 07:12 (4)	20:59		21:47	19 06:34 (6)	22:06	15 06:38 (6)
29	08:27			07:22		06:12		05:25		06:15 (6)	05:17 06:24 (6)
	17:17			20:06		21:01		21:48	19 06:34 (6)	22:06	15 06:39 (6)
30	08:25			07:20		06:10		05:24		06:16 (6)	05:18 06:23 (6)
	17:19			20:08		21:02		21:49	19 06:35 (6)	22:06	15 06:38 (6)
31	08:24			07:17				05:23		06:16 (6)	
	17:21			20:10				21:50	19 06:35 (6)		
Potential sun hours	256		276	367		418		489		503	
Total, worst case	808				89		146		211		462
Sun reduction	0.16				0.24		0.35		0.37		0.30
Oper. time red.	1.00				1.00		1.00		1.00		1.00
Wind dir. red.	0.61				0.68		0.67		0.65		0.65
Total reduction	0.10				0.17		0.24		0.24		0.19
Total, real	78				15		34		50		89

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
Kathryn Feeney / kfeeney@jodireland.com
Calculated:
16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case
Assumptions for shadow calculations

Shadow receptor: R - H18

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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

July		August		September		October		November		December	
1	05:18	06:24 (6)	05:56	06:48		07:38	07:34			08:26	14:40 (1)
	22:06	15 06:39 (6)	21:33	20:29		19:18	17:10			16:28	47 15:50 (2)
2	05:19	06:24 (6)	05:58	06:49	07:27 (7)	07:40	07:36			08:28	14:40 (1)
	22:05	16 06:40 (6)	21:31	20:27	4 07:31 (7)	19:15	17:08			16:27	50 15:51 (2)
3	05:20	06:23 (6)	05:59	06:51	07:24 (7)	07:42	07:37			08:29	14:39 (1)
	22:05	17 06:40 (6)	21:29	20:24	8 07:32 (7)	19:13	17:06			16:27	52 15:51 (2)
4	05:21	06:23 (6)	06:01	06:53	07:23 (7)	07:43	07:39			08:30	14:39 (1)
	22:05	17 06:40 (6)	21:27	20:22	10 07:33 (7)	19:11	17:04			16:26	55 15:52 (2)
5	05:21	06:23 (6)	06:03	06:54	07:23 (7)	07:45	07:41			08:32	14:38 (1)
	22:04	18 06:41 (6)	21:26	20:20	10 07:33 (7)	19:08	17:02			16:26	54 15:50 (2)
6	05:22	06:24 (6)	06:04	06:56	07:22 (7)	07:47	07:43			08:33	14:38 (1)
	22:04	17 06:41 (6)	21:24	20:17	10 07:32 (7)	19:06	17:01			16:25	55 15:50 (2)
7	05:23	06:24 (6)	06:06	06:58	07:24 (7)	07:49	07:45			08:34	14:38 (1)
	22:03	18 06:42 (6)	21:22	20:15	7 07:31 (7)	19:04	16:59			16:25	55 15:49 (2)
8	05:24	06:23 (6)	06:07	06:59	07:25 (7)	07:50	07:47			08:36	14:37 (1)
	22:02	18 06:41 (6)	21:20	20:12	4 07:29 (7)	19:01	16:57			16:24	56 15:49 (2)
9	05:25	06:23 (6)	06:09	07:01		07:52	07:49			08:37	14:38 (1)
	22:02	19 06:42 (6)	21:18	20:10		18:59	16:56			16:24	56 15:49 (2)
10	05:26	06:23 (6)	06:11	07:03		07:54	07:50			08:38	14:38 (1)
	22:01	19 06:42 (6)	21:16	20:08		18:57	16:54			16:24	55 15:48 (2)
11	05:27	06:23 (6)	06:12	07:04		07:56	07:52			08:39	14:38 (1)
	22:00	19 06:42 (6)	21:14	20:05		18:54	16:52			16:24	56 15:48 (2)
12	05:28	06:23 (6)	06:14	07:06		07:57	07:54			08:40	14:38 (1)
	21:59	19 06:42 (6)	21:12	20:03		18:52	16:51			16:23	55 15:48 (2)
13	05:29	06:24 (6)	06:16	07:08		07:59	07:56			08:41	14:38 (1)
	21:58	20 06:44 (6)	21:10	20:01		18:50	16:49			16:23	55 15:47 (2)
14	05:31	06:24 (6)	06:17	07:09		08:01	07:58			08:42	14:38 (1)
	21:57	20 06:44 (6)	21:08	19:58		18:48	16:48			16:23	55 15:47 (2)
15	05:32	06:24 (6)	06:19	07:11	07:55 (4)	08:03	07:59			08:43	14:39 (1)
	21:56	19 06:43 (6)	21:06	19:56	7 08:02 (4)	18:45	16:46			16:23	54 15:47 (2)
16	05:33	06:24 (6)	06:21	07:13	07:52 (4)	08:04	08:01			08:44	14:39 (1)
	21:55	19 06:43 (6)	21:04	19:53	11 08:03 (4)	18:43	16:45			16:24	55 15:48 (2)
17	05:34	06:24 (6)	06:22	07:14	07:51 (4)	08:06	08:03			08:45	14:39 (1)
	21:54	19 06:43 (6)	21:02	19:51	13 08:04 (4)	18:41	16:43			16:24	56 15:48 (2)
18	05:36	06:24 (6)	06:24	07:16	07:51 (4)	08:08	08:05			08:46	14:39 (1)
	21:53	19 06:43 (6)	21:00	19:49	13 08:04 (4)	18:39	16:42			16:24	55 15:47 (2)
19	05:37	06:26 (6)	06:26	07:18	07:50 (4)	08:10	08:07			08:46	14:40 (1)
	21:52	17 06:43 (6)	20:58	19:46	13 08:03 (4)	18:37	16:40			16:24	55 15:48 (2)
20	05:38	06:26 (6)	06:27	07:19	07:50 (4)	08:12	08:08			08:47	14:41 (1)
	21:50	17 06:43 (6)	20:56	5 07:19 (5)	19:44	13 08:03 (4)	18:34			16:25	55 15:49 (2)
21	05:40	06:26 (6)	06:29	07:21	07:51 (4)	08:13	08:10			08:48	14:40 (1)
	21:49	16 06:42 (6)	20:53	9 07:20 (5)	19:42	11 08:02 (4)	18:32			16:25	56 15:49 (2)
22	05:41	06:27 (6)	06:31	07:23	07:10 (5)	08:15	08:12			15:30 (2)	08:48
	21:48	14 06:41 (6)	20:51	12 07:22 (5)	19:39	9 08:00 (4)	18:30			15:40 (2)	16:25
23	05:43	06:28 (6)	06:32	07:25	07:10 (5)	08:17	08:13			15:27 (2)	08:49
	21:47	13 06:41 (6)	20:49	12 07:22 (5)	19:37	2 07:56 (4)	18:28			15:41 (2)	16:26
24	05:44	06:29 (6)	06:34	07:26	07:09 (5)	08:19	08:15			15:26 (2)	08:49
	21:45	10 06:39 (6)	20:47	13 07:22 (5)	19:34		18:26			15:43 (2)	16:27
25	05:45	06:31 (6)	06:36	07:28	07:09 (5)	08:21	08:17			15:25 (2)	08:49
	21:44	6 06:37 (6)	20:45	13 07:22 (5)	19:32		17:24			15:44 (2)	16:27
26	05:47		06:37	07:30	07:08 (5)	08:23	08:18			15:25 (2)	08:50
	21:42		20:42	13 07:21 (5)	19:30		17:22			15:46 (2)	16:28
27	05:48		06:39	07:31	07:09 (5)	08:24	08:20			15:25 (2)	08:50
	21:41		20:40	11 07:20 (5)	19:27		17:20			15:47 (2)	16:29
28	05:50		06:41	07:33	07:11 (5)	08:22	08:17			14:46 (1)	08:50
	21:39		20:38	8 07:19 (5)	19:25		17:18			15:47 (2)	16:29
29	05:51		06:43	07:35		08:23	08:19			14:43 (1)	08:50
	21:38		20:36	19:22		17:16	16:30			15:48 (2)	16:30
30	05:53		06:44	07:36		08:25	08:20			14:42 (1)	08:50
	21:36		20:33	19:20		17:14	16:29			15:50 (2)	16:31
31	05:55		06:46			07:32				08:50	14:46 (1)
	21:34		20:31			17:12				16:32	56 15:56 (2)
Potential sun hours	506		456	381		330	263			240	
Total, worst case		421	96	145			217			1694	
Sun reduction		0.26	0.30	0.28			0.19			0.14	
Oper. time red.		1.00	1.00	1.00			1.00			1.00	
Wind dir. red.		0.65	0.66	0.68			0.62			0.61	
Total reduction		0.17	0.20	0.19			0.11			0.08	
Total, real		72	19	28			25			141	

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: S - 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
229 231 210 320 200 640 608 691 568 658 724 1,086 671 733 661 530 8,760

	January	February	March	April	May	June
1	08:50 16:34	08:22 17:23	07:27 18:16	07:15 20:12	06:08 21:04	19:46 (3) 21:51
2	08:50 16:35	08:21 17:25	07:25 18:18	07:13 20:13	06:06 21:06	19:48 (3) 21:53
3	08:50 16:36	08:19 17:27	07:23 18:20	07:10 20:15	06:05 21:08	19:49 (3) 21:54
4	08:50 16:37	08:17 17:28	07:20 18:21	07:08 20:17	06:03 21:09	19:50 (3) 21:55
5	08:49 16:38	08:15 17:30	07:18 18:23	07:05 20:19	06:01 21:11	19:52 (3) 21:56
6	08:49 16:39	08:14 17:32	07:16 18:25	07:03 20:20	05:59 21:13	19:53 (3) 21:57
7	08:49 16:41	08:12 17:34	07:14 18:27	07:01 20:22	05:57 21:14	19:57 (3) 21:58
8	08:48 16:42	08:10 17:36	07:11 18:29	06:59 20:24	05:55 21:16	20:09 (3) 21:59
9	08:48 16:43	08:08 17:38	07:09 18:31	06:56 20:26	05:53 21:18	21:01 (1) 22:00
10	08:47 16:45	08:06 17:40	07:07 18:32	06:54 20:27	05:52 21:19	21:01 (1) 22:00
11	08:47 16:46	08:05 17:42	07:04 18:34	06:52 20:29	05:50 21:21	21:01 (1) 22:01
12	08:46 16:48	08:03 17:44	07:02 18:36	06:49 20:31	05:48 21:23	21:02 (1) 22:02
13	08:45 16:49	08:01 17:46	07:00 18:38	06:47 20:33	05:46 21:24	21:01 (1) 22:03
14	08:44 16:51	07:59 17:48	06:57 18:40	06:45 20:34	05:45 21:26	21:02 (1) 22:03
15	08:43 16:53	07:57 17:49	06:55 18:41	06:43 20:36	05:43 21:28	21:02 (1) 22:04
16	08:43 16:54	07:55 17:51	06:53 18:43	06:40 20:38	05:42 21:29	21:02 (1) 22:04
17	08:42 16:56	07:53 17:53	06:50 18:45	06:38 20:40	05:40 21:31	21:03 (1) 22:05
18	08:41 16:57	07:51 17:55	06:48 18:47	06:36 20:41	05:39 21:32	21:03 (1) 22:05
19	08:40 16:59	07:49 17:57	06:46 18:49	06:34 20:43	05:37 21:34	21:03 (1) 22:06
20	08:39 17:01	07:47 17:59	06:43 18:50	06:31 20:45	05:36 21:35	21:03 (1) 22:06
21	08:37 17:03	07:45 18:01	06:41 18:52	06:29 20:47	05:34 21:37	21:04 (1) 22:06
22	08:36 17:04	07:42 18:03	06:39 18:54	06:27 20:48	05:33 21:38	21:04 (1) 22:06
23	08:35 17:06	07:40 18:05	06:36 18:56	06:25 20:50	05:32 21:40	21:04 (1) 22:06
24	08:34 17:08	07:38 18:07	06:34 18:57	06:23 20:52	05:30 21:41	21:04 (1) 22:07
25	08:32 17:10	07:36 18:08	06:31 18:59	06:21 20:54	05:29 21:43	21:05 (1) 22:07
26	08:31 17:12	07:34 18:10	06:29 19:01	06:19 20:55	05:28 21:44	21:04 (1) 22:07
27	08:30 17:13	07:32 18:12	06:27 19:03	06:17 20:57	05:27 21:45	21:05 (1) 22:07
28	08:28 17:15	07:29 18:14	06:24 19:05	06:14 20:59	05:26 21:47	21:05 (1) 22:06
29	08:27 17:17		07:22 20:06	06:12 21:01	05:25 21:48	21:05 (1) 22:06
30	08:25 17:19		07:20 20:08	06:10 21:02	05:24 21:49	21:05 (1) 22:06
31	08:24 17:21		07:17 20:10		05:23 21:50	21:00 (1) 21:17 (1)
Potential sun hours	256	276	367	418	488	503
Total, worst case				617	280	768
Sun reduction				0.35	0.37	0.30
Oper. time red.				1.00	1.00	1.00
Wind dir. red.				0.67	0.67	0.65
Total reduction				0.24	0.24	0.19
Total, real				147	68	149

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	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case

Shadow receptor: S - 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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

July		August		September		October		November		December	
1	05:18	21:06 (1)	05:56	06:48	19:53 (3)	07:38	07:34	08:26			
2	22:06	21:32 (1)	21:33	20:29	20:01 (3)	19:18	17:10	16:28			
3	05:19	21:06 (1)	05:58	06:49	19:55 (3)	07:40	07:35	08:28			
4	22:05	21:32 (1)	21:31	20:26	19:59 (3)	19:15	17:08	16:27			
5	05:20	21:06 (1)	05:59	06:51		07:42	07:37	08:29			
6	22:05	21:31 (1)	21:29	20:24		19:13	17:06	16:27			
7	05:21	21:06 (1)	06:01	06:53		07:43	07:39	08:30			
8	22:05	21:30 (1)	21:27	20:22		19:11	17:04	16:26			
9	05:21	21:06 (1)	06:03	20:09 (3)	06:54	07:45	07:41	08:32			
10	22:04	21:30 (1)	21:26	20:15 (3)	20:19	19:08	17:02	16:26			
11	05:22	21:07 (1)	06:04	20:05 (3)	06:56	07:47	07:43	08:33			
12	22:03	21:30 (1)	21:24	20:19 (3)	20:17	19:06	17:01	16:25			
13	05:23	21:07 (1)	06:06	20:03 (3)	06:58	07:49	07:45	08:34			
14	22:03	21:29 (1)	21:22	20:22 (3)	20:15	19:04	16:59	16:25			
15	05:24	21:07 (1)	06:07	20:01 (3)	06:59	07:50	07:47	08:36			
16	22:02	21:29 (1)	21:20	20:24 (3)	20:12	19:01	16:57	16:24			
17	05:25	21:07 (1)	06:09	19:59 (3)	07:01	07:52	07:48	08:37			
18	22:01	21:27 (1)	21:18	20:25 (3)	20:10	18:59	16:56	16:24			
19	05:26	21:07 (1)	06:11	19:57 (3)	07:03	07:54	07:50	08:38			
20	22:01	21:27 (1)	21:16	20:26 (3)	20:08	18:57	16:54	16:24			
21	05:27	21:07 (1)	06:12	19:56 (3)	07:04	07:56	07:52	08:39			
22	22:00	21:26 (1)	21:14	20:27 (3)	20:05	18:54	16:52	16:24			
23	05:28	21:07 (1)	06:14	19:55 (3)	07:06	07:57	07:54	08:40			
24	21:59	21:25 (1)	21:12	20:31 (2)	20:03	18:52	16:51	16:24			
25	05:30	21:09 (1)	06:16	19:54 (3)	07:08	07:59	07:56	08:41			
26	21:58	21:25 (1)	21:10	20:33 (2)	20:01	18:50	16:49	16:23			
27	05:31	21:09 (1)	06:17	19:53 (3)	07:09	08:01	07:58	08:42			
28	21:57	21:24 (1)	21:08	20:34 (2)	19:58	18:48	16:48	16:23			
29	05:32	21:09 (1)	06:19	19:52 (3)	07:11	08:03	07:59	08:43			
30	21:56	21:23 (1)	21:06	20:35 (2)	19:56	18:45	16:46	16:23			
31	05:33	21:09 (1)	06:21	19:52 (3)	07:13	08:04	08:01	08:44			
32	21:55	21:22 (1)	21:04	20:36 (2)	19:53	18:43	16:45	16:24			
33	05:34	21:10 (1)	06:22	19:51 (3)	07:14	08:06	08:03	08:45			
34	21:54	21:21 (1)	21:02	20:33 (2)	19:51	18:41	16:43	16:24			
35	05:36	21:10 (1)	06:24	19:51 (3)	07:16	08:08	08:05	08:45			
36	21:53	21:20 (1)	21:00	20:32 (2)	19:49	18:39	16:42	16:24			
37	05:37	21:11 (1)	06:26	19:50 (3)	07:18	08:10	08:06	08:46			
38	21:52	21:20 (1)	20:58	20:29 (2)	19:46	18:37	16:40	16:24			
39	05:38	21:12 (1)	06:27	19:50 (3)	07:19	08:12	08:08	08:47			
40	21:50	21:18 (1)	20:56	20:27 (2)	19:44	18:34	16:39	16:25			
41	05:40	21:12 (1)	06:29	19:49 (3)	07:21	08:13	08:10	08:47			
42	21:49	21:17 (1)	20:53	20:25 (2)	19:41	18:32	16:38	16:25			
43	05:41	21:12 (1)	06:31	19:49 (3)	07:23	08:15	08:12	08:48			
44	21:48	21:15 (1)	20:51	20:23 (2)	19:39	18:30	16:37	16:25			
45	05:43	21:14 (1)	06:32	19:49 (3)	07:25	08:17	08:13	08:48			
46	21:46	21:15 (1)	20:49	20:21 (2)	19:37	18:28	16:36	16:26			
47	05:44		06:34	19:48 (3)	07:26	08:19	08:15	08:49			
48	21:45		20:47	20:19 (2)	19:34	18:26	16:35	16:27			
49	05:45		06:36	19:49 (3)	07:28	07:21	08:17	08:49			
50	21:44		20:45	20:17 (2)	19:32	17:24	16:33	16:27			
51	05:47		06:37	19:49 (3)	07:30	07:23	08:18	08:50			
52	21:42		20:42	20:14 (2)	19:30	17:22	16:32	16:28			
53	05:48		06:39	19:49 (3)	07:31	07:24	08:20	08:50			
54	21:41		20:40	20:12 (3)	19:27	17:20	16:31	16:29			
55	05:50		06:41	19:50 (3)	07:33	07:26	08:22	08:50			
56	21:39		20:38	20:11 (3)	19:25	17:18	16:31	16:30			
57	05:51		06:43	19:50 (3)	07:35	07:28	08:23	08:50			
58	21:37		20:36	20:08 (3)	19:22	17:16	16:30	16:30			
59	05:53		06:44	19:51 (3)	07:36	07:30	08:25	08:50			
60	21:36		20:33	20:06 (3)	19:20	17:14	16:29	16:31			
61	05:55		06:46	19:51 (3)		07:32		08:50			
62	21:34		20:31	20:03 (3)		17:12		16:32			
Potential sun hours	506		456	381		330	263	240			
Total, worst case	372		785	12							
Sun reduction	0.26		0.30	0.28							
Oper. time red.	1.00		1.00	1.00							
Wind dir. red.	0.65		0.67	0.67							
Total reduction	0.17		0.20	0.19							
Total, real	64		156	2							

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

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

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: U - 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
229 231 210 320 200 640 608 691 568 658 724 1,086 671 733 661 530 8,760

	January			February			March			April			May			June		
1	08:50		14:43 (1)	08:22		07:27		07:15		06:08		05:22		06:29 (6)				
	16:34	48	15:56 (2)	17:23		18:16		20:12		21:04		21:52		11	06:40 (6)			
2	08:50		14:43 (1)	08:21		07:25		07:13		06:06		05:21		06:30 (6)				
	16:35	47	15:56 (2)	17:25		18:18		20:13	5	07:41 (7)	21:06	21:53	9	06:39 (6)				
3	08:50		14:45 (1)	08:19		07:23		07:10		06:05		05:20		06:32 (6)				
	16:36	45	15:57 (2)	17:26		18:20		20:15	8	07:41 (7)	21:08	21:54	7	06:39 (6)				
4	08:50		14:47 (1)	08:17		07:20		07:08		06:03		05:19		06:33 (6)				
	16:37	42	15:57 (2)	17:28		18:21		20:17	10	07:41 (7)	21:09	21:55	3	06:36 (6)				
5	08:50		14:48 (1)	08:16		07:18		07:06		06:01		05:18						
	16:38	39	15:57 (2)	17:30		18:23		20:19	10	07:41 (7)	21:11	21:56						
6	08:49		14:51 (1)	08:14		07:16		07:03		05:59		05:18						
	16:39	35	15:58 (2)	17:32		18:25		20:20	9	07:40 (7)	21:13	21:57						
7	08:49		15:33 (2)	08:12		07:14		07:01		05:57		05:17						
	16:41	24	15:57 (2)	17:34		18:27		20:22	7	07:39 (7)	21:14	21:58						
8	08:48		15:35 (2)	08:10		07:11		06:59		05:55		05:17						
	16:42	23	15:58 (2)	17:36		18:29		20:24		21:16		21:59						
9	08:48		15:35 (2)	08:08		07:09		06:56		05:53		05:16						
	16:43	23	15:58 (2)	17:38		18:31		20:26		21:18		22:00						
10	08:47		15:36 (2)	08:07		07:07		06:54		05:52		05:16						
	16:45	21	15:57 (2)	17:40		18:32		20:27		21:20		22:00						
11	08:47		15:37 (2)	08:05		07:04		06:52		05:50		05:15						
	16:46	20	15:57 (2)	17:42		18:34		20:29	2	07:21 (5)	21:21	22:01						
12	08:46		15:38 (2)	08:03		07:02		06:49		05:48		05:15						
	16:48	18	15:56 (2)	17:44		18:36		20:31	8	07:24 (5)	21:23	22:02						
13	08:45		15:39 (2)	08:01		07:00		06:47		05:46		05:15						
	16:49	17	15:56 (2)	17:46		18:38		20:33	11	07:24 (5)	21:24	22:03						
14	08:44		15:41 (2)	07:59		06:57		06:45		05:45		05:14						
	16:51	14	15:55 (2)	17:48		18:40		20:34	12	07:25 (5)	21:26	22:03						
15	08:44		15:43 (2)	07:57		06:55		06:43		05:43		05:14						
	16:53	11	15:54 (2)	17:49		18:41		20:36	13	07:25 (5)	21:28	22:04						
16	08:43		15:45 (2)	07:55		06:53		06:40		05:42		05:14						
	16:54	7	15:52 (2)	17:51		18:43		20:38	13	07:25 (5)	21:29	22:04						
17	08:42			07:53		06:50		06:38		05:40		05:14						
	16:56			17:53		18:45		20:40	11	07:24 (5)	21:31	22:05						
18	08:41			07:51		06:48		06:36		05:39		05:14						
	16:57			17:55		18:47	5	07:19 (4)	20:41	21:32	19	06:43 (6)	22:05					
19	08:40			07:49		06:46		07:12 (4)	06:34	05:37		05:14						
	16:59			17:57		18:49	9	07:21 (4)	20:43	21:34	18	06:42 (6)	22:06					
20	08:39			07:47		06:43		07:10 (4)	06:31	05:36		05:14						
	17:01			17:59		18:50	12	07:22 (4)	20:45	21:35	19	06:43 (6)	22:06					
21	08:37			07:45		06:41		07:09 (4)	06:29	05:34		05:14						
	17:03			18:01		18:52	13	07:22 (4)	20:47	21:37	19	06:43 (6)	22:06					
22	08:36			07:42		06:39		07:09 (4)	06:27	05:33		05:14						
	17:04			18:03		18:54	13	07:22 (4)	20:49	21:38	19	06:43 (6)	22:06					
23	08:35			07:40		06:36		07:09 (4)	06:25	05:32		05:15						
	17:06			18:05		18:56	12	07:21 (4)	20:50	21:40	18	06:43 (6)	22:07					
24	08:34			07:38		06:34		07:09 (4)	06:23	05:30		05:15						
	17:08			18:07		18:57	12	07:21 (4)	20:52	21:41	18	06:42 (6)	22:07					
25	08:32			07:36		06:31		07:11 (4)	06:21	05:29		05:15						
	17:10			18:08		18:59	8	07:19 (4)	20:54	21:43	18	06:42 (6)	22:07					
26	08:31			07:34		06:29		06:19		05:28		05:16						
	17:12			18:10		19:01		20:56		21:44	17	06:42 (6)	22:07					
27	08:30			07:32		06:27		06:17		05:27		05:16						
	17:13			18:12		19:03		20:57		21:45	17	06:42 (6)	22:07					
28	08:28			07:29		06:24		06:14		05:26		05:17						
	17:15			18:14		19:05		20:59		21:47	16	06:42 (6)	22:06					
29	08:27					07:22		06:12		05:25		05:17						
	17:17					20:06		21:01		21:48	15	06:41 (6)	22:06					
30	08:25					07:20		06:10		05:24		05:18						
	17:19					20:08		21:02		21:49	14	06:42 (6)	22:06					
31	08:24					07:17				05:23		06:28 (6)						
	17:21					20:10				21:50	13	06:41 (6)						
Potential sun hours	256			276		367		418		489		503						
Total, worst case		434				84		137		319		30						
Sun reduction		0.16				0.24		0.35		0.37		0.30						
Oper. time red.		1.00				1.00		1.00		1.00		1.00						
Wind dir. red.		0.61				0.68		0.67		0.65		0.65						
Total reduction		0.10				0.17		0.24		0.24		0.19						
Total, real		42				14		32		77		6						

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	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
Kathryn Feeney / kfeeney@jodireland.com
Calculated:
16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** U - 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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

July		August		September		October		November		December	
1	05:18		05:56	06:41 (6)	06:48		07:38	07:34		08:26	15:19 (2)
	22:06		21:33	06:45 (6)	20:29		19:18	17:10		16:28	20 15:39 (2)
2	05:19		05:58		06:49		07:40	07:36		08:28	15:19 (2)
	22:05		21:31		20:27		19:15	17:08		16:27	21 15:40 (2)
3	05:20		05:59		06:51		07:42	07:37		08:29	15:18 (2)
	22:05		21:29		20:24		19:13	17:06		16:27	23 15:41 (2)
4	05:21		06:01		06:53		07:43	07:39		08:30	15:19 (2)
	22:05		21:27		20:22		19:11	17:04		16:26	23 15:42 (2)
5	05:21		06:03		06:54		07:45	07:41		08:32	15:18 (2)
	22:04		21:26		20:20	7 07:36 (7)	19:08	17:02		16:26	24 15:42 (2)
6	05:22		06:04		06:56		07:47	07:43		08:33	14:38 (1)
	22:04		21:24		20:17	9 07:36 (7)	19:06	17:01		16:25	33 15:44 (2)
7	05:23		06:06		06:58		07:49	07:45		08:34	14:36 (1)
	22:03		21:22		20:15	10 07:36 (7)	19:04	16:59		16:25	37 15:44 (2)
8	05:24		06:07		06:59		07:50	07:47		08:36	14:34 (1)
	22:02		21:20		20:12	11 07:36 (7)	19:01	16:57		16:24	42 15:44 (2)
9	05:25		06:09		07:01		07:52	07:49		08:37	14:34 (1)
	22:02	5 06:44 (6)	21:18		20:10	8 07:35 (7)	18:59	16:56		16:24	45 15:46 (2)
10	05:26		06:11		07:03		07:54	07:50		08:38	14:34 (1)
	22:01	8 06:46 (6)	21:16		20:08	5 07:34 (7)	18:57	16:54		16:24	46 15:46 (2)
11	05:27		06:12		07:04		07:56	07:52		08:39	14:33 (1)
	22:00	10 06:47 (6)	21:14		20:05		18:54	16:52		16:24	48 15:47 (2)
12	05:28		06:14		07:06		07:57	07:54		08:40	14:33 (1)
	21:59	12 06:48 (6)	21:12		20:03		18:52	16:51		16:23	49 15:47 (2)
13	05:29		06:16		07:08		07:59	07:56		08:41	14:33 (1)
	21:58	13 06:50 (6)	21:10		20:01		18:50	16:49		16:23	50 15:47 (2)
14	05:31		06:17		07:09		08:01	07:58		08:42	14:33 (1)
	21:57	14 06:50 (6)	21:08		19:58		18:48	16:48		16:23	51 15:47 (2)
15	05:32		06:19		07:11		08:03	07:59		08:43	14:33 (1)
	21:56	16 06:51 (6)	21:06		19:56		18:45	16:46		16:23	51 15:47 (2)
16	05:33		06:21		07:13		08:04	08:01		08:44	14:33 (1)
	21:55	16 06:51 (6)	21:04		19:53		18:43	16:45		16:24	53 15:48 (2)
17	05:34		06:22		07:14		08:06	08:03		08:45	14:33 (1)
	21:54	18 06:52 (6)	21:02		19:51		18:41	16:43		16:24	53 15:48 (2)
18	05:36		06:24		07:16		08:08	08:05		08:46	14:33 (1)
	21:53	18 06:52 (6)	21:00		19:49	7 08:06 (4)	18:39	16:42		16:24	51 15:47 (2)
19	05:37		06:26		07:18		08:10	08:07		08:46	14:34 (1)
	21:52	18 06:53 (6)	20:58		19:46	11 08:07 (4)	18:37	16:40		16:24	52 15:48 (2)
20	05:38		06:27		07:19		08:12	08:08		08:47	14:34 (1)
	21:50	19 06:53 (6)	20:56		19:44	13 08:08 (4)	18:34	16:39		16:25	53 15:49 (2)
21	05:40		06:29		07:21		08:13	08:10		08:48	14:34 (1)
	21:49	19 06:53 (6)	20:53		19:42	13 08:08 (4)	18:32	16:38		16:25	53 15:49 (2)
22	05:41		06:31		07:23		08:15	08:12		08:48	14:35 (1)
	21:48	19 06:53 (6)	20:51		19:39	13 08:07 (4)	18:30	16:37		16:25	52 15:49 (2)
23	05:43		06:32		07:25		08:17	08:13		08:49	14:35 (1)
	21:47	19 06:53 (6)	20:49	1 07:22 (5)	19:37	12 08:06 (4)	18:28	16:36		16:26	53 15:50 (2)
24	05:44		06:34		07:26		08:19	08:15		08:49	14:35 (1)
	21:45	19 06:53 (6)	20:47	8 07:25 (5)	19:34	10 08:05 (4)	18:26	16:34		16:27	53 15:50 (2)
25	05:45		06:36		07:28		08:21	08:17		08:49	14:37 (1)
	21:44	19 06:53 (6)	20:45	10 07:26 (5)	19:32	7 08:03 (4)	17:24	16:33		16:27	51 15:51 (2)
26	05:47		06:37		07:30		08:23	08:18		08:50	14:37 (1)
	21:42	18 06:53 (6)	20:42	12 07:26 (5)	19:30		17:22	16:32	6 15:31 (2)	16:28	53 15:52 (2)
27	05:48		06:39		07:31		08:24	08:20		08:50	14:38 (1)
	21:41	17 06:52 (6)	20:40	13 07:27 (5)	19:27		17:20	16:31	11 15:34 (2)	16:29	52 15:52 (2)
28	05:50		06:41		07:33		08:26	08:22		08:50	14:38 (1)
	21:39	16 06:52 (6)	20:38	13 07:27 (5)	19:25		17:18	16:31	14 15:35 (2)	16:29	52 15:53 (2)
29	05:51		06:43		07:35		08:28	08:23		08:50	14:39 (1)
	21:38	14 06:51 (6)	20:36	12 07:26 (5)	19:22		17:16	16:30	17 15:37 (2)	16:30	52 15:54 (2)
30	05:53		06:44		07:36		08:30	08:25		08:50	14:40 (1)
	21:36	12 06:50 (6)	20:33	11 07:25 (5)	19:20		17:14	16:29	18 15:38 (2)	16:31	51 15:55 (2)
31	05:55		06:46		07:37		08:32			08:50	14:41 (1)
	21:34	10 06:49 (6)	20:31	8 07:23 (5)			17:12			16:32	51 15:56 (2)
Potential sun hours	506		456		381		330	263		240	
Total, worst case	349		92		136			66		1398	
Sun reduction	0.26		0.30		0.28			0.19		0.14	
Oper. time red.	1.00		1.00		1.00			1.00		1.00	
Wind dir. red.	0.65		0.67		0.68			0.62		0.61	
Total reduction	0.17		0.20		0.19			0.12		0.08	
Total, real	60		18		26			8		117	

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: V - 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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

January		February		March		April		May		June	
1	08:50	15:27 (2)	08:22	07:27		07:15		07:38 (7)	06:08		05:22
	16:34	24	15:51 (2)	17:23	18:16	20:12	8	07:46 (7)	21:04		21:52
2	08:50	15:27 (2)	08:21	07:25		07:13		07:36 (7)	06:06		05:21
	16:35	23	15:50 (2)	17:25	18:18	20:13	10	07:46 (7)	21:06		21:53
3	08:50	15:28 (2)	08:19	07:23		07:10		07:35 (7)	06:05		05:20
	16:36	23	15:51 (2)	17:26	18:20	20:15	10	07:45 (7)	21:08		21:54
4	08:50	15:29 (2)	08:17	07:20		07:08		07:35 (7)	06:03		05:19
	16:37	22	15:51 (2)	17:28	18:21	20:17	10	07:45 (7)	21:09		21:55
5	08:50	15:29 (2)	08:16	07:18		07:06		07:37 (7)	06:01		05:18
	16:38	22	15:51 (2)	17:30	18:23	20:19	7	07:44 (7)	21:11		21:56
6	08:49	15:31 (2)	08:14	07:16		07:03			05:59		05:18
	16:39	20	15:51 (2)	17:32	18:25	20:20			21:13		21:57
7	08:49	15:31 (2)	08:12	07:14		07:01			05:57		05:17
	16:41	20	15:51 (2)	17:34	18:27	20:22			21:14		21:58
8	08:48	15:33 (2)	08:10	07:11		06:59			05:55		05:17
	16:42	18	15:51 (2)	17:36	18:29	20:24			21:16	9	06:45 (6)
9	08:48	15:34 (2)	08:08	07:09		06:56		07:22 (5)	05:53		06:34 (6)
	16:43	17	15:51 (2)	17:38	18:31	20:26	5	07:27 (5)	21:18	12	06:46 (6)
10	08:47	15:35 (2)	08:07	07:07		06:54		07:20 (5)	05:52		06:34 (6)
	16:45	15	15:50 (2)	17:40	18:32	20:27	9	07:29 (5)	21:20	14	06:48 (6)
11	08:47	15:36 (2)	08:05	07:04		06:52		07:19 (5)	05:50		06:32 (6)
	16:46	13	15:49 (2)	17:42	18:34	20:29	11	07:30 (5)	21:21	16	06:48 (6)
12	08:46	15:38 (2)	08:03	07:02		06:49		07:18 (5)	05:48		06:31 (6)
	16:48	10	15:48 (2)	17:44	18:36	20:31	13	07:31 (5)	21:23	17	06:48 (6)
13	08:45	15:42 (2)	08:01	07:00		06:47		07:17 (5)	05:46		06:31 (6)
	16:49	3	15:45 (2)	17:46	18:38	20:33	13	07:30 (5)	21:24	18	06:49 (6)
14	08:44		07:59	06:57		06:45		07:17 (5)	05:45		06:30 (6)
	16:51		17:48	18:40		20:34	13	07:30 (5)	21:26	19	06:49 (6)
15	08:44		07:57	06:55		06:43		07:18 (5)	05:43		06:31 (6)
	16:53		17:49	18:41		20:36	11	07:29 (5)	21:28	19	06:50 (6)
16	08:43		07:55	06:53		07:19 (4)	06:40	07:19 (5)	05:42		06:31 (6)
	16:54		17:51	18:43	7	07:26 (4)	20:38	07:28 (5)	21:29	19	06:50 (6)
17	08:42		07:53	06:50		07:17 (4)	06:38	07:21 (5)	05:40		06:30 (6)
	16:56		17:53	18:45	10	07:27 (4)	20:40	07:26 (5)	21:31	20	06:50 (6)
18	08:41		07:51	06:48		07:15 (4)	06:36		05:39		06:31 (6)
	16:57		17:55	18:47	12	07:27 (4)	20:41		21:32	19	06:50 (6)
19	08:40		07:49	06:46		07:15 (4)	06:34		05:37		06:31 (6)
	16:59		17:57	18:49	13	07:28 (4)	20:43		21:34	18	06:49 (6)
20	08:39		07:47	06:43		07:14 (4)	06:31		05:36		06:31 (6)
	17:01		17:59	18:50	13	07:27 (4)	20:45		21:35	18	06:49 (6)
21	08:37		07:45	06:41		07:14 (4)	06:29		05:34		06:32 (6)
	17:03		18:01	18:52	13	07:27 (4)	20:47		21:37	17	06:49 (6)
22	08:36		07:42	06:39		07:15 (4)	06:27		05:33		06:33 (6)
	17:04		18:03	18:54	11	07:26 (4)	20:49		21:38	16	06:49 (6)
23	08:35		07:40	06:36		07:16 (4)	06:25		05:32		06:34 (6)
	17:06		18:05	18:56	7	07:23 (4)	20:50		21:40	14	06:48 (6)
24	08:34		07:38	06:34		06:23			05:30		06:33 (6)
	17:08		18:07	18:57		20:52			21:41	14	06:47 (6)
25	08:32		07:36	06:31		06:21			05:29		06:35 (6)
	17:10		18:08	18:59		20:54			21:43	11	06:46 (6)
26	08:31		07:34	06:29		06:19			05:28		06:36 (6)
	17:12		18:10	19:01		20:56			21:44	9	06:45 (6)
27	08:30		07:32	06:27		06:17			05:27		06:38 (6)
	17:13		18:12	19:03		20:57			21:45	5	06:43 (6)
28	08:28		07:29	06:24		06:14			05:26		05:17
	17:15		18:14	19:05		20:59			21:47		22:06
29	08:27			07:22		06:12			05:25		05:17
	17:17			20:06		21:01			21:48		22:06
30	08:25			07:20		06:10			05:24		05:18
	17:19			20:08		21:02			21:49		22:06
31	08:24			07:17		07:40 (7)			05:23		
	17:21			20:10	4	07:44 (7)			21:50		
Potential sun hours	256		276	367		418			489		503
Total, worst case	230			90		134			304		
Sun reduction	0.16			0.24		0.35			0.37		
Oper. time red.	1.00			1.00		1.00			1.00		
Wind dir. red.	0.61			0.68		0.67			0.66		
Total reduction	0.10			0.16		0.24			0.24		
Total, real	22			15		32			73		

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
Kathryn Feeney / kfeeney@jodireland.com
Calculated:
16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** V - 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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

July		August		September		October		November		December	
1	05:18		05:56	06:42 (6)	06:48		07:18 (5)	07:38		08:26	15:19 (2)
	22:06		21:33	17 06:59 (6)	20:29	11	07:29 (5)	19:18		16:28	12 15:31 (2)
2	05:19		05:58	06:43 (6)	06:49		07:19 (5)	07:40		08:28	15:18 (2)
	22:05		21:31	15 06:58 (6)	20:27	9	07:28 (5)	19:15		16:27	15 15:33 (2)
3	05:20		05:59	06:43 (6)	06:51		07:20 (5)	07:42		08:29	15:17 (2)
	22:05		21:29	14 06:57 (6)	20:24	5	07:25 (5)	19:13		16:27	17 15:34 (2)
4	05:21		06:01	06:45 (6)	06:53			07:43		08:30	15:17 (2)
	22:05		21:27	11 06:56 (6)	20:22			19:11		16:26	18 15:35 (2)
5	05:21		06:03	06:47 (6)	06:54			07:45		08:32	15:16 (2)
	22:04		21:26	6 06:53 (6)	20:20			19:08		16:26	20 15:36 (2)
6	05:22		06:04		06:56			07:47		08:33	15:17 (2)
	22:04		21:24		20:17			19:06		16:25	20 15:37 (2)
7	05:23		06:06		06:58		07:32 (7)	07:49		08:34	15:16 (2)
	22:03		21:22		20:15	7	07:39 (7)	19:04		16:25	22 15:38 (2)
8	05:24		06:07		06:59		07:30 (7)	07:50		08:36	15:16 (2)
	22:02		21:20		20:12	9	07:39 (7)	19:01		16:24	22 15:38 (2)
9	05:25		06:09		07:01		07:29 (7)	07:52		08:37	15:17 (2)
	22:02		21:18		20:10	10	07:39 (7)	18:59		16:24	23 15:40 (2)
10	05:26		06:11		07:03		07:29 (7)	07:54		08:38	15:17 (2)
	22:01		21:16		20:08	10	07:39 (7)	18:57		16:24	23 15:40 (2)
11	05:27		06:12		07:04		07:30 (7)	07:56		08:39	15:17 (2)
	22:00		21:14		20:05	8	07:38 (7)	18:54		16:24	24 15:41 (2)
12	05:28		06:14		07:06		07:32 (7)	07:57		08:40	15:17 (2)
	21:59		21:12		20:03	5	07:37 (7)	18:52		16:23	24 15:41 (2)
13	05:29		06:16		07:08			07:59		08:41	14:37 (1)
	21:58		21:10		20:01			18:50		16:23	30 15:42 (2)
14	05:31		06:17		07:09			08:01		08:42	14:36 (1)
	21:57		21:08		19:58			18:48		16:23	34 15:43 (2)
15	05:32		06:19		07:11			08:03		08:43	14:35 (1)
	21:56		21:06		19:56			18:45		16:23	36 15:43 (2)
16	05:33		06:21		07:13			08:04		08:44	14:35 (1)
	21:55	2 06:51 (6)	21:04		19:53			18:43		16:24	38 15:44 (2)
17	05:34		06:22		07:14			08:06		08:45	14:35 (1)
	21:54	8 06:54 (6)	21:02		19:51			18:41		16:24	39 15:45 (2)
18	05:36		06:24		07:16			08:08		08:46	14:35 (1)
	21:53	10 06:55 (6)	21:00		19:49			18:39		16:24	38 15:44 (2)
19	05:37		06:26		07:18			08:10		08:46	14:35 (1)
	21:52	13 06:57 (6)	20:58		19:46			18:37		16:24	40 15:45 (2)
20	05:38		06:27		07:19		08:03 (4)	08:12		08:47	14:36 (1)
	21:50	13 06:57 (6)	20:56		19:44	6	08:09 (4)	18:34		16:25	40 15:46 (2)
21	05:40		06:29		07:21		08:01 (4)	08:13		08:48	14:35 (1)
	21:49	15 06:58 (6)	20:53		19:42	10	08:11 (4)	18:32		16:25	42 15:46 (2)
22	05:41		06:31		07:23		07:59 (4)	08:15		08:48	14:36 (1)
	21:48	16 06:58 (6)	20:51		19:39	12	08:11 (4)	18:30		16:25	42 15:47 (2)
23	05:43		06:32		07:25		07:59 (4)	08:17		08:49	14:37 (1)
	21:47	18 07:00 (6)	20:49		19:37	12	08:11 (4)	18:28		16:26	40 15:47 (2)
24	05:44		06:34		07:26		07:58 (4)	08:19		08:49	14:37 (1)
	21:45	19 07:00 (6)	20:47		19:34	14	08:12 (4)	18:26		16:27	40 15:47 (2)
25	05:45		06:36		07:28		07:58 (4)	08:21		08:49	14:38 (1)
	21:44	19 07:00 (6)	20:45		19:32	12	08:10 (4)	17:24		16:27	40 15:48 (2)
26	05:47		06:37		07:30		07:58 (4)	08:23		08:50	14:39 (1)
	21:42	19 07:00 (6)	20:42	6 07:28 (5)	19:30	11	08:09 (4)	17:22		16:28	39 15:49 (2)
27	05:48		06:39		07:31		08:00 (4)	08:24		08:50	14:40 (1)
	21:41	19 07:00 (6)	20:40	10 07:30 (5)	19:27	8	08:08 (4)	17:20		16:29	38 15:49 (2)
28	05:50		06:41		07:33		08:03 (4)	08:26		08:50	14:41 (1)
	21:39	20 07:01 (6)	20:38	11 07:31 (5)	19:25	1	08:04 (4)	17:18		16:29	36 15:49 (2)
29	05:51		06:43		07:35			08:23		08:50	14:42 (1)
	21:38	19 07:00 (6)	20:36	13 07:31 (5)	19:22			17:16	3 15:26 (2)	16:30	34 15:49 (2)
30	05:53		06:44		07:36			08:25		08:50	14:44 (1)
	21:36	18 07:00 (6)	20:33	13 07:31 (5)	19:20			17:14	10 15:30 (2)	16:31	31 15:50 (2)
31	05:55		06:46		07:37 (5)			07:32		08:50	15:26 (2)
	21:34	18 07:00 (6)	20:31	13 07:30 (5)				17:12		16:32	24 15:50 (2)
Potential sun hours	506		456		381		330		263		240
Total, worst case		246		129		160			13		941
Sun reduction		0.26		0.30		0.28			0.19		0.14
Oper. time red.		1.00		1.00		1.00			1.00		1.00
Wind dir. red.		0.66		0.66		0.68			0.61		0.61
Total reduction		0.17		0.20		0.19			0.11		0.08
Total, real		43		25		31			1		79

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: W - 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
229 231 210 320 200 640 608 691 568 658 724 1,086 671 733 661 530 8,760

	January		February		March		April		May		June	
1	08:50		15:14 (3)	08:22	16:32 (1)	07:27	07:15		06:08		05:22	
	16:34	30	15:44 (3)	17:23	16:52 (2)	18:16	20:12		21:04		21:52	
2	08:50		15:14 (3)	08:21	16:32 (1)	07:25	07:13		06:06		05:21	
	16:35	29	15:43 (3)	17:25	16:54 (2)	18:18	20:13		21:06		21:53	
3	08:50		15:15 (3)	08:19	16:32 (1)	07:23	07:10		06:04		05:20	
	16:36	29	15:44 (3)	17:26	16:56 (2)	18:20	20:15		21:08		21:54	
4	08:50		15:16 (3)	08:17	16:32 (1)	07:20	07:08		06:03		05:19	
	16:37	28	15:44 (3)	17:28	16:58 (2)	18:21	20:17		21:09		21:55	
5	08:50		15:17 (3)	08:16	16:31 (1)	07:18	07:05		06:01		05:18	
	16:38	27	15:44 (3)	17:30	17:00 (2)	18:23	20:19		21:11		21:56	
6	08:49		15:18 (3)	08:14	16:31 (1)	07:16	07:03		05:59		05:18	
	16:39	26	15:44 (3)	17:32	17:02 (2)	18:25	20:20		21:13		21:57	
7	08:49		15:18 (3)	08:12	16:31 (1)	07:14	07:01		05:57		05:17	
	16:41	26	15:44 (3)	17:34	17:04 (2)	18:27	20:22		21:14		21:58	
8	08:48		15:19 (3)	08:10	16:31 (1)	07:11	06:59		05:55		05:17	
	16:42	25	15:44 (3)	17:36	17:06 (2)	18:29	20:24		21:16		21:59	
9	08:48		15:21 (3)	08:08	16:31 (1)	07:09	06:56		05:53		05:16	
	16:43	23	15:44 (3)	17:38	17:08 (2)	18:31	20:26		21:18		22:00	
10	08:47		15:22 (3)	08:07	16:31 (1)	07:07	06:54		05:52		05:16	
	16:45	22	15:44 (3)	17:40	17:10 (2)	18:32	20:27	9	07:38 (4)	21:19	22:00	
11	08:47		15:23 (3)	08:05	16:32 (1)	07:04	06:52		07:27 (4)	05:50	05:15	
	16:46	20	15:43 (3)	17:42	17:12 (2)	18:34	20:29	12	07:39 (4)	21:21	22:01	
12	08:46		15:24 (3)	08:03	16:32 (1)	07:02	06:49		07:26 (4)	05:48	05:15	
	16:48	19	15:43 (3)	17:44	17:11 (2)	18:36	20:31	15	07:41 (4)	21:23	22:02	
13	08:45		15:25 (3)	08:01	16:32 (1)	07:00	06:47		07:24 (4)	05:46	06:23 (5)	05:15
	16:49	17	15:42 (3)	17:46	17:10 (2)	18:38	20:33	16	07:40 (4)	21:24	06:30 (5)	22:03
14	08:44		15:27 (3)	07:59	16:33 (1)	06:57	06:45		07:23 (4)	05:45	06:21 (5)	05:14
	16:51	14	15:41 (3)	17:48	17:09 (2)	18:40	20:34	18	07:41 (4)	21:26	06:31 (5)	22:03
15	08:44		15:30 (3)	07:57	16:34 (1)	06:55	06:43		07:23 (4)	05:43	06:20 (5)	05:14
	16:52	9	15:39 (3)	17:49	17:08 (1)	18:41	20:36	18	07:41 (4)	21:28	06:32 (5)	22:04
16	08:43			07:55	16:35 (1)	06:53	06:40		07:23 (4)	05:42	06:20 (5)	05:14
	16:54			17:51	17:07 (1)	18:43	20:38	17	07:40 (4)	21:29	06:33 (5)	22:04
17	08:42			07:53	16:36 (1)	06:50	06:38		07:23 (4)	05:40	06:19 (5)	05:14
	16:56			17:53	17:06 (1)	18:45	20:40	17	07:40 (4)	21:31	06:33 (5)	22:05
18	08:41			07:51	16:38 (1)	06:48	06:36		07:24 (4)	05:39	06:19 (5)	05:14
	16:57			17:55	17:05 (1)	18:47	20:41	15	07:39 (4)	21:32	06:34 (5)	22:05
19	08:40			07:49	16:39 (1)	06:46	06:34		07:24 (4)	05:37	06:18 (5)	05:14
	16:59			17:57	17:02 (1)	18:49	20:43	13	07:37 (4)	21:34	06:34 (5)	22:06
20	08:39			07:47	16:41 (1)	06:43	06:31		07:25 (4)	05:36	06:18 (5)	05:14
	17:01			17:59	17:00 (1)	18:50	20:45	10	07:35 (4)	21:35	06:34 (5)	22:06
21	08:37			07:45	16:44 (1)	06:41	06:29		07:28 (4)	05:34	06:18 (5)	05:14
	17:03			18:01	16:57 (1)	18:52	20:47	4	07:32 (4)	21:37	06:34 (5)	22:06
22	08:36			07:42		06:39	06:27		06:53 (7)	05:33	06:19 (5)	05:14
	17:04			18:03		18:54	20:48	7	07:00 (7)	21:38	06:35 (5)	22:06
23	08:35			07:40		06:36	06:25		06:52 (7)	05:32	06:19 (5)	05:15
	17:06			18:05		18:56	20:50	10	07:02 (7)	21:40	06:35 (5)	22:07
24	08:34			07:38		06:34	06:23		06:51 (7)	05:30	06:19 (5)	05:15
	17:08			18:07		18:57	20:52	11	07:02 (7)	21:41	06:34 (5)	22:07
25	08:32			07:36		06:31	06:21		06:50 (7)	05:29	06:19 (5)	05:15
	17:10			18:08		18:59	20:54	12	07:02 (7)	21:43	06:33 (5)	22:07
26	08:31		16:36 (1)	07:34		06:29	06:19		06:50 (7)	05:28	06:20 (5)	05:16
	17:12	4	16:40 (1)	18:10		19:01	20:55	12	07:02 (7)	21:44	06:33 (5)	22:07
27	08:30		16:35 (1)	07:32		06:27	06:17		06:50 (7)	05:27	06:20 (5)	05:16
	17:13	6	16:41 (1)	18:12		19:03	20:57	12	07:02 (7)	21:45	06:33 (5)	22:07
28	08:28		16:35 (1)	07:29		06:24	06:14		06:50 (7)	05:26	06:21 (5)	05:17
	17:15	9	16:44 (1)	18:14		19:05	20:59	11	07:01 (7)	21:47	06:32 (5)	22:06
29	08:27		16:34 (1)			07:22	06:12		06:51 (7)	05:25	06:22 (5)	05:17
	17:17	11	16:45 (1)			20:06	21:01	9	07:00 (7)	21:48	06:31 (5)	22:06
30	08:25		16:33 (1)			07:20	06:10		06:52 (7)	05:24	06:24 (5)	05:18
	17:19	14	16:47 (1)			20:08	21:02	6	06:58 (7)	21:49	06:31 (5)	22:06
31	08:24		16:33 (1)			07:17			05:23	06:25 (5)		
	17:21	17	16:50 (1)			20:10			21:50	06:29 (5)		
Potential sun hours	256			276		367	418		489		503	
Total, worst case		405		627			254		237			
Sun reduction		0.16		0.21			0.35		0.37			
Oper. time red.		1.00		1.00			1.00		1.00			
Wind dir. red.		0.61		0.63			0.67		0.65			
Total reduction		0.10		0.13			0.24		0.24			
Total, real		39		82			60		57			

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	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case

Shadow receptor: W - 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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

July		August		September		October		November		December	
1	05:18	05:56	06:48	07:26 (4)	07:38	07:34	16:01 (1)	08:26	15:05 (3)		
	22:06	21:33	20:29	12	07:38 (4)	19:18	17:10	39	16:40 (2)	16:28	20
2	05:19	05:58	06:49	07:28 (4)	07:40	07:36	16:01 (1)	08:28	15:05 (3)		
	22:05	21:31	20:26	9	07:37 (4)	19:15	17:08	37	16:38 (2)	16:27	22
3	05:20	05:59	06:51		07:42	07:37	16:01 (1)	08:29	15:04 (3)		
	22:05	21:29	20:24		19:13	17:06	35	16:36 (2)	16:27	23	15:27 (3)
4	05:21	06:01	06:53		07:43	07:39	16:01 (1)	08:30	15:04 (3)		
	22:05	21:27	20:22		19:11	17:04	33	16:34 (2)	16:26	25	15:29 (3)
5	05:21	06:03	06:54		07:45	07:41	16:01 (1)	08:32	15:04 (3)		
	22:04	21:26	20:20		19:08	17:02	31	16:32 (2)	16:26	25	15:29 (3)
6	05:22	06:04	06:56		07:47	07:43	16:01 (1)	08:33	15:04 (3)		
	22:04	21:24	20:17		19:06	17:01	29	16:30 (2)	16:25	27	15:31 (3)
7	05:23	06:06	06:58		07:49	07:45	16:01 (1)	08:34	15:04 (3)		
	22:03	21:22	20:15		19:04	16:59	27	16:28 (2)	16:25	27	15:31 (3)
8	05:24	06:07	06:59		07:50	07:47	16:02 (1)	08:36	15:04 (3)		
	22:02	21:20	20:12		19:01	16:57	24	16:26 (2)	16:24	27	15:31 (3)
9	05:25	06:09	07:01		07:52	07:48	16:02 (1)	08:37	15:04 (3)		
	22:02	21:18	20:10		18:59	16:55	22	16:24 (2)	16:24	29	15:33 (3)
10	05:26	06:11	07:03		07:54	07:50	16:03 (1)	08:38	15:04 (3)		
	22:01	21:16	20:08		18:57	16:54	19	16:22 (2)	16:24	29	15:33 (3)
11	05:27	06:12	07:04		07:56	07:52	16:04 (1)	08:39	15:04 (3)		
	22:00	21:14	20:05		18:54	16:52	17	16:21 (1)	16:24	30	15:34 (3)
12	05:28	06:14	07:06		07:57	07:54	16:05 (1)	08:40	15:05 (3)		
	21:59	21:12	20:03		18:52	16:51	14	16:19 (1)	16:23	29	15:34 (3)
13	05:29	06:16	07:08		07:59	07:56	16:06 (1)	08:41	15:05 (3)		
	21:58	6	06:39 (5)	21:10	7	07:07 (7)	20:01	18:50	16:49	11	16:17 (1)
14	05:31	06:32 (5)	06:17	06:58 (7)	07:09	08:01	07:58	16:07 (1)	08:42		15:05 (3)
	21:57	8	06:40 (5)	21:08	10	07:08 (7)	19:58	18:48	16:48	9	16:16 (1)
15	05:32	06:31 (5)	06:19	06:57 (7)	07:11	08:03	07:59	16:08 (1)	08:43		15:06 (3)
	21:56	10	06:41 (5)	21:06	12	07:09 (7)	19:56	18:45	16:46	6	16:14 (1)
16	05:33	06:30 (5)	06:21	06:57 (7)	07:13	08:04	08:01	16:09 (1)	08:44		15:06 (3)
	21:55	12	06:42 (5)	21:04	13	07:10 (7)	19:53	18:43	16:45	3	16:12 (1)
17	05:34	06:29 (5)	06:22	06:56 (7)	07:14	08:06	08:03		08:45		15:07 (3)
	21:54	13	06:42 (5)	21:02	13	07:09 (7)	19:51	18:41	16:43		16:24
18	05:36	06:29 (5)	06:24	06:57 (7)	07:16	08:08	08:05		08:46		15:06 (3)
	21:53	14	06:43 (5)	21:00	12	07:09 (7)	19:49	18:39	16:42		16:24
19	05:37	06:29 (5)	06:26	06:56 (7)	07:18	08:10	08:07		08:46		15:07 (3)
	21:52	15	06:44 (5)	20:58	12	07:08 (7)	19:46	18:37	16:40		16:24
20	05:38	06:29 (5)	06:27	06:57 (7)	07:19	08:12		08:12	16:40		15:08 (3)
	21:50	15	06:44 (5)	20:56	10	07:07 (7)	19:44	18:34	4	17:23 (1)	16:39
21	05:40	06:28 (5)	06:29	06:58 (7)	07:21	08:13		17:14 (1)	08:10		08:48
	21:49	16	06:44 (5)	20:53	7	07:05 (7)	19:42	18:32	15	17:29 (1)	16:38
22	05:41	06:28 (5)	06:31	07:32 (4)	07:23	08:15		17:11 (1)	08:12		08:48
	21:48	16	06:44 (5)	20:51	6	07:38 (4)	19:39	18:30	20	17:31 (1)	16:37
23	05:43	06:29 (5)	06:32	07:30 (4)	07:25	08:17		17:09 (1)	08:13		08:49
	21:46	16	06:45 (5)	20:49	10	07:40 (4)	19:37	18:28	24	17:33 (1)	16:36
24	05:44	06:28 (5)	06:34	07:27 (4)	07:26	08:19		17:07 (1)	08:15		08:49
	21:45	16	06:44 (5)	20:47	14	07:41 (4)	19:34	18:26	28	17:35 (1)	16:34
25	05:45	06:28 (5)	06:36	07:27 (4)	07:28	07:21		16:05 (1)	08:17		08:49
	21:44	16	06:44 (5)	20:45	15	07:42 (4)	19:32	17:24	31	16:36 (1)	16:33
26	05:47	06:29 (5)	06:37	07:25 (4)	07:30	07:23		16:04 (1)	08:18		08:50
	21:42	15	06:44 (5)	20:42	17	07:42 (4)	19:30	17:22	33	16:37 (1)	16:32
27	05:48	06:29 (5)	06:39	07:25 (4)	07:31	07:24		16:03 (1)	08:20		15:10 (3)
	21:41	14	06:43 (5)	20:40	17	07:42 (4)	19:27	17:20	34	16:37 (2)	16:31
28	05:50	06:30 (5)	06:41	07:25 (4)	07:33	07:26		16:03 (1)	08:22	9	15:19 (3)
	21:39	13	06:43 (5)	20:38	17	07:42 (4)	19:25	17:18	36	16:39 (2)	16:31
29	05:51	06:31 (5)	06:43	07:24 (4)	07:35	07:28		16:02 (1)	08:23		15:06 (3)
	21:38	11	06:42 (5)	20:36	17	07:41 (4)	19:22	17:16	38	16:40 (2)	16:30
30	05:53	06:33 (5)	06:44	07:25 (4)	07:36	07:30		16:01 (1)	08:25		15:06 (3)
	21:36	9	06:42 (5)	20:33	16	07:41 (4)	19:20	17:14	40	16:41 (2)	16:29
31	05:55	06:34 (5)	06:46	07:24 (4)		07:32		16:01 (1)			08:50
	21:34	5	06:39 (5)	20:31	15	07:39 (4)		17:12	41	16:42 (2)	
Potential sun hours	506		456		381		330		263		240
Total, worst case	240		240		21		344		415		894
Sun reduction	0.26		0.30		0.28		0.24		0.19		0.14
Oper. time red.	1.00		1.00		1.00		1.00		1.00		1.00
Wind dir. red.	0.65		0.67		0.67		0.63		0.63		0.61
Total reduction	0.17		0.20		0.19		0.15		0.12		0.08
Total, real	41		47		4		52		49		75

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** AA - 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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January			February		March		April			May			June	
1	08:50		15:24 (2)	08:22		07:27		07:15		07:40 (7)	06:08			05:22	
	16:34	18	15:42 (2)	17:23		18:16		20:12	10	07:50 (7)	21:04			21:52	
2	08:50		15:24 (2)	08:21		07:25		07:13		07:41 (7)	06:06			05:21	
	16:35	17	15:41 (2)	17:25		18:18		20:13	9	07:50 (7)	21:06			21:53	
3	08:50		15:25 (2)	08:19		07:23		07:10		07:41 (7)	06:05		06:45 (6)	05:20	
	16:36	17	15:42 (2)	17:26		18:20		20:15	6	07:47 (7)	21:08	9	06:54 (6)	21:54	
4	08:50		15:27 (2)	08:17		07:20		07:08			06:03		06:43 (6)	05:19	
	16:37	15	15:42 (2)	17:28		18:21		20:17			21:09	13	06:56 (6)	21:55	
5	08:50		15:27 (2)	08:16		07:18		07:06			06:01		06:42 (6)	05:18	
	16:38	14	15:41 (2)	17:30		18:23		20:19			21:11	14	06:56 (6)	21:56	
6	08:49		15:29 (2)	08:14		07:16		07:03		07:29 (5)	05:59		06:40 (6)	05:18	
	16:39	12	15:41 (2)	17:32		18:25		20:20	4	07:33 (5)	21:13	17	06:57 (6)	21:57	
7	08:49		15:31 (2)	08:12		07:14		07:01		07:27 (5)	05:57		06:40 (6)	05:17	
	16:41	9	15:40 (2)	17:34		18:27		20:22	9	07:36 (5)	21:14	18	06:58 (6)	21:58	
8	08:48		15:34 (2)	08:10		07:11		06:59		07:26 (5)	05:55		06:40 (6)	05:17	
	16:42	4	15:38 (2)	17:36		18:29		20:24	11	07:37 (5)	21:16	18	06:58 (6)	21:59	
9	08:48			08:08		07:09		06:56		07:24 (5)	05:53		06:39 (6)	05:16	
	16:43			17:38		18:31		20:26	12	07:36 (5)	21:18	19	06:58 (6)	22:00	
10	08:47			08:07		07:07		06:54		07:24 (5)	05:52		06:40 (6)	05:16	
	16:45			17:40		18:32		20:27	12	07:36 (5)	21:20	19	06:59 (6)	22:00	
11	08:47			08:05		07:04		06:52		07:24 (5)	05:50		06:39 (6)	05:15	
	16:46			17:42		18:34		20:29	12	07:36 (5)	21:21	19	06:58 (6)	22:01	
12	08:46			08:03		07:02		06:49		07:24 (5)	05:48		06:39 (6)	05:15	
	16:48			17:44		18:36		20:31	12	07:36 (5)	21:23	19	06:58 (6)	22:02	
13	08:45			08:01		07:00		07:26 (4)		07:24 (5)	05:46		06:40 (6)	05:15	
	16:49			17:46		18:38	4	07:30 (4)	20:33	9	07:33 (5)	21:24	18	06:58 (6)	
14	08:44			07:59		06:57		07:23 (4)	06:45		07:26 (5)	05:45		06:40 (6)	
	16:51			17:48		18:40	9	07:32 (4)	20:34	5	07:31 (5)	21:26	17	06:57 (6)	
15	08:44			07:57		06:55		07:21 (4)	06:43			05:43		06:41 (6)	
	16:52			17:49		18:41	12	07:33 (4)	20:36			21:28	16	06:57 (6)	
16	08:43			07:55		06:53		07:21 (4)	06:40			05:42		06:42 (6)	
	16:54			17:51		18:43	12	07:33 (4)	20:38			21:29	14	06:56 (6)	
17	08:42			07:53		06:50		07:21 (4)	06:38			05:40		06:42 (6)	
	16:56			17:53		18:45	13	07:34 (4)	20:40			21:31	13	06:55 (6)	
18	08:41			07:51		06:48		07:20 (4)	06:36			05:39		06:43 (6)	
	16:57			17:55		18:47	13	07:33 (4)	20:42			21:32	11	06:54 (6)	
19	08:40			07:49		06:46		07:21 (4)	06:34			05:37		06:44 (6)	
	16:59			17:57		18:49	11	07:32 (4)	20:43			21:34	8	06:52 (6)	
20	08:39			07:47		06:43		07:21 (4)	06:31			05:36		05:14	
	17:01			17:59		18:50	9	07:30 (4)	20:45			21:35		22:06	
21	08:37			07:45		06:41			06:29			05:34		05:14	
	17:03			18:01		18:52			20:47			21:37		22:06	
22	08:36			07:42		06:39			06:27			05:33		05:14	
	17:04			18:03		18:54			20:49			21:38		22:06	
23	08:35			07:40		06:36			06:25			05:32		05:15	
	17:06			18:05		18:56			20:50			21:40		22:07	
24	08:34			07:38		06:34			06:23			05:30		05:15	
	17:08			18:07		18:57			20:52			21:41		22:07	
25	08:32			07:36		06:31			06:21			05:29		05:15	
	17:10			18:08		18:59			20:54			21:43		22:07	
26	08:31			07:34		06:29			06:19			05:28		05:16	
	17:12			18:10		19:01			20:56			21:44		22:07	
27	08:30			07:32		06:27			06:17			05:27		05:16	
	17:13			18:12		19:03			20:57			21:45		22:07	
28	08:28			07:29		06:24			06:14			05:26		05:17	
	17:15			18:14		19:05			20:59			21:47		22:06	
29	08:27					07:22		07:45 (7)	06:12			05:25		05:17	
	17:17					20:06	5	07:50 (7)	21:01			21:48		22:06	
30	08:25					07:20		07:43 (7)	06:10			05:24		05:18	
	17:19					20:08	8	07:51 (7)	21:02			21:49		22:06	
31	08:24					07:17		07:40 (7)				05:23			
	17:21					20:10	10	07:50 (7)				21:50			
Potential sun hours	256			276		367		418			489			503	
Total, worst case		106				106		111			262				
Sun reduction		0.16				0.24		0.35			0.37				
Oper. time red.		1.00				1.00		1.00			1.00				
Wind dir. red.		0.61				0.67		0.67			0.66				
Total reduction		0.10				0.16		0.24			0.24				
Total, real		10				17		26			64				

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
Kathryn Feeney / kfeeney@jodireland.com
Calculated:
16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** AA - 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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

July		August		September		October		November		December	
1	05:18		05:56	06:49 (6)	06:48		07:23 (5)	07:38		07:34	08:26
	22:06		21:33	19 07:08 (6)	20:29	12	07:35 (5)	19:18		17:10	16:28
2	05:19		05:58	06:50 (6)	06:49		07:23 (5)	07:40		07:36	08:28
	22:05		21:31	19 07:09 (6)	20:27	12	07:35 (5)	19:15		17:08	16:27
3	05:20		05:59	06:49 (6)	06:51		07:22 (5)	07:42		07:37	08:29
	22:05		21:29	19 07:08 (6)	20:24	12	07:34 (5)	19:13		17:06	16:27
4	05:21		06:01	06:50 (6)	06:53		07:23 (5)	07:43		07:39	08:30
	22:05		21:27	18 07:08 (6)	20:22	11	07:34 (5)	19:11		17:04	16:26
5	05:21		06:03	06:49 (6)	06:54		07:24 (5)	07:45		07:41	08:32
	22:04		21:26	19 07:08 (6)	20:20	9	07:33 (5)	19:08		17:02	16:26
6	05:22		06:04	06:50 (6)	06:56		07:25 (5)	07:47		07:43	08:33
	22:04		21:24	17 07:07 (6)	20:17	4	07:29 (5)	19:06		17:01	16:25
7	05:23		06:06	06:51 (6)	06:58			07:49		07:45	08:34
	22:03		21:22	16 07:07 (6)	20:15			19:04		16:59	16:25
8	05:24		06:07	06:51 (6)	06:59			07:50		07:47	08:36
	22:02		21:20	15 07:06 (6)	20:12			19:01		16:57	16:24
9	05:25		06:09	06:53 (6)	07:01		07:36 (7)	07:52		07:49	08:37
	22:02		21:18	12 07:05 (6)	20:10	5	07:41 (7)	18:59		16:56	16:24
10	05:26		06:11	06:54 (6)	07:03		07:34 (7)	07:54		07:50	08:38
	22:01		21:16	8 07:02 (6)	20:08	9	07:43 (7)	18:57		16:54	16:24
11	05:27		06:12		07:04		07:33 (7)	07:56		07:52	08:39
	22:00		21:14		20:05	10	07:43 (7)	18:54		16:52	16:24
12	05:28		06:14		07:06		07:32 (7)	07:57		07:54	08:40
	21:59		21:12		20:03	11	07:43 (7)	18:52		16:51	16:23
13	05:29		06:16		07:08		07:33 (7)	07:59		07:56	08:41
	21:58		21:10		20:01	8	07:41 (7)	18:50		16:49	16:23
14	05:31		06:17		07:09		07:35 (7)	08:01		07:58	08:42
	21:57		21:08		19:58	5	07:40 (7)	18:48		16:48	16:23
15	05:32		06:19		07:11		07:37 (7)	08:03		07:59	08:43
	21:56		21:06		19:56	1	07:38 (7)	18:45		16:46	16:23
16	05:33		06:21		07:13			08:04		08:01	08:44
	21:55		21:04		19:53			18:43		16:45	16:24
17	05:34		06:22		07:14			08:06		08:03	08:45
	21:54		21:02		19:51			18:41		16:43	16:24
18	05:36		06:24		07:16			08:08		08:05	08:46
	21:53		21:00		19:49			18:39		16:42	16:24
19	05:37		06:26		07:18			08:10		08:07	08:46
	21:52		20:58		19:46			18:37		16:40	16:24
20	05:38		06:27		07:19			08:12		08:08	08:47
	21:50		20:56		19:44			18:34		16:39	16:25
21	05:40		06:29		07:21			08:13		08:10	08:48
	21:49		20:53		19:42			18:32		16:38	16:25
22	05:41		06:31		07:23			08:15		08:12	08:48
	21:48		20:51		19:39			18:30		16:37	16:25
23	05:43		06:32		07:25		08:07 (4)	08:17		08:13	08:49
	21:47		20:49		19:37	7	08:14 (4)	18:28		16:36	16:26
24	05:44		06:34		07:26		08:05 (4)	08:19		08:15	08:49
	21:45	4	06:57 (6)	20:47	19:34	10	08:15 (4)	18:26		16:34	16:27
25	05:45		06:54 (6)	06:36	07:28		08:03 (4)	07:21		08:17	08:49
	21:44	9	07:03 (6)	20:45	19:32	12	08:15 (4)	17:24		16:33	16:27
26	05:47		06:53 (6)	06:37	07:30		08:02 (4)	07:23		08:18	08:50
	21:42	12	07:05 (6)	20:42	19:30	13	08:15 (4)	17:22		16:32	16:28
27	05:48		06:52 (6)	06:39	07:31		08:02 (4)	07:24		08:20	08:50
	21:41	14	07:06 (6)	20:40	19:27	13	08:15 (4)	17:20		16:31	16:29
28	05:50		06:52 (6)	06:41	07:33		08:03 (4)	07:26		08:22	08:50
	21:39	15	07:07 (6)	20:38	19:25	12	08:15 (4)	17:18		16:31	16:29
29	05:51		06:51 (6)	06:43	07:35		08:03 (4)	07:28		08:23	08:50
	21:38	16	07:07 (6)	20:36	5 07:32 (5)	19:22	10 08:13 (4)	17:16		16:30	16:30
30	05:53		06:51 (6)	06:44	07:36		08:04 (4)	07:30		08:25	08:50
	21:36	17	07:08 (6)	20:33	9 07:34 (5)	19:20	7 08:11 (4)	17:14		16:29	16:31
31	05:55		06:50 (6)	06:46	07:35 (5)			07:32		08:26	08:50
	21:34	18	07:08 (6)	20:31	12 07:35 (5)			17:12		16:32	16:32
Potential sun hours	506		456		381			330		263	240
Total, worst case		105		188		193					523
Sun reduction		0.26		0.30		0.28					0.14
Oper. time red.		1.00		1.00		1.00					1.00
Wind dir. red.		0.66		0.66		0.67					0.61
Total reduction		0.17		0.20		0.19					0.08
Total, real		18		37		37					44

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: AB - 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
229 231 210 320 200 640 608 691 568 658 724 1,086 671 733 661 530 8,760

	January		February		March		April		May		June	
1	08:50		15:20 (3)	08:22	16:39 (1)	07:27	07:15		06:08		06:50 (7)	05:22
	16:34	31	15:51 (3)	17:23	16:52 (1)	18:16	20:12		21:04	8	06:58 (7)	21:52
2	08:50		15:20 (3)	08:21	16:38 (1)	07:25	07:13		06:06			05:21
	16:35	30	15:50 (3)	17:25	16:54 (2)	18:18	20:13		21:06			21:53
3	08:50		15:21 (3)	08:19	16:39 (1)	07:23	07:10		06:04			05:20
	16:36	30	15:51 (3)	17:26	16:56 (2)	18:20	20:15		21:08			21:54
4	08:50		15:22 (3)	08:17	16:38 (1)	07:20	07:08		06:03			05:19
	16:37	29	15:51 (3)	17:28	16:58 (2)	18:21	20:17		21:09			21:55
5	08:50		15:22 (3)	08:16	16:37 (1)	07:18	07:05		06:01			05:18
	16:38	29	15:51 (3)	17:30	17:00 (2)	18:23	20:19		21:11			21:56
6	08:49		15:23 (3)	08:14	16:37 (1)	07:16	07:03		05:59			05:18
	16:39	29	15:52 (3)	17:32	17:02 (2)	18:25	20:20		21:13			21:57
7	08:49		15:24 (3)	08:12	16:37 (1)	07:14	07:01		05:57			05:17
	16:41	27	15:51 (3)	17:34	17:04 (2)	18:27	20:22		21:14			21:58
8	08:48		15:24 (3)	08:10	16:37 (1)	07:11	06:59		05:55			05:17
	16:42	27	15:51 (3)	17:36	17:06 (2)	18:29	20:24		21:16			21:59
9	08:48		15:25 (3)	08:08	16:37 (1)	07:09	06:56		05:53			05:16
	16:43	27	15:52 (3)	17:38	17:08 (2)	18:31	20:26		21:18			22:00
10	08:47		15:26 (3)	08:07	16:37 (1)	07:07	06:54		05:52			05:16
	16:45	26	15:52 (3)	17:40	17:10 (2)	18:32	20:27	5	07:36 (4)	21:19		22:00
11	08:47		15:27 (3)	08:05	16:37 (1)	07:04	06:52		07:28 (4)	05:50		05:15
	16:46	24	15:51 (3)	17:42	17:13 (2)	18:34	20:29	11	07:39 (4)	21:21		22:01
12	08:46		15:28 (3)	08:03	16:37 (1)	07:02	06:49		07:26 (4)	05:48		05:15
	16:48	23	15:51 (3)	17:44	17:15 (2)	18:36	20:31	14	07:40 (4)	21:23		22:02
13	08:45		15:29 (3)	08:01	16:37 (1)	07:00	06:47		07:24 (4)	05:46		05:15
	16:49	22	15:51 (3)	17:46	17:14 (2)	18:38	20:33	16	07:40 (4)	21:24		22:03
14	08:44		15:30 (3)	07:59	16:38 (1)	06:57	06:45		07:23 (4)	05:45		05:14
	16:51	20	15:50 (3)	17:48	17:13 (2)	18:40	20:34	18	07:41 (4)	21:26		22:03
15	08:44		15:32 (3)	07:57	16:39 (1)	06:55	06:43		07:23 (4)	05:43		05:14
	16:52	17	15:49 (3)	17:49	17:13 (1)	18:41	20:36	18	07:41 (4)	21:28	6	06:27 (5)
16	08:43		15:33 (3)	07:55	16:39 (1)	06:53	06:40		07:23 (4)	05:42		05:14
	16:54	16	15:49 (3)	17:51	17:12 (1)	18:43	20:38	18	07:41 (4)	21:29	9	06:29 (5)
17	08:42		15:36 (3)	07:53	16:40 (1)	06:50	06:38		07:23 (4)	05:40		05:14
	16:56	11	15:47 (3)	17:53	17:11 (1)	18:45	20:40	18	07:41 (4)	21:31	12	06:30 (5)
18	08:41		15:39 (3)	07:51	16:42 (1)	06:48	06:36		07:23 (4)	05:39		05:14
	16:57	6	15:45 (3)	17:55	17:10 (1)	18:47	20:41	17	07:40 (4)	21:32	13	06:31 (5)
19	08:40			07:49	16:42 (1)	06:46	06:34		07:23 (4)	05:37		05:14
	16:59			17:57	17:08 (1)	18:49	20:43	16	07:39 (4)	21:34	15	06:31 (5)
20	08:39			07:47	16:44 (1)	06:43	06:31		07:23 (4)	05:36		05:14
	17:01			17:59	17:07 (1)	18:50	20:45	14	07:37 (4)	21:35	16	06:32 (5)
21	08:37			07:45	16:46 (1)	06:41	06:29		07:25 (4)	05:34		05:14
	17:03			18:01	17:05 (1)	18:52	20:47	11	07:36 (4)	21:37	16	06:32 (5)
22	08:36			07:42	16:50 (1)	06:39	06:27		07:27 (4)	05:33		05:14
	17:04			18:03	17:02 (1)	18:54	20:48	6	07:33 (4)	21:38	17	06:33 (5)
23	08:35			07:40		06:36	06:25		06:52 (7)	05:32		05:15
	17:06			18:05		18:56	20:50	8	07:00 (7)	21:40	17	06:33 (5)
24	08:34			07:38		06:34	06:23		06:50 (7)	05:30		05:15
	17:08			18:07		18:57	20:52	11	07:01 (7)	21:41	16	06:32 (5)
25	08:32			07:36		06:31	06:21		06:49 (7)	05:29		05:15
	17:10			18:08		18:59	20:54	12	07:01 (7)	21:43	16	06:32 (5)
26	08:31			07:34		06:29	06:19		06:49 (7)	05:28		05:16
	17:12			18:10		19:01	20:55	13	07:02 (7)	21:44	16	06:32 (5)
27	08:30			07:32		06:27	06:17		06:48 (7)	05:27		05:16
	17:13			18:12		19:03	20:57	13	07:01 (7)	21:45	16	06:32 (5)
28	08:28		16:43 (1)	07:29		06:24	06:14		06:48 (7)	05:26		05:17
	17:15	1	16:44 (1)	18:14		19:05	20:59	13	07:01 (7)	21:47	15	06:32 (5)
29	08:27		16:42 (1)			07:22	06:12		06:49 (7)	05:25		05:17
	17:17	3	16:45 (1)			20:06	21:01	11	07:00 (7)	21:48	15	06:32 (5)
30	08:25		16:40 (1)			07:20	06:10		06:49 (7)	05:24		05:18
	17:19	7	16:47 (1)			20:08	21:02	10	06:59 (7)	21:49	14	06:32 (5)
31	08:24		16:40 (1)			07:17			05:23			06:19 (5)
	17:21	10	16:50 (1)			20:10			21:50	13		06:32 (5)
Potential sun hours	256			276		367	418		489		503	
Total, worst case		445		586			273		250		47	
Sun reduction		0.16		0.21			0.35		0.37		0.30	
Oper. time red.		1.00		1.00			1.00		1.00		1.00	
Wind dir. red.		0.61		0.63			0.67		0.65		0.65	
Total reduction		0.10		0.13			0.24		0.24		0.19	
Total, real		43		77			65		60		9	

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	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** AK - 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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:33	20:29	19:18	17:10	16:28
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	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:26	20:20	19:08	17:03	16:26
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7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
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	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	22:00	22:01	21:18	20:10	18:59	16:56	16:24
10	08:47	08:06	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
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	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:46	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:03	21:58	21:10	20:01	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:23
15	08:43	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:50	18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:57	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:49	20:43	21:34	22:05	21:52	20:58	19:46	18:37	16:41	16:24
20	08:39	07:47	06:43	06:31	05:36	05:14	05:38	06:27	07:19	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:34	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:42	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:32	07:25	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:57	20:52	21:41	22:07	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:45	06:36	07:28	08:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:43	22:07	21:44	20:45	19:32	18:24	16:33	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:55	21:44	22:07	21:42	20:42	19:30	18:22	16:32	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:48	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:41	20:40	19:27	18:20	16:32	16:29
28	08:28	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:22	08:50
	17:15	18:14	19:05	20:59	21:47	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:12	05:25	05:17	05:52	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:36	19:22	18:16	16:30	16:30
30	08:25		07:20	06:10	05:24	05:18	05:53	06:44	07:36	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: AL - 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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:09	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:52	22:06	21:33	20:29	19:18	17:10	16:28
2	08:50	08:21	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:36	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:27	19:15	17:08	16:28
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:21	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:29	18:22	20:17	21:09	21:55	22:05	21:27	20:22	19:11	17:04	16:26
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	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:26	20:20	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:40	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:08	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:13	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	22:00	22:01	21:18	20:10	18:59	16:56	16:24
10	08:47	08:07	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:47	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:55	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:03	21:58	21:10	20:01	18:50	16:49	16:24
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:24
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	16:53	17:50	18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:46	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:54	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:35	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:46
	16:58	17:55	18:47	20:42	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:07	08:46
	16:59	17:57	18:49	20:43	21:34	22:06	21:52	20:58	19:46	18:37	16:41	16:24
20	08:39	07:47	06:43	06:32	05:36	05:14	05:38	06:27	07:20	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:35	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:48
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:42	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:49	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:33	07:25	08:17	08:13	08:49
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:58	20:52	21:41	22:07	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:46	06:36	07:28	08:21	08:17	08:49
	17:10	18:09	18:59	20:54	21:43	22:07	21:44	20:45	19:32	18:24	16:34	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:56	21:44	22:07	21:42	20:42	19:30	18:22	16:33	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:49	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:07	21:41	20:40	19:27	18:20	16:32	16:29
28	08:28	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:22	08:50
	17:15	18:14	19:05	20:59	21:47	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:13	05:25	05:17	05:52	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:38	20:36	19:23	18:16	16:30	16:30
30	08:25		07:20	06:11	05:24	05:18	05:53	06:44	07:37	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: AN - 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
229 231 210 320 200 640 608 691 568 658 724 1,086 671 733 661 530 8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:09	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:52	22:06	21:33	20:29	19:18	17:10	16:28
2	08:50	08:21	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:36	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:27	19:15	17:08	16:28
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:21	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:29	18:22	20:17	21:09	21:55	22:05	21:27	20:22	19:11	17:04	16:26
5	08:50	08:16	07:18	07:06	06:01	05:19	05:22	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:26	20:20	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:40	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:08	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:13	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	22:00	22:01	21:18	20:10	18:59	16:56	16:24
10	08:47	08:07	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:47	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:55	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:03	21:58	21:10	20:01	18:50	16:49	16:24
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:24
15	08:44	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:50	18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:54	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:35	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:46
	16:58	17:55	18:47	20:42	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:07	08:46
	16:59	17:57	18:49	20:43	21:34	22:06	21:52	20:58	19:46	18:37	16:41	16:24
20	08:39	07:47	06:43	06:32	05:36	05:14	05:38	06:27	07:20	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:35	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:42	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:49	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:33	07:25	08:17	08:13	08:49
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:58	20:52	21:41	22:07	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:46	06:36	07:28	08:21	08:17	08:49
	17:10	18:09	18:59	20:54	21:43	22:07	21:44	20:45	19:32	18:24	16:34	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:56	21:44	22:07	21:42	20:42	19:30	18:22	16:33	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:49	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:07	21:41	20:40	19:27	18:20	16:32	16:29
28	08:28	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:22	08:50
	17:15	18:14	19:05	20:59	21:47	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:13	05:25	05:17	05:52	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:38	20:36	19:23	18:16	16:30	16:30
30	08:25		07:20	06:11	05:24	05:18	05:53	06:44	07:37	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: AO - 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
229 231 210 320 200 640 608 691 568 658 724 1,086 671 733 661 530 8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:09	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:52	22:06	21:33	20:29	19:18	17:10	16:28
2	08:50	08:21	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:36	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:27	19:15	17:08	16:28
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:21	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:29	18:22	20:17	21:09	21:55	22:05	21:27	20:22	19:11	17:04	16:26
5	08:50	08:16	07:18	07:06	06:01	05:19	05:22	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:26	20:20	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:40	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:08	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:13	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	22:00	22:01	21:18	20:10	18:59	16:56	16:24
10	08:47	08:07	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:47	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:55	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:03	21:58	21:10	20:01	18:50	16:49	16:24
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:24
15	08:44	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:50	18:42	20:36	21:28	22:04	21:56	21:06	19:56	18:46	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:54	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:35	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:46
	16:58	17:55	18:47	20:42	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:07	08:46
	16:59	17:57	18:49	20:43	21:34	22:06	21:52	20:58	19:46	18:37	16:41	16:24
20	08:39	07:47	06:43	06:32	05:36	05:14	05:38	06:27	07:20	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:35	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:48
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:42	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:49	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:33	07:25	08:17	08:13	08:49
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:58	20:52	21:41	22:07	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:46	06:36	07:28	08:21	08:17	08:49
	17:10	18:09	18:59	20:54	21:43	22:07	21:44	20:45	19:32	18:24	16:34	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:56	21:44	22:07	21:42	20:42	19:30	18:22	16:33	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:49	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:07	21:41	20:40	19:27	18:20	16:32	16:29
28	08:28	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:22	08:50
	17:15	18:14	19:05	20:59	21:47	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:13	05:25	05:17	05:52	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:38	20:36	19:23	18:16	16:30	16:30
30	08:25		07:20	06:11	05:24	05:18	05:53	06:44	07:37	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case
Assumptions for shadow calculations

Shadow receptor: AP - H42

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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December			
1	08:50 16:34 32	09:32 (2) 10:04 (2) 17:23	08:22 18:16	07:27 18:16	06:09 20:12	05:22 21:04	05:18 22:06	05:56 21:33	06:48 20:29	07:38 19:18	07:34 17:10	08:02 (1) 08:23 (1) 16:28	08:26 16:28	33	08:59 (3) 09:47 (2)
2	08:50 16:35 31	09:33 (2) 10:04 (2) 17:25	08:21 18:18	07:25 18:18	06:07 20:13	05:21 21:06	05:19 22:06	05:58 21:31	06:49 20:27	07:40 19:15	07:36 17:08	08:04 (1) 08:23 (1) 16:27	08:28 16:27	32	09:01 (3) 09:48 (2)
3	08:50 16:36 31	09:33 (2) 10:04 (2) 17:27	08:19 18:20	07:23 18:20	06:05 20:15	05:20 21:08	05:20 22:05	05:59 21:29	06:51 20:24	07:42 19:13	07:37 17:06	08:06 (1) 08:23 (1) 16:27	08:29 16:27	31	09:02 (3) 09:48 (2)
4	08:50 16:37 31	09:34 (2) 10:05 (2) 17:28	08:17 18:22	07:21 18:22	06:03 20:17	05:19 21:09	05:21 22:05	05:59 21:27	06:51 20:22	07:43 19:11	07:39 17:04	08:08 (1) 08:23 (1) 16:26	08:31 16:26	31	09:04 (3) 09:50 (2)
5	08:50 16:38 30	09:34 (2) 10:04 (2) 17:30	08:16 18:23	07:18 18:23	06:06 20:19	05:19 21:11	05:21 22:04	06:03 21:26	06:54 20:20	07:45 19:08	07:41 17:03	08:10 (1) 08:22 (1) 16:26	08:32 16:26	30	09:20 (2) 09:50 (2)
6	08:49 16:40 30	09:35 (2) 10:05 (2) 17:32	08:14 18:25	07:16 18:25	06:07 20:20	05:18 21:13	05:22 22:04	06:04 21:24	06:56 20:17	07:47 19:06	07:43 17:01	08:12 (1) 08:22 (1) 16:25	08:33 16:25	30	09:21 (2) 09:51 (2)
7	08:49 16:41 30	09:35 (2) 10:05 (2) 17:34	08:12 18:27	07:14 18:27	06:07 20:22	05:17 21:15	05:23 22:03	06:06 21:22	06:58 20:15	07:49 19:04	07:45 16:59	08:14 (1) 08:21 (1) 16:25	08:35 16:25	30	09:21 (2) 09:51 (2)
8	08:48 16:42 31	09:36 (1) 10:06 (2) 17:36	08:10 18:29	07:11 18:29	06:59 20:24	05:55 21:16	05:24 22:02	06:08 21:20	06:59 20:13	07:50 19:01	07:47 16:57	08:16 (1) 08:20 (1) 16:24	08:36 16:24	31	09:21 (2) 09:52 (2)
9	08:48 16:44 31	09:36 (1) 10:05 (2) 17:38	08:08 18:31	07:09 18:31	06:56 20:26	05:53 21:18	05:25 22:02	06:09 21:18	07:01 20:10	07:52 18:59	07:49 16:56	08:18 (1) 08:19 (1) 16:24	08:37 16:24	31	09:22 (2) 09:53 (2)
10	08:47 16:45 32	09:37 (1) 10:06 (2) 17:40	08:07 18:33	07:07 18:33	06:54 20:28	05:52 21:20	05:26 22:01	06:11 21:16	07:03 20:08	07:54 18:57	07:50 16:54	08:19 (1) 08:24 (1) 16:24	08:38 16:24	31	09:22 (2) 09:53 (2)
11	08:47 16:46 33	09:37 (1) 10:06 (2) 17:42	08:05 18:34	07:04 18:34	06:52 20:29	05:50 21:21	05:27 22:01	06:12 22:00	07:04 21:14	07:56 18:55	07:52 16:52	08:25 (1) 08:30 (1) 16:24	08:39 16:24	32	09:23 (2) 09:54 (2)
12	08:46 16:48 34	09:38 (1) 10:07 (2) 17:44	08:03 18:36	07:02 18:36	06:49 20:31	05:48 21:23	05:28 22:02	06:14 21:12	07:06 20:03	07:57 18:52	07:54 16:51	08:31 (1) 08:36 (1) 16:24	08:40 16:24	32	09:24 (2) 09:54 (2)
13	08:45 16:49 33	09:38 (1) 10:07 (2) 17:46	08:01 18:38	07:00 18:38	06:47 20:33	05:47 21:25	05:30 22:03	06:16 21:10	07:08 20:01	07:59 18:50	07:56 16:49	08:37 (1) 08:42 (1) 16:23	08:41 16:23	32	09:25 (2) 09:55 (2)
14	08:44 16:51 34	09:39 (1) 10:08 (2) 17:48	08:01 18:40	07:00 18:40	06:46 20:35	05:46 21:26	05:31 22:03	06:17 21:08	07:09 19:58	08:01 18:48	07:58 16:48	08:43 (1) 08:48 (1) 16:23	08:42 16:23	32	09:26 (2) 09:56 (2)
15	08:44 16:53 33	09:40 (1) 10:09 (2) 17:50	08:01 18:42	07:01 18:42	06:45 20:36	05:45 21:28	05:31 22:04	06:17 21:06	07:09 19:56	08:01 18:46	07:58 16:46	08:44 (1) 08:49 (1) 16:24	08:43 16:24	32	09:27 (2) 09:57 (2)
16	08:43 16:54 33	09:41 (1) 10:10 (2) 17:51	08:01 18:43	07:01 18:43	06:44 20:38	05:44 21:29	05:32 22:04	06:18 21:04	07:10 19:54	08:02 18:43	07:59 16:45	08:45 (1) 08:50 (1) 16:24	08:44 16:24	32	09:28 (2) 09:58 (2)
17	08:42 16:56 32	09:42 (1) 10:11 (2) 17:53	08:01 18:45	07:01 18:45	06:43 20:40	05:43 21:31	05:33 22:05	06:19 21:02	07:11 19:51	08:03 18:41	07:59 16:43	08:46 (1) 08:51 (1) 16:24	08:45 16:24	32	09:29 (2) 09:59 (2)
18	08:41 16:58 31	09:43 (1) 10:12 (2) 17:55	08:01 18:46	07:01 18:46	06:42 20:42	05:42 21:32	05:34 22:06	06:20 21:00	07:12 19:49	08:04 18:39	07:59 16:42	08:47 (1) 08:52 (1) 16:24	08:46 16:24	33	09:30 (2) 09:25 (2)
19	08:40 16:59 27	09:44 (1) 10:13 (2) 17:57	08:01 18:47	07:01 18:47	06:41 20:43	05:41 21:34	05:35 22:06	06:21 21:01	07:13 19:46	08:05 18:37	07:59 16:41	08:48 (1) 08:53 (1) 16:24	08:47 16:24	33	09:31 (2) 09:26 (2)
20	08:39 17:01 19	09:45 (1) 10:14 (2) 17:59	08:01 18:48	07:01 18:48	06:40 20:44	05:40 21:35	05:36 22:07	06:22 21:02	07:14 19:47	08:06 18:38	07:59 16:42	08:49 (1) 08:54 (1) 16:24	08:48 16:24	33	09:32 (2) 09:27 (2)
21	08:38 17:03 21	09:46 (1) 10:15 (2) 18:01	08:01 18:49	07:01 18:49	06:39 20:45	05:39 21:36	05:37 22:08	06:23 21:03	07:15 19:48	08:07 18:39	07:59 16:43	08:50 (1) 08:55 (1) 16:24	08:49 16:24	32	09:33 (2) 09:28 (2)
22	08:36 17:04 20	09:47 (1) 10:16 (2) 18:03	08:01 18:50	07:01 18:50	06:38 20:46	05:38 21:37	05:38 22:09	06:24 21:04	07:16 19:49	08:08 18:40	07:59 16:44	08:51 (1) 08:56 (1) 16:24	08:49 16:24	32	09:34 (2) 09:29 (2)
23	08:35 17:06 19	09:48 (1) 10:17 (2) 18:05	08:01 18:51	07:01 18:51	06:37 20:47	05:37 21:38	05:39 22:10	06:25 21:05	07:17 19:50	08:09 18:41	07:59 16:45	08:52 (1) 08:57 (1) 16:24	08:49 16:24	33	09:35 (2) 09:30 (2)
24	08:34 17:08 18	09:49 (1) 10:18 (2) 18:07	08:01 18:52	07:01 18:52	06:36 20:48	05:36 21:39	05:40 22:11	06:26 21:06	07:18 19:51	08:10 18:42	07:59 16:46	08:53 (1) 08:58 (1) 16:24	08:49 16:24	33	09:36 (2) 09:31 (2)
25	08:33 17:10 16	09:50 (1) 10:19 (2) 18:09	08:01 18:53	07:01 18:53	06:35 20:49	05:35 21:40	05:41 22:12	06:27 21:07	07:19 19:52	08:11 18:43	07:59 16:47	08:54 (1) 08:59 (1) 16:24	08:49 16:24	33	09:37 (2) 09:32 (2)
26	08:31 17:12 13	09:51 (1) 10:20 (2) 18:10	08:01 18:54	07:01 18:54	06:34 20:50	05:34 21:41	05:42 22:13	06:28 21:08	07:20 19:53	08:12 18:44	07:59 16:48	08:55 (1) 08:60 (1) 16:24	08:49 16:24	32	09:38 (2) 09:33 (2)
27	08:30 17:13 10	09:52 (1) 10:21 (2) 18:12	08:01 18:55	07:01 18:55	06:33 20:51	05:33 21:42	05:43 22:14	06:29 21:09	07:21 19:54	08:13 18:45	07:59 16:49	08:56 (1) 08:61 (1) 16:24	08:49 16:24	32	09:39 (2) 09:34 (2)
28	08:28 17:15 3	09:53 (1) 10:22 (2) 18:14	08:01 18:56	07:01 18:56	06:32 20:52	05:32 21:43	05:44 22:15	06:30 21:10	07:22 19:55	08:14 18:46	07:59 16:50	08:57 (1) 08:62 (1) 16:24	08:49 16:24	33	09:40 (2) 09:35 (2)
29	08:27 17:17 30	09:54 (1) 10:23 (2) 18:15	08:01 18:57	07:01 18:57	06:31 20:53	05:31 21:44	05:45 22:16	06:31 21:11	07:23 19:56	08:15 18:47	07:59 16:51	08:58 (1) 08:63 (1) 16:24	08:49 16:24	33	09:41 (2) 09:36 (2)
30	08:25 17:19 31	09:55 (1) 10:24 (2) 18:16	08:01 18:58	07:01 18:58	06:30 20:54	05:30 21:45	05:46 22:17	06:32 21:12	07:24 19:57	08:16 18:48	07:59 16:52	08:59 (1) 08:64 (1) 16:24	08:49 16:24	33	09:42 (2) 09:37 (2)
31	08:24 17:21	09:56 (1) 10:25 (2)	08:01 18:59	07:01 18:59	06:29 20:55	05:29 21:46	05:47 22:18	06:33 21:13	07:25 19:58	08:17 18:49	07:59 16:53	08:60 (1) 08:65 (1) 16:24	08:49 16:24	32	09:43 (2) 09:38 (2)
Potential sun hours	256	276	367	418	489	503	506	456	381	330	263	240	990		
Total, worst case	738	273									174	502	990		
Sun reduction	0.16	0.21									0.19		0.14		
Oper. time red.	1.00	1.00									1.00		1.00		
Wind dir. red.	0.64	0.66									0.65		0.63		
Total reduction	0.10	0.14									0.16		0.09		
Total, real	75	37									61		86		

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	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** AQ - H43**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:33	20:29	19:18	17:10	16:28
2	08:50	08:21	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:35	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:06	06:01	05:19	05:21	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:25	20:20	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:07	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	22:00	22:01	21:18	20:10	18:59	16:56	16:24
10	08:47	08:06	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:47	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:46	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:02	21:58	21:10	20:01	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:23
15	08:43	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:50	18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:57	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:49	20:43	21:34	22:05	21:52	20:58	19:46	18:37	16:41	16:24
20	08:38	07:47	06:43	06:31	05:36	05:14	05:38	06:27	07:19	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:34	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:42	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:32	07:25	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:57	20:52	21:41	22:07	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:45	06:36	07:28	08:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:42	22:07	21:44	20:45	19:32	18:24	16:33	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:55	21:44	22:07	21:42	20:42	19:30	18:22	16:32	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:48	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:41	20:40	19:27	18:20	16:32	16:29
28	08:28	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:21	08:50
	17:15	18:14	19:05	20:59	21:47	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:12	05:25	05:17	05:52	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:36	19:22	18:16	16:30	16:30
30	08:25		07:20	06:10	05:24	05:18	05:53	06:44	07:36	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** AR - 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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:33	20:29	19:18	17:10	16:28
2	08:50	08:21	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:35	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:06	06:01	05:19	05:21	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:25	20:20	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:07	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	22:00	22:01	21:18	20:10	18:59	16:56	16:24
10	08:47	08:06	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:47	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:46	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:02	21:58	21:10	20:01	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:23
15	08:43	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:50	18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:57	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:49	20:43	21:34	22:05	21:52	20:58	19:46	18:37	16:41	16:24
20	08:38	07:47	06:43	06:31	05:36	05:14	05:38	06:27	07:19	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:34	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:42	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:32	07:25	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:57	20:52	21:41	22:07	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:45	06:36	07:28	08:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:43	22:07	21:44	20:45	19:32	18:24	16:33	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:55	21:44	22:07	21:42	20:42	19:30	18:22	16:32	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:48	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:41	20:40	19:27	18:20	16:32	16:29
28	08:28	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:22	08:50
	17:15	18:14	19:05	20:59	21:47	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:12	05:25	05:17	05:52	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:36	19:22	18:16	16:30	16:30
30	08:25		07:20	06:10	05:24	05:18	05:53	06:44	07:36	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** AS - 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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

[January]			[February]			[March]			[April]			[May]			[June]			[July]			[August]			[September]			[October]			[November]			[December]		
1	08:50	08:22	07:27						07:15			07:38 (1)	06:09	05:22	05:18	05:56	06:48				07:38						07:38			08:04 (3)	07:34	08:26			
	16:34	17:23	18:16						20:12			07:46 (1)	21:04	21:52	22:06	21:33	20:29				19:18						19:18			08:16 (3)	17:10	16:28			
2	08:50	08:21	07:25						07:13			07:36 (1)	06:07	05:21	05:19	05:58	06:49				07:28 (1)	07:40					07:40			08:06 (3)	07:36	08:28			
	16:35	17:25	18:18						20:13			07:46 (1)	21:06	21:53	22:06	21:31	20:27				07:34 (1)	19:15					19:15			08:16 (3)	17:08	16:28			
3	08:50	08:19	07:23						07:10			07:33 (1)	06:05	05:20	05:20	05:59	06:51				07:24 (1)	07:42					07:42			08:07 (3)	07:37	08:29			
	16:36	17:27	18:20						20:15			07:45 (1)	21:08	21:54	22:05	21:29	20:24				07:36 (1)	19:13					19:13			08:15 (3)	17:06	16:27			
4	08:50	08:17	07:21						07:08			07:31 (1)	06:03	05:19	05:21	06:01	06:53				07:22 (1)	07:43					07:43			08:09 (3)	07:39	08:31			
	16:37	17:29	18:22						20:17			07:45 (1)	21:09	21:55	22:05	21:27	20:22				07:38 (1)	19:11					19:11			08:14 (3)	17:04	16:26			
5	08:50	08:16	07:18						07:06			07:29 (1)	06:01	05:19	05:22	06:03	06:54				07:21 (1)	07:45					07:45			08:11 (3)	07:41	08:32			
	16:38	17:30	18:23						20:19			07:45 (1)	21:11	21:56	22:04	21:26	20:20				07:39 (1)	19:08					19:08			08:13 (3)	17:03	16:26			
6	08:49	08:14	07:16						07:03			07:26 (1)	05:59	05:18	05:22	06:04	06:56				07:22 (1)	07:47					07:47			07:43	08:33				
	16:40	17:32	18:25						20:20			07:43 (1)	21:13	21:57	22:04	21:24	20:17				07:39 (1)	19:06					19:06			17:01	16:25				
7	08:49	08:12	07:14						07:01			07:24 (1)	05:57	05:17	05:23	06:06	06:58				07:24 (1)	07:49					07:49			07:45	08:35				
	16:41	17:34	18:27						20:22			07:42 (1)	21:15	21:58	22:03	21:22	20:15				07:40 (1)	19:04					19:04			16:59	16:25				
8	08:48	08:10	07:11						07:35 (3)	06:59		07:25 (1)	05:55	05:17	05:24	06:08	06:59				07:25 (1)	07:50					07:50			07:47	08:36				
	16:42	17:36	18:29						20:24			07:36 (3)	20:24	21:16	21:59	22:02	20:13				07:39 (1)	19:01					19:01			16:57	16:24				
9	08:48	08:08	07:09						07:33 (3)	06:56		07:27 (1)	05:53	05:16	05:25	06:09	07:01				07:27 (1)	07:52					07:52			07:49	08:37				
	16:44	17:38	18:31						20:26			07:37 (3)	20:26	21:18	22:00	22:02	20:10				07:39 (1)	18:59					18:59			16:56	16:24				
10	08:47	08:07	07:07						07:30 (3)	06:54		07:29 (1)	05:52	05:16	05:26	06:11	07:03				07:29 (1)	07:54					07:54			07:50	08:38				
	16:45	17:40	18:33						20:28			07:37 (3)	20:28	21:20	22:01	22:01	20:08				07:39 (1)	18:57					18:57			16:54	16:24				
11	08:47	08:05	07:05						07:28 (3)	06:52		07:28 (3)	20:29	21:21	22:01	22:00	21:14				07:30 (1)	07:56					07:56			07:52	08:39				
	16:46	17:42	18:34						20:29			07:37 (3)	20:29	21:21	22:01	22:00	21:14				07:38 (1)	18:55					18:55			16:52	16:24				
12	08:46	08:03	07:02						07:26 (3)	06:49		07:38 (3)	20:31	21:23	22:02	21:59	21:12				07:32 (1)	07:57					07:57			07:54	08:40				
	16:48	17:44	18:36						20:31			07:38 (3)	20:31	21:23	22:02	21:59	21:12				07:39 (1)	18:57					18:57			16:51	16:24				
13	08:45	08:01	07:00						07:23 (3)	06:47		07:37 (3)	20:33	21:25	22:03	21:58	21:10				07:34 (1)	07:59					07:59			07:56	08:41				
	16:50	17:46	18:38						20:33			07:37 (3)	20:33	21:25	22:03	21:58	21:10				07:39 (1)	18:59					18:59			16:49	16:24				
14	08:44	07:59	06:58						07:21 (3)	06:45		07:36 (3)	20:35	21:26	22:03	21:57	21:08				07:49 (2)	08:01					08:01			07:58	08:42				
	16:51	17:48	18:40						20:35			07:36 (3)	20:35	21:26	22:03	21:57	21:08				07:49 (2)	08:01					08:01			16:48	16:24				
15	08:44	07:57	06:55						07:18 (2)	06:43		07:35 (2)	20:36	21:28	22:04	21:56	21:06				07:48 (2)	08:03					08:03			08:00	08:43				
	16:53	17:50	18:42						20:36			07:35 (2)	20:36	21:28	22:04	21:56	21:06				07:48 (2)	08:03					08:03			16:46	16:24				
16	08:43	07:55	06:53						07:16 (2)	06:40		07:34 (2)	20:38	21:29	22:04	21:55	21:04				07:47 (2)	08:05					08:05			08:01	08:44				
	16:54	17:52	18:43						20:38			07:34 (2)	20:38	21:29	22:04	21:55	21:04				07:47 (2)	08:05					08:05			16:45	16:24				
17	08:42	07:53	06:50						07:14 (2)	06:38		07:33 (2)	20:40	21:25	22:03	21:58	21:10				07:45 (2)	08:06					08:06			08:03	08:45				
	16:56	17:53	18:45						20:40			07:33 (2)	20:40	21:31	22:05	21:54	21:02				07:45 (2)	08:06					08:06			16:43	16:24				
18	08:41	07:51	06:48						07:11 (2)	06:36		07:32 (2)	20:42	21:26	22:04	21:59	21:10				07:44 (2)	08:08					08:08			08:05	08:46				
	16:58	17:55	18:47						20:42			07:32 (2)	20:42	21:32	22:05	21:53	21:00				07:44 (2)	08:08					08:08			16:42	16:24				
19	08:40	07:49	06:46						07:09 (2)	06:34		07:31 (2)	20:44	21:27	22:06	21:52	20:58				07:43 (2)	08:10					08:10			08:07	08:46				
	16:59	17:57	18:49						20:43			07:31 (2)	20:43	21:34	22:06	21:52	20:58				07:43 (2)	08:10					08:10			16:41	16:24				
20	08:39	07:47	06:43						07:07 (2)	06:32		07:30 (2)	20:46	21:29	22:07	21:51	20:56				07:42 (2)	08:11					08:11			08:08	08:47				
	17:01	17:59	18:50						20:45			07:30 (2)	20:45	21:35	22:06	21:51	20:56				07:42 (2)	08:11					08:11			16:39	16:25				
21	08:38	07:45	06:41						07:04 (2)	06:29		07:29 (2)	20:47	21:37	22:06	21:49	20:54				07:41 (2)	08:12					08:12			08:10	08:48				
	17:03	18:01	18:52						20:47			07:29 (2)	20:47	21:37	22:06	21:49	20:54				07:41 (2)	08:12					08:12			16:38	16:25				
22	08:36	07:43	06:39						07:02 (2)	06:27		07:27 (2)	20:49	21:38	22:06	21:48	20:51				07:40 (2)	08:13					08:13			08:12	08:48				
	17:04	18:03	18:54						20:49			07:27 (2)	20:49	21:38	22:06	21:48	20:51				07:40 (2)	08:13					08:13			16:37	16:26				
23	08:35	07:40	06:36						06:59 (2)	06:25		07:26 (2)	20:50	21:38	22:06	21:48	20:51				07:40 (2)	08:13					08:13			08:14	08:49				
	17:06	18:05	18:56						20:50			07:26 (2)	20:50	21:40	22:07	21:47	20:49				07:40 (2)	08:13					08:13			16:36	16:26				
24	08:34	07:38	06:34						06:57 (2)	06:23		07																							

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: AT - 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
229 231 210 320 200 640 608 691 568 658 724 1,086 671 733 661 530 8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:33	20:29	19:18	17:10	16:28
2	08:50	08:21	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:35	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:06	06:01	05:19	05:21	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:25	20:20	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:07	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	22:00	22:01	21:18	20:10	18:59	16:56	16:24
10	08:47	08:06	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:47	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:46	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:02	21:58	21:10	20:01	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:23
15	08:43	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:50	18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:57	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:49	20:43	21:34	22:05	21:52	20:58	19:46	18:37	16:41	16:24
20	08:38	07:47	06:43	06:31	05:36	05:14	05:38	06:27	07:19	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:34	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:42	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:32	07:25	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:57	20:52	21:41	22:07	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:45	06:36	07:28	08:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:43	22:07	21:44	20:45	19:32	18:24	16:33	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:55	21:44	22:07	21:42	20:42	19:30	18:22	16:32	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:48	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:41	20:40	19:27	18:20	16:32	16:29
28	08:28	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:22	08:50
	17:15	18:14	19:05	20:59	21:47	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:12	05:25	05:17	05:52	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:36	19:22	18:16	16:30	16:30
30	08:25		07:20	06:10	05:24	05:18	05:53	06:44	07:36	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** AU - 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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

		January	February	March	April	May	June		July		August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22			05:18	21:28 (2)	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51			22:06	3	21:31 (2)	21:33	20:29	19:18	17:10
2	08:50	08:20	07:25	07:13	06:06	05:21			05:19	21:29 (2)	05:58	06:49	07:40	07:35	08:28
	16:35	17:25	18:18	20:13	21:06	21:53			22:05	2	21:31 (2)	21:31	20:26	19:15	17:08
3	08:50	08:19	07:23	07:10	06:05	05:20			05:20	21:28 (2)	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54			22:05	2	21:30 (2)	21:29	20:24	19:13	17:06
4	08:50	08:17	07:20	07:08	06:03	05:19			05:21	21:29 (2)	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55			22:04	1	21:30 (2)	21:27	20:22	19:11	17:04
5	08:49	08:15	07:18	07:06	06:01	05:19			05:21	21:29 (2)	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56			22:04	1	21:30 (2)	21:25	20:19	19:08	17:03
6	08:49	08:14	07:16	07:03	05:59	05:18			05:22		06:04	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:13	21:57			22:03		21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17		21:23 (2)	05:23		06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	1	21:24 (2)	22:03		21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17		21:23 (2)	05:24		06:07	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	2	21:25 (2)	22:02		21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16		21:24 (2)	05:25		06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	22:00	2	21:26 (2)	22:01		21:18	20:10	18:59	16:56	16:24
10	08:47	08:06	07:07	06:54	05:52	05:16		21:23 (2)	05:26		06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	3	21:26 (2)	22:01		21:16	20:08	18:57	16:54	16:24
11	08:47	08:05	07:04	06:52	05:50	05:15		21:24 (2)	05:27		06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	3	21:27 (2)	22:00		21:14	20:05	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15		21:24 (2)	05:28		06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	4	21:28 (2)	21:59		21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:46	05:15		21:24 (2)	05:30		06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:02	4	21:28 (2)	21:58		21:10	20:01	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	05:45	05:14		21:24 (2)	05:31		06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	5	21:29 (2)	21:57		21:08	19:58	18:48	16:48	16:23
15	08:43	07:57	06:55	06:43	05:43	05:14		21:24 (2)	05:32		06:19	07:11	08:03	07:59	08:43
	16:53	17:49	18:41	20:36	21:28	22:04	5	21:29 (2)	21:56		21:06	19:56	18:45	16:46	16:23
16	08:43	07:55	06:53	06:40	05:42	05:14		21:25 (2)	05:33		06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	5	21:30 (2)	21:55		21:04	19:53	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14		21:25 (2)	05:34		06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	5	21:30 (2)	21:54		21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14		21:25 (2)	05:36		06:24	07:16	08:08	08:05	08:45
	16:57	17:55	18:47	20:41	21:32	22:05	5	21:30 (2)	21:53		21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14		21:25 (2)	05:37		06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:49	20:43	21:34	22:05	6	21:31 (2)	21:52		20:58	19:46	18:37	16:41	16:24
20	08:38	07:47	06:43	06:31	05:36	05:14		21:25 (2)	05:38		06:27	07:19	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	6	21:31 (2)	21:50		20:56	19:44	18:34	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14		21:26 (2)	05:40		06:29	07:21	08:13	08:10	08:47
	17:03	18:01	18:52	20:47	21:37	22:06	6	21:32 (2)	21:49		20:53	19:41	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:14		21:26 (2)	05:41		06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	6	21:32 (2)	21:48		20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15		21:26 (2)	05:43		06:32	07:25	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	6	21:32 (2)	21:46		20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15		21:26 (2)	05:44		06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:57	20:52	21:41	22:07	6	21:32 (2)	21:45		20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15		21:27 (2)	05:45		06:36	07:28	07:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:42	22:07	5	21:32 (2)	21:44		20:45	19:32	17:24	16:33	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16		21:27 (2)	05:47		06:37	07:30	07:23	08:18	08:50
	17:12	18:10	19:01	20:55	21:44	22:07	5	21:32 (2)	21:42		20:42	19:30	17:22	16:32	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16		21:27 (2)	05:48		06:39	07:31	07:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	5	21:32 (2)	21:41		20:40	19:27	17:20	16:32	16:29
28	08:28	07:29	06:24	06:15	05:26	05:17		21:27 (2)	05:50		06:41	07:33	07:26	08:21	08:50
	17:15	18:14	19:04	20:59	21:47	22:06	5	21:32 (2)	21:39		20:38	19:25	17:18	16:31	16:30
29	08:27		07:22	06:12	05:25	05:17		21:28 (2)	05:51		06:43	07:35	07:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	4	21:32 (2)	21:37		20:36	19:22	17:16	16:30	16:30
30	08:25		07:20	06:10	05:24	05:18		21:27 (2)	05:53		06:44	07:36	07:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	4	21:31 (2)	21:36		20:33	19:20	17:14	16:29	16:31
31	08:24		07:17		05:23				05:55		06:46		07:32		08:50
	17:21		20:10		21:50				21:34		20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503		506			456	381	330	263	240
Total, worst case							108			9					
Sun reduction							0.30			0.26					
Oper. time red.							1.00			1.00					
Wind dir. red.							0.65			0.65					
Total reduction							0.19			0.17					
Total, real							21			2					

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case
Assumptions for shadow calculations

Shadow receptor: AV - H48

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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December		
1	08:50 16:34 30	09:23 (3) 10:13 (2) 17:23	08:22 17:23	08:49 (1) 09:03 (1) 18:16	07:27 20:12 21:04	06:09 21:04 21:52	05:22 22:06 21:33	05:18 22:06 21:33	05:56 22:06 21:33	06:48 22:06 21:33	07:38 22:06 21:33	08:09 (1) 17:10 22	08:26 16:28 26	08:59 (3) 09:51 (2)
2	08:50 16:35 31	09:23 (3) 10:14 (2) 17:25	08:21 17:25	08:47 (1) 09:03 (1) 18:18	07:25 20:13 21:06	06:07 21:06 21:53	05:21 22:06 21:31	05:19 22:06 21:31	05:58 22:06 21:31	06:49 22:06 21:31	07:40 22:06 21:31	08:08 (1) 17:08 24	08:28 16:27 29	09:01 (3) 09:54 (2)
3	08:50 16:36 31	09:22 (3) 10:13 (2) 17:27	08:19 17:27	08:46 (1) 09:04 (1) 18:20	07:23 20:15 21:08	06:05 21:08 21:54	05:20 22:05 21:29	05:19 22:05 21:29	05:59 22:05 21:29	06:51 22:05 21:29	07:42 22:05 21:29	08:07 (1) 17:06 26	08:29 16:26 30	09:02 (3) 09:55 (2)
4	08:50 16:37 31	09:22 (3) 10:13 (2) 17:28	08:17 17:28	08:44 (1) 09:04 (1) 18:22	07:21 20:17 21:09	06:03 21:09 21:55	05:21 22:05 21:27	05:21 22:05 21:27	06:01 22:05 21:27	06:53 22:05 21:27	07:43 22:05 21:27	08:08 (1) 17:04 25	08:31 16:26 31	09:04 (3) 09:57 (2)
5	08:50 16:38 31	09:21 (3) 10:13 (2) 17:30	08:16 17:30	08:42 (1) 09:04 (1) 18:23	07:18 20:19 21:11	06:01 21:11 21:56	05:19 22:04 21:26	05:21 22:04 21:26	06:03 22:04 21:26	06:54 22:04 21:26	07:45 22:04 21:26	08:10 (1) 17:03 23	08:32 16:26 31	09:05 (3) 09:58 (2)
6	08:49 16:40 31	09:21 (3) 10:13 (2) 17:32	08:14 17:32	08:40 (1) 09:04 (1) 18:25	07:16 20:20 21:13	05:59 21:13 21:57	05:18 22:04 21:24	05:22 22:04 21:24	06:04 22:04 21:24	06:56 22:04 21:24	07:47 22:04 21:24	08:12 (1) 17:01 22	08:33 16:25 31	09:07 (3) 09:59 (2)
7	08:49 16:41 30	09:20 (3) 10:12 (2) 17:34	08:12 17:34	08:38 (1) 09:03 (1) 18:27	07:14 20:22 21:15	05:57 21:15 21:58	05:17 22:03 21:22	05:23 22:03 21:22	06:06 22:03 21:22	06:58 22:03 21:22	07:49 22:03 21:22	08:14 (1) 16:59 20	08:35 16:25 31	09:08 (3) 10:00 (2)
8	08:48 16:42 30	09:20 (3) 10:13 (2) 17:36	08:10 17:36	08:38 (1) 09:03 (1) 18:29	07:11 20:24 21:16	06:59 21:16 21:59	05:55 22:02 21:20	05:24 22:02 21:20	06:07 22:02 21:20	06:59 22:02 21:20	07:50 22:02 21:20	08:16 (1) 16:57 18	08:36 16:24 30	09:09 (3) 10:00 (2)
9	08:48 16:44 30	09:19 (3) 10:12 (2) 17:38	08:08 17:38	08:38 (1) 09:02 (1) 18:31	07:09 20:26 21:18	06:56 21:18 22:00	05:53 22:02 21:18	05:25 22:02 21:18	06:09 22:02 21:18	07:01 22:02 21:18	07:52 22:02 21:18	08:18 (1) 16:56 16	08:37 16:24 31	09:11 (3) 10:02 (2)
10	08:47 16:45 29	09:18 (3) 10:11 (2) 17:40	08:07 17:40	08:39 (1) 09:02 (1) 18:33	07:07 20:28 21:20	06:54 21:20 22:01	05:52 22:01 21:16	05:26 22:01 21:16	06:11 22:01 21:16	07:03 22:01 21:16	07:54 22:01 21:16	08:20 (1) 16:54 13	08:38 16:24 31	09:12 (3) 10:03 (2)
11	08:47 16:46 26	09:17 (3) 10:09 (2) 17:42	08:05 17:42	08:40 (1) 09:01 (1) 18:34	07:04 20:29 21:21	06:52 21:21 22:01	05:15 22:00 21:14	05:27 22:00 21:14	06:12 22:00 21:14	07:04 22:00 21:14	07:56 22:00 21:14	08:33 (1) 16:52 11	08:39 16:24 30	09:13 (3) 10:03 (2)
12	08:46 16:48 20	09:16 (3) 10:06 (2) 17:44	08:03 17:44	08:42 (1) 09:05 (1) 18:36	07:02 20:31 21:23	06:49 20:31 22:02	05:48 21:23 21:59	05:28 22:02 21:12	06:14 22:02 21:12	07:06 22:02 21:12	07:57 22:02 21:12	08:33 (1) 16:51 9	08:40 16:24 31	09:14 (3) 10:04 (2)
13	08:45 16:49 18	09:16 (3) 10:04 (3) 17:46	08:01 17:46	08:43 (1) 09:04 (3) 18:38	07:00 20:33 21:25	06:47 20:33 22:03	05:15 22:03 21:58	05:30 22:03 21:10	06:16 22:03 21:10	07:08 22:03 21:10	07:59 22:03 21:10	08:32 (1) 16:49 6	08:41 16:23 31	09:15 (3) 10:05 (2)
14	08:44 16:51 20	09:15 (3) 10:04 (3) 17:50	07:59 17:50	08:47 (1) 09:05 (3) 18:40	06:57 20:35 21:26	06:45 20:35 22:03	05:14 22:03 21:57	05:31 22:03 21:08	06:17 22:03 21:08	07:09 22:03 21:08	08:01 22:03 21:08	08:31 (1) 16:48 3	08:42 16:23 30	09:16 (3) 10:05 (2)
15	08:44 16:53 21	09:14 (3) 10:03 (3) 17:52	07:57 17:52	08:44 (1) 09:04 (3) 18:41	06:55 20:36 21:28	06:43 20:36 22:04	05:14 22:04 21:56	05:32 22:04 21:06	06:19 22:04 21:06	07:11 22:04 21:06	08:03 22:04 21:06	08:30 (1) 16:46 1	08:43 16:24 30	09:17 (3) 10:06 (2)
16	08:43 16:54 21	09:13 (3) 10:02 (3) 17:51	07:55 17:51	08:43 (1) 09:03 (3) 18:43	06:53 20:38 21:29	06:40 20:38 22:04	05:14 22:04 21:55	05:33 22:04 21:04	06:21 22:04 21:04	07:13 22:04 21:04	08:05 22:04 21:04	08:31 (1) 16:45 08:01	08:44 16:24 30	09:18 (3) 10:07 (2)
17	08:42 16:56 20	09:14 (3) 10:01 (3) 17:53	07:53 17:53	08:42 (1) 09:04 (3) 18:45	06:50 20:40 21:31	06:38 20:40 22:05	05:14 22:05 21:54	05:34 22:05 21:02	06:22 22:05 21:02	07:15 22:05 21:02	08:06 22:05 21:02	08:30 (1) 16:43 16:43	08:45 16:24 29	09:19 (3) 10:07 (2)
18	08:41 16:58 19	09:13 (3) 10:00 (3) 17:55	07:51 17:55	08:41 (1) 09:03 (3) 18:47	06:48 20:42 21:32	06:36 20:42 22:05	05:14 22:05 21:53	05:36 22:05 21:00	06:24 22:05 21:00	07:16 22:05 21:00	08:08 22:05 21:00	08:30 (1) 16:42 16:42	08:46 16:24 28	09:20 (3) 10:07 (2)
19	08:40 16:59 18	09:12 (3) 10:00 (3) 17:57	07:49 17:57	08:40 (1) 09:04 (3) 18:49	06:46 20:43 21:34	06:34 20:43 22:06	05:14 22:06 21:52	05:37 22:06 21:08	06:26 22:06 21:08	07:18 22:06 21:08	08:10 22:06 21:08	08:33 (1) 16:41 7	08:46 16:24 29	09:21 (3) 10:08 (2)
20	08:39 17:01 17	09:17 (3) 10:04 (3) 17:59	07:47 17:59	08:43 (1) 09:08 (3) 18:50	06:43 20:45 21:35	06:32 20:45 22:06	05:14 22:06 21:51	05:38 22:06 21:06	06:27 22:06 21:06	07:20 22:06 21:06	08:12 22:06 21:06	08:35 (3) 16:39 11	08:47 16:25 29	09:21 (3) 10:09 (2)
21	08:38 17:03 14	09:18 (3) 10:06 (3) 18:01	07:45 18:01	08:41 (1) 09:10 (3) 18:52	06:41 20:47 21:37	06:29 20:47 22:06	05:14 22:06 21:49	05:40 22:06 21:04	06:29 22:06 21:04	07:21 22:06 21:04	08:14 22:06 21:04	08:38 (3) 16:38 14	08:48 16:25 29	09:22 (3) 10:09 (2)
22	08:36 17:04 11	09:20 (3) 10:09 (3) 18:03	07:43 18:03	08:39 (1) 09:12 (3) 18:54	06:39 20:49 21:38	06:27 20:49 22:06	05:14 22:06 21:48	05:41 22:06 21:04	06:31 22:06 21:04	07:23 22:06 21:04	08:15 22:06 21:04	08:41 (3) 16:37 17	08:48 16:26 29	09:23 (3) 10:10 (2)
23	08:35 17:06 7	09:23 (3) 10:10 (3) 18:05	07:40 18:05	08:36 (1) 09:14 (3) 18:56	06:36 20:50 21:40	06:25 20:50 22:07	05:15 22:07 21:47	05:43 22:07 21:04	06:33 22:07 21:04	07:25 22:07 21:04	08:17 22:07 21:04	08:44 (3) 16:36 18	08:49 16:26 29	09:24 (3) 10:10 (2)
24	08:34 17:08 30	09:24 (3) 10:11 (3) 18:07	07:38 18:07	08:34 (1) 09:15 (3) 18:58	06:34 20:52 21:41	06:23 20:52 22:07	05:15 22:07 21:45	05:44 22:07 21:04	06:34 22:07 21:04	07:26 22:07 21:04	08:19 22:07 21:04	08:45 (3) 16:35 19	08:49 16:27 29	09:25 (3) 10:11 (2)
25	08:33 17:10 30	09:25 (3) 10:12 (3) 18:09	07:36 18:09	08:33 (1) 09:16 (3) 18:59	06:32 20:54 21:43	06:21 20:54 22:07	05:15 22:07 21:44	05:45 22:07 21:04	06:36 22:07 21:04	07:28 22:07 21:04	08:21 22:07 21:04	08:46 (3) 16:34 20	08:49 16:27 29	09:26 (3) 10:12 (2)
26	08:31 17:12 30	09:26 (3) 10:13 (3) 18:10	07:34 18:10	08:31 (1) 09:17 (3) 19:01	06:29 20:56 21:44	06:19 20:56 22:07	05:16 22:07 21:42	05:47 22:07 21:04	06:38 22:07 21:04	07:30 22:07 21:04	08:23 22:07 21:04	08:47 (3) 16:32 21	08:50 16:28 28	09:27 (3) 10:13 (2)
27	08:30 17:13 1	09:27 (3) 10:14 (3) 18:12	07:32 18:12	08:30 (1) 09:18 (3) 19:03	06:27 20:57 21:45	06:17 20:57 22:07	05:17 22:07 21:41	05:48 22:07 21:04	06:39 22:07 21:04	07:31 22:07 21:04	08:25 22:07 21:04	08:48 (3) 16:32 21	08:50 16:29 30	09:28 (3) 10:12 (2)
28	08:28 17:15 4	09:28 (3) 10:15 (3) 18:14	07:30 18:14	08:28 (1) 09:19 (3) 19:05	06:24 20:59 21:47	06:15 20:59 22:07	05:17 22:07 21:39	05:50 22:07 21:04	06:41 22:07 21:04	07:33 22:07 21:04	08:26 22:07 21:04	08:49 (3) 16:31 10	08:50 16:29 29	09:29 (3) 10:12 (2)
29	08:27 17:17 6	09:29 (3) 10:16 (3) 18:14	07:29 18:14	08:27 (1) 09:20 (3) 19:06	06:22 21:01 21:48	06:13 21:01 22:06	05:17 22:06 21:38	05:52 22:06 21:04	06:43 22:06 21:04	07:35 22:06 21:04	08:28 22:06 21:04	08:51 (3) 16:30 18	08:52 16:29 30	09:30 (3) 10:13 (2)
30	08:25 17:19 9	09:30 (3) 10:17 (3) 18:15	07:27 18:15	08:25 (1) 09:22 (3) 19:07	06:20 21:03 21:49	06:11 21:03 22:06	05:18 22:06 21:36	05:53 22:06 21:04	06:44 22:06 21:04	07:37 22:06 21:04	08:30 22:06 21:04	08:53 (3) 16:29 20	08:54 16:29 30	09:31 (3) 10:14 (2)
31	08:24 17:21 11	09:31 (3) 10:18 (3) 18:16	07:25 18:16	08:24 (1) 09:23 (3) 19:08	06:19 21:04 21:50	06:10 21:04 22:06	05:19 22:06 21:34	05:54 22:06 21:04	06:46 22:06 21:04	07:39 22:06 21:04	08:32 22:06 21:04	08:55 (3) 16:28 20	08:56 16:29 30	09:32 (3) 10:15 (2)
Potential sun hours	256	276	367	418	489	503	506	456	381	330	263	240	919	
Total, worst case	567	270											919	
Sun reduction	0.16	0.21											0.14	
Oper. time red.	1.00	1.00											1.00	
Wind dir. red.	0.64	0.65											0.63	
Total reduction	0.10													

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
Kathryn Feeney / kfeeney@jodireland.com
Calculated:
16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** AW - 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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December				
1	08:50	08:22	07:27	07:15	06:08	05:22	20:52 (3)	05:18	21:01 (3)	05:56	20:58 (2)	06:48	07:38	07:34	08:26	
2	16:34	17:23	18:16	20:12	21:04	21:51	21:18 (3)	22:06	21:25 (3)	21:33	21:02 (2)	20:29	19:18	17:10	16:28	
3	08:50	08:20	07:25	07:13	06:06	05:21	20:52 (3)	05:19	21:01 (3)	05:58	20:57 (2)	06:49	07:40	07:35	08:28	
4	16:35	17:25	18:18	20:13	21:06	21:53	21:19 (3)	22:05	21:26 (3)	21:31	21:00 (2)	20:26	19:15	17:08	16:27	
5	08:50	08:19	07:23	07:10	06:05	05:20	20:53 (3)	05:20	21:00 (3)	05:59	20:57 (2)	06:51	07:42	07:37	08:29	
6	16:36	17:27	18:20	20:15	21:08	21:54	21:21 (3)	22:05	21:26 (3)	21:29	1	20:58 (2)	20:24	19:13	17:06	16:27
7	08:50	08:17	07:20	07:08	06:03	05:19	20:53 (3)	05:21	21:01 (3)	06:01		06:53	07:43	07:39	08:30	
8	16:37	17:28	18:21	20:17	21:09	21:55	21:21 (3)	22:04	21:27 (3)	21:27		20:22	19:11	17:04	16:26	
9	08:49	08:15	07:18	07:05	06:01	05:18	20:53 (3)	05:21	21:01 (3)	06:03		06:54	07:45	07:41	08:32	
10	16:38	17:30	18:23	20:19	21:11	21:56	21:21 (3)	22:04	21:27 (3)	21:25		20:19	19:08	17:02	16:26	
11	08:49	08:14	07:16	07:03	05:59	05:18	20:54 (3)	05:22	21:01 (3)	06:04		06:56	07:47	07:43	08:33	
12	16:39	17:32	18:25	20:20	21:13	21:57	21:22 (3)	22:03	21:28 (3)	21:24		20:17	19:06	17:01	16:25	
13	08:49	08:12	07:14	07:01	05:57	05:17	20:54 (3)	05:23	21:01 (3)	06:06		06:58	07:49	07:45	08:34	
14	16:41	17:34	18:27	20:22	21:14	21:58	21:21 (3)	22:03	21:28 (3)	21:22		20:15	19:04	16:59	16:25	
15	08:48	08:10	07:11	06:59	05:55	05:17	20:55 (3)	05:24	21:01 (3)	06:07		06:59	07:50	07:47	08:36	
16	16:42	17:36	18:29	20:24	21:16	21:59	21:21 (3)	22:02	21:29 (3)	21:20		20:12	19:01	16:57	16:24	
17	08:48	08:08	07:09	06:56	05:53	05:16	20:56 (3)	05:25	21:00 (3)	06:09		07:01	07:52	07:48	08:37	
18	16:43	17:38	18:31	20:26	21:18	22:00	21:22 (3)	22:01	21:27 (3)	21:18		20:10	18:59	16:56	16:24	
19	08:47	08:06	07:07	06:54	05:52	20:48 (2)	20:56 (3)	05:26	21:00 (3)	06:11		07:03	07:54	07:50	08:38	
20	16:45	17:40	18:32	20:27	21:19	2	20:50 (2)	22:00	21:27 (3)	21:16		20:08	18:57	16:54	16:24	
21	08:47	08:05	07:04	06:52	05:50	20:47 (2)	20:57 (3)	05:27	21:00 (3)	06:12		07:04	07:56	07:52	08:39	
22	16:46	17:42	18:34	20:29	21:21	4	20:51 (2)	22:01	21:26 (3)	21:14		20:05	18:54	16:52	16:24	
23	08:46	08:03	07:02	06:49	05:48	20:46 (2)	20:57 (3)	05:28	21:00 (3)	06:14		07:06	07:57	07:54	08:40	
24	16:48	17:44	18:36	20:31	21:23	6	20:52 (2)	22:02	21:25 (3)	21:12		20:03	18:52	16:51	16:24	
25	08:45	08:01	07:00	06:47	05:46	20:47 (2)	20:57 (3)	05:30	21:00 (3)	06:16		07:08	07:59	07:56	08:41	
26	16:49	17:46	18:38	20:33	21:24	7	20:54 (2)	22:02	21:21 (3)	21:58		20:01	18:50	16:49	16:23	
27	08:44	07:59	06:57	06:45	05:45	20:47 (2)	20:57 (3)	05:31	21:00 (3)	06:17		07:09	08:01	07:58	08:42	
28	16:51	17:48	18:40	20:34	21:26	8	20:55 (2)	22:03	21:21 (3)	21:57		20:04	18:48	16:48	16:23	
29	08:43	07:57	06:55	06:43	05:43	20:47 (2)	20:58 (3)	05:32	21:00 (3)	06:19		07:11	08:03	07:59	08:43	
30	16:53	17:49	18:41	20:36	21:28	10	20:57 (2)	22:04	21:21 (3)	21:56		20:06	18:45	16:46	16:23	
31	08:43	07:55	06:53	06:40	05:42	20:48 (2)	20:58 (3)	05:33	21:00 (3)	06:21		07:13	08:04	08:01	08:44	
32	16:54	17:51	18:43	20:38	21:29	10	20:58 (2)	22:04	21:21 (3)	21:55		20:07	18:43	16:45	16:24	
33	08:42	07:53	06:50	06:38	05:40	20:48 (2)	20:59 (3)	05:34	21:00 (3)	06:22		07:14	08:06	08:03	08:45	
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36	16:57	17:55	18:47	20:41	21:32	12	21:01 (2)	22:05	21:21 (3)	21:53		20:10	18:39	16:42	16:24	
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38	16:59	17:57	18:49	20:43	21:34	13	21:03 (2)	22:05	21:21 (3)	21:52		20:12	18:37	16:41	16:24	
39	08:38	07:47	06:43	06:31	05:36	20:50 (2)	20:59 (3)	05:38	21:00 (3)	06:27		07:19	08:12	08:08	08:47	
40	17:01	17:59	18:50	20:45	21:35	13	21:03 (2)	22:06	21:21 (3)	21:50		20:14	18:34	16:39	16:25	
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45	08:35	07:40	06:36	06:25	05:32	20:51 (3)	21:00 (3)	05:43	21:01 (2)	06:32		07:25	08:17	08:13	08:48	
46	17:06	18:05	18:56	20:50	21:40	17	21:08 (3)	22:06	21:22 (3)	21:46		20:19	18:28	16:36	16:26	
47	08:34	07:38	06:34	06:23	05:30	20:50 (3)	21:00 (3)	05:44	21:00 (2)	06:34		07:26	08:19	08:15	08:49	
48	17:08	18:07	18:57	20:52	21:41	18	21:08 (3)	22:07	21:22 (3)	21:45		20:20	18:26	16:35	16:27	
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52	17:12	18:10	19:01	20:55	21:44	21	21:11 (3)	22:07	21:23 (3)	21:42		20:24	18:22	16:32	16:28	
53	08:30	07:32	06:27	06:17	05:27	20:50 (3)	21:01 (3)	05:48	20:58 (2)	06:39		07:31	08:24	08:20	08:50	
54	17:13	18:12	19:03	20:57	21:45	22	21:12 (3)	22:06	21:24 (3)	21:41		20:26	18:20	16:31	16:29	
55	08:28	07:29	06:24	06:14	05:26	20:51 (3)	21:01 (3)	05:50	20:58 (2)	06:41		07:33	08:26	08:21	08:50	
56	17:15	18:14	19:04	20:59	21:47	22	21:13 (3)	22:06	21:24 (3)	21:39		20:28	18:18	16:31	16:30	
57	08:27		07:22	06:12	05:25	20:52 (3)	21:01 (3)	05:51	20:58 (2)	06:43		07:35	08:28	08:23	08:50	
58	17:17		20:06	21:01	21:48	23	21:15 (3)	22:06	21:25 (3)	21:37		20:30	18:16	16:30	16:30	
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60	17:19		20:08	21:02	21:49	24	21:16 (3)	22:06	21:25 (3)	21:36		20:32	18:14	16:29	16:31	
61	08:24		07:17		05:23	20:52 (3)		05:55	20:57 (2)	06:46		07:37	08:22	08:27	08:50	
62	17:21		20:10		21:50	25	21:17 (3)		21:34			20:34	18:12	16:28	16:32	
63	Potential sun hours	256	276	367	418	488	503	506	456		381	330	263	240		
64	Total, worst case					320		726		614		8				
65	Sun reduction					0.37		0.30		0.26		0.30				
66	Oper. time red.					1.00		1.00		1.00		1.00				
67	Wind dir. red.					0.66		0.66		0.67		0.67				
68	Total reduction					0.24		0.20		0.20		0.20				
69	Total, real					78		143		108		2				

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	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** AX - 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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

January			February			March			April			May			June		
1	08:50	16:34	08:22	17:23	18:16	07:27	18:16	07:15	07:15	19:38 (3)	06:08	20:28 (1)	05:22				
2	08:50	16:35	08:20	17:25	18:18	07:23	18:23	07:13	20:12	7	19:45 (3)	21:04	7	20:35 (1)	21:51		
3	08:50	16:36	08:19	17:26	18:20	07:20	18:23	07:10	07:13	9	19:47 (3)	21:06	8	20:37 (1)	21:53		
4	08:50	16:37	08:17	17:28	18:21	07:18	18:23	07:08	07:10	12	19:48 (3)	21:08	11	20:39 (1)	21:54		
5	08:49	16:38	08:15	17:30	18:23	07:16	18:23	07:05	07:08	15	19:51 (3)	21:09	12	20:40 (1)	21:55		
6	08:49	16:39	08:14	17:32	18:25	07:14	18:25	07:03	07:05	17	19:53 (3)	21:11	13	20:41 (1)	21:56		
7	08:49	16:41	08:12	17:34	18:27	07:11	18:27	07:01	07:03	19	19:54 (3)	21:13	16	20:43 (1)	21:57		
8	08:48	16:42	08:10	17:36	18:29	07:09	18:29	06:59	07:01	21	19:56 (3)	21:14	17	20:45 (1)	21:58		
9	08:48	16:43	08:08	17:38	18:31	07:07	18:31	06:56	06:59	22	19:57 (3)	21:16	18	20:46 (1)	21:59		
10	08:47	16:45	08:06	17:40	18:32	07:04	18:32	06:54	06:56	23	19:58 (2)	21:18	18	20:47 (1)	22:00		
11	08:47	16:46	08:05	17:42	18:34	07:02	18:34	06:52	06:54	24	20:00 (2)	21:19	20	20:50 (1)	22:00		
12	08:46	16:48	08:03	17:44	18:36	07:00	18:36	06:49	06:52	25	20:02 (2)	21:21	20	20:50 (1)	22:01		
13	08:45	16:49	08:01	17:46	18:38	06:58	18:38	06:47	06:49	26	20:04 (2)	21:23	18	20:49 (1)	22:02		
14	08:44	16:51	07:59	17:48	18:40	06:55	18:40	06:45	06:47	26	20:05 (2)	21:24	15	20:48 (1)	22:03		
15	08:43	16:53	07:57	17:49	18:41	06:53	18:41	06:43	06:45	23	20:07 (2)	21:26	12	20:46 (1)	22:03		
16	08:43	16:54	07:55	17:51	18:43	06:50	18:43	06:40	06:43	12	20:09 (2)	21:28	7	20:44 (1)	22:04		
17	08:42	16:56	07:53	17:53	18:45	06:48	18:45	06:38	06:40	11	20:10 (2)	21:29			22:04		
18	08:41	16:57	07:51	17:55	18:47	06:46	18:47	06:36	06:38	6	20:07 (2)	21:31			22:05		
19	08:40	16:59	07:49	17:57	18:49	06:44	18:49	06:34	06:36			21:32			22:05		
20	08:38	17:01	07:47	17:59	18:50	06:41	18:50	06:31	06:34			21:33			22:05		
21	08:37	17:03	07:45	18:01	18:52	06:38	18:52	06:29	06:31			21:34			22:05		
22	08:36	17:04	07:42	18:03	18:54	06:36	18:54	06:27	06:29			21:35			22:06		
23	08:35	17:06	07:40	18:05	18:56	06:34	18:56	06:25	06:27			21:36			22:06		
24	08:34	17:08	07:38	18:07	18:57	06:31	18:57	06:23	06:25			21:37			22:07		
25	08:32	17:10	07:36	18:08	18:59	06:29	18:59	06:21	06:23			21:38			22:07		
26	08:31	17:12	07:34	18:10	19:01	06:27	19:01	06:19	06:21			21:39			22:07		
27	08:30	17:13	07:32	18:12	19:03	06:24	19:03	06:17	06:19			21:40			22:07		
28	08:28	17:15	07:29	18:14	19:04	06:22	19:04	06:14	06:16			21:41			22:07		
29	08:27	17:17	07:27		19:06	06:20	19:06	06:12	06:14			21:42			22:07		
30	08:25	17:19	07:25		19:08	06:18	19:08	06:10	06:12	3	20:32 (1)	21:48			22:06		
31	08:24	17:21	07:24		19:10	06:16	19:10	06:08	06:10	4	20:33 (1)	21:49			22:06		
Potential sun hours	256	276	367		418		488		503								
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)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

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+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** AX - 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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

July		August		September		October		November		December	
1	05:18		05:56	20:41 (1)	06:48		19:36 (3)	07:38	07:34		08:26
	22:06		21:33	19	21:00 (1)	20:29	25	20:01 (2)	19:18		16:28
2	05:19		05:58	20:40 (1)	06:49		19:35 (3)	07:40	07:35		08:28
	22:05		21:31	20	21:00 (1)	20:26	24	19:59 (2)	19:15		16:27
3	05:20		05:59	20:39 (1)	06:51		19:33 (3)	07:42	07:37		08:29
	22:05		21:29	19	20:58 (1)	20:24	23	19:56 (2)	19:13		16:27
4	05:21		06:01	20:39 (1)	06:53		19:32 (3)	07:43	07:39		08:30
	22:04		21:27	18	20:57 (1)	20:22	23	19:55 (2)	19:11		16:26
5	05:21		06:03	20:38 (1)	06:54		19:31 (3)	07:45	07:41		08:32
	22:04		21:25	17	20:55 (1)	20:19	21	19:52 (3)	19:08		16:26
6	05:22		06:04	20:38 (1)	06:56		19:31 (3)	07:47	07:43		08:33
	22:03		21:24	16	20:54 (1)	20:17	19	19:50 (3)	19:06		16:25
7	05:23		06:06	20:38 (1)	06:58		19:31 (3)	07:49	07:45		08:34
	22:03		21:22	15	20:53 (1)	20:15	17	19:48 (3)	19:04		16:25
8	05:24		06:07	20:37 (1)	06:59		19:30 (3)	07:50	07:47		08:36
	22:02		21:20	13	20:50 (1)	20:12	15	19:45 (3)	19:01		16:24
9	05:25		06:09	20:37 (1)	07:01		19:30 (3)	07:52	07:48		08:37
	22:01		21:18	12	20:49 (1)	20:10	13	19:43 (3)	18:59		16:24
10	05:26		06:11	20:37 (1)	07:03		19:31 (3)	07:54	07:50		08:38
	22:01		21:16	10	20:47 (1)	20:08	10	19:41 (3)	18:57		16:24
11	05:27		06:12	20:37 (1)	07:04		19:30 (3)	07:56	07:52		08:39
	22:00		21:14	8	20:45 (1)	20:05	8	19:38 (3)	18:54		16:24
12	05:28		06:14	20:37 (1)	07:06		19:31 (3)	07:57	07:54		08:40
	21:59		21:12	6	20:43 (1)	20:03	5	19:36 (3)	18:52		16:23
13	05:29		06:16	20:37 (1)	07:08		19:31 (3)	07:59	07:56		08:41
	21:58		21:10	4	20:41 (1)	20:01	2	19:33 (3)	18:50		16:23
14	05:31		06:17	20:37 (1)	07:09		08:01	07:58	08:42		08:42
	21:57		21:08	2	20:39 (1)	19:58		18:48	16:48		16:23
15	05:32		06:19		07:11			08:03	07:59		08:43
	21:56		21:06		19:56			18:45	16:46		16:23
16	05:33		06:21		07:13			08:04	08:01		08:44
	21:55		21:04		19:53			18:43	16:45		16:24
17	05:34		06:22		07:14			08:06	08:03		08:45
	21:54		21:02		19:51			18:41	16:43		16:24
18	05:36		06:24		07:16			08:08	08:05		08:45
	21:53		21:00		19:49			18:39	16:42		16:24
19	05:37		06:26		07:18			08:10	08:06		08:46
	21:52		20:58		19:46			18:37	16:40		16:24
20	05:38		06:27		07:19			08:12	08:08		08:47
	21:50		20:56		19:44			18:34	16:39		16:25
21	05:40		06:29		07:21			08:13	08:10		08:47
	21:49		20:53		19:41			18:32	16:38		16:25
22	05:41		06:31		07:23			08:15	08:12		08:48
	21:48		20:51		19:39			18:30	16:37		16:25
23	05:43		06:32		07:25			08:17	08:13		08:48
	21:46		20:49		19:37			18:28	16:36		16:26
24	05:44		06:34		07:26			08:19	08:15		08:49
	21:45		20:47		19:34			18:26	16:34		16:27
25	05:45		06:36		07:28			07:21	08:17		08:49
	21:44		20:45		19:32			17:24	16:33		16:27
26	05:47		06:37		07:30			07:23	08:18		08:50
	21:42		20:42	6	20:09 (2)	19:30		17:22	16:32		16:28
27	05:48		06:39		20:00 (2)	07:31		07:24	08:20		08:50
	21:41		20:40	12	20:12 (2)	19:27		17:20	16:31		16:29
28	05:50		06:41		19:48 (3)	07:33		07:26	08:22		08:50
	21:39		20:38	14	20:11 (2)	19:25		17:18	16:31		16:29
29	05:51	20:46 (1)	06:43		19:42 (3)	07:35		07:28	08:23		08:50
	21:37	10	20:56 (1)	20:36	23	20:08 (2)	19:22	17:16	16:30		16:30
30	05:53		20:45 (1)	06:44		19:39 (3)	07:36	07:30	08:25		08:50
	21:36	13	20:58 (1)	20:33	27	20:06 (2)	19:20	17:14	16:29		16:31
31	05:55		20:43 (1)	06:46		19:37 (3)		07:32			08:50
	21:34	16	20:59 (1)	20:31	26	20:03 (2)		17:12			16:32
Potential sun hours	506		456		381			330	263		240
Total, worst case	39		287		205						
Sun reduction	0.26		0.30		0.28						
Oper. time red.	1.00		1.00		1.00						
Wind dir. red.	0.67		0.67		0.68						
Total reduction	0.18		0.20		0.19						
Total, real	7		57		39						

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: AY - H51

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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

January		February		March		April		May		June	
1	08:50	15:26 (3)	08:22	16:23 (1)	07:27	07:15	08:19 (4)	06:08	06:49 (5)	05:22	
	16:34	12	15:38 (3)	17:23	29	16:52 (2)	18:16	20:12	9	08:28 (4)	21:04
2	08:50	15:26 (3)	08:21	16:23 (1)	07:25	07:13	06:06	21:04	17	07:06 (5)	21:52
	16:35	11	15:37 (3)	17:25	31	16:54 (2)	18:18	20:13		21:06	18
3	08:50	15:28 (3)	08:19	16:25 (1)	07:23	07:10	06:04	21:06		06:48 (5)	21:53
	16:36	8	15:36 (3)	17:26	31	16:56 (2)	18:20	20:15	20	07:08 (5)	21:54
4	08:50	15:31 (3)	08:17	16:26 (1)	07:20	07:08	06:03	21:08	20	06:48 (5)	21:59
	16:37	4	15:35 (3)	17:28	32	16:58 (2)	18:21	20:17	20	07:08 (5)	21:55
5	08:50		08:16	16:27 (1)	07:18	07:05	06:01	21:09		06:47 (5)	21:58
	16:38		17:30	29	16:56 (2)	18:23	20:19	21:11	20	07:07 (5)	21:56
6	08:49		08:14	16:29 (1)	07:16	07:03	05:59	21:13	20	06:47 (5)	21:57
	16:39		17:32	25	16:54 (2)	18:25	20:20	21:13	20	07:07 (5)	21:57
7	08:49		08:12	16:31 (1)	07:14	07:01	05:57	21:14	20	06:48 (5)	21:58
	16:41		17:34	12	16:43 (1)	18:27	20:22	21:14	20	07:08 (5)	21:58
8	08:48		08:10	16:37 (1)	07:11	06:59	05:55	21:16	19	06:48 (5)	21:59
	16:42		17:36	1	16:38 (1)	18:29	20:24	21:16	19	07:07 (5)	21:59
9	08:48		08:08		07:09	06:56	07:24 (7)	05:53		06:48 (5)	21:56
	16:43		17:38		18:31	20:26	7	07:31 (7)	21:18	18	07:06 (5)
10	08:47		08:07		07:07	06:54	07:22 (7)	05:52		06:49 (5)	22:00
	16:45		17:40		18:32	20:27	11	07:33 (7)	21:19	17	07:06 (5)
11	08:47		08:05		07:04	06:52	07:21 (7)	05:50		06:49 (5)	22:00
	16:46		17:42		18:34	20:29	13	07:34 (7)	21:21	16	07:05 (5)
12	08:46		08:03		07:02	06:49	07:20 (7)	05:48		06:50 (5)	22:01
	16:48		17:44		18:36	20:31	14	07:34 (7)	21:23	13	07:03 (5)
13	08:45		08:01		07:00	06:47	07:19 (7)	05:46		06:51 (5)	22:02
	16:49		17:46		18:38	20:33	15	07:34 (7)	21:24	12	07:03 (5)
14	08:44		07:59		06:57	06:45	07:19 (7)	05:45		06:53 (5)	22:03
	16:51		17:48		18:40	20:34	14	07:33 (7)	21:26	7	07:00 (5)
15	08:44		07:57		06:55	06:43	07:19 (7)	05:43			22:03
	16:52		17:49		18:41	20:36	14	07:33 (7)	21:28		05:14
16	08:43		07:55		06:53	06:40	07:20 (7)	05:42			22:04
	16:54		17:51		18:43	20:38	12	07:32 (7)	21:29		05:14
17	08:42	16:20 (1)	07:53		06:50	06:38	07:21 (7)	05:40			22:04
	16:56	2	16:22 (1)	17:53	18:45	20:40	10	07:31 (7)	21:31		05:14
18	08:41	16:20 (1)	07:51		06:48	06:36	07:23 (7)	05:39			22:05
	16:57	4	16:24 (1)	17:55	18:47	20:41	6	07:29 (7)	21:32		05:14
19	08:40	16:20 (1)	07:49		06:46	06:34		05:37			22:05
	16:59	6	16:26 (1)	17:57	18:49	20:43		21:34			05:14
20	08:39	16:19 (1)	07:47		06:43	06:31	07:23 (4)	05:36			22:06
	17:01	8	16:27 (1)	17:59	18:50	8	07:31 (4)	20:45			05:14
21	08:37	16:20 (1)	07:45		06:41	06:29	07:20 (4)	05:34			22:06
	17:03	9	16:29 (1)	18:01	18:52	14	07:34 (4)	20:47			05:14
22	08:36	16:20 (1)	07:42		06:39	06:27	07:19 (4)	05:33			22:07
	17:04	12	16:32 (1)	18:03	18:54	16	07:35 (4)	20:48			05:15
23	08:35	16:19 (1)	07:40		06:36	06:25	07:17 (4)	05:32			22:07
	17:06	14	16:33 (1)	18:05	18:56	18	07:35 (4)	20:50			05:15
24	08:34	16:20 (1)	07:38		06:34	06:23	07:16 (4)	05:30			22:07
	17:08	15	16:35 (1)	18:07	18:57	20	07:36 (4)	20:52			05:16
25	08:32	16:19 (1)	07:36		06:31	06:21	07:15 (4)	05:29			22:07
	17:10	18	16:37 (1)	18:08	18:59	21	07:36 (4)	20:54			05:16
26	08:31	16:20 (1)	07:34		06:29	06:19	07:15 (4)	05:28			22:07
	17:11	19	16:39 (2)	18:10	19:01	21	07:36 (4)	20:55			05:16
27	08:30	16:20 (1)	07:32		06:27	06:17	07:15 (4)	05:27			22:07
	17:13	21	16:41 (2)	18:12	19:03	21	07:36 (4)	20:57			05:17
28	08:28	16:21 (1)	07:29		06:24	06:14	07:14 (4)	05:26			22:07
	17:15	23	16:44 (2)	18:14	19:05	20	07:34 (4)	20:59	7	06:55 (5)	21:47
29	08:27	16:21 (1)			07:22	06:12	08:15 (4)	05:24			21:47
	17:17	24	16:45 (2)		20:06	19	08:34 (4)	21:01	12	07:04 (5)	21:48
30	08:25	16:21 (1)			07:20	06:10	08:16 (4)	05:23			22:06
	17:19	26	16:47 (2)		20:08	17	08:33 (4)	21:02	14	07:05 (5)	21:49
31	08:24	16:22 (1)			07:17	06:09	08:16 (4)	05:23			22:06
	17:21	28	16:50 (2)		20:10	14	08:30 (4)	21:50			05:18
Potential sun hours	256		276		367		418		489		503
Total, worst case		264		190		209		158		237	
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.		0.62		0.63		0.68		0.67		0.66	
Total reduction		0.10		0.13		0.17		0.24		0.24	
Total, real		26		25		34		37		58	

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

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

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: AY - H51

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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

July		August		September		October		November		December	
1	05:18	05:56	07:00 (5)	06:48	07:20 (7)	07:38	07:34			08:26	
2	22:06	21:33	14 07:14 (5)	20:29	13 07:33 (7)	19:18	17:10			16:28	
3	05:19	05:58	06:59 (5)	06:49	07:21 (7)	07:40	07:36			08:28	
4	22:05	21:31	17 07:16 (5)	20:26	11 07:32 (7)	19:15	17:08			16:27	
5	05:20	05:59	06:58 (5)	06:51	07:22 (7)	07:42	07:37		16:04 (1)	08:29	
6	22:05	21:29	18 07:16 (5)	20:24	7 07:29 (7)	19:13	17:06	6	16:10 (1)	16:27	
7	05:21	06:01	06:58 (5)	06:53		07:43	07:39		16:00 (1)	08:30	
8	22:05	21:27	19 07:17 (5)	20:22		19:11	17:04	18	16:21 (2)	16:26	
9	05:21	06:02	06:57 (5)	06:54		07:45	07:41		15:58 (1)	08:32	
10	22:04	21:26	19 07:16 (5)	20:20		19:08	17:02	27	16:25 (2)	16:26	
11	05:22	06:04	06:57 (5)	06:56		07:47	07:43		15:57 (1)	08:33	
12	22:04	21:24	20 07:17 (5)	20:17		19:06	17:01	29	16:26 (2)	16:25	
13	05:23	06:06	06:57 (5)	06:58		07:49	07:45		15:56 (1)	08:34	
14	22:03	21:22	21 07:18 (5)	20:15		19:04	16:59	32	16:28 (2)	16:25	
15	05:24	06:07	06:57 (5)	06:59		07:50	07:47		15:55 (1)	08:36	15:18 (3)
16	22:02	21:20	20 07:17 (5)	20:12		19:01	16:57	31	16:26 (2)	16:24	4 15:22 (3)
17	05:25	06:09	06:57 (5)	07:01		07:52	07:48		15:54 (1)	08:37	15:17 (3)
18	22:02	21:18	20 07:17 (5)	20:10		18:59	16:55	30	16:24 (2)	16:24	8 15:25 (3)
19	05:26	06:11	06:57 (5)	07:03		07:54	07:50		15:53 (1)	08:38	15:16 (3)
20	22:01	21:16	19 07:16 (5)	20:08		18:57	16:54	29	16:22 (2)	16:24	10 15:26 (3)
21	05:27	06:12	06:58 (5)	07:04	08:11 (4)	07:56	07:52		15:53 (1)	08:39	15:16 (3)
22	22:00	21:14	18 07:16 (5)	20:05	9 08:20 (4)	18:54	16:52	28	16:21 (2)	16:24	12 15:28 (3)
23	05:28	06:14	06:58 (5)	07:06	08:09 (4)	07:57	07:54		15:53 (1)	08:40	15:15 (3)
24	21:59	21:12	16 07:14 (5)	20:03	13 08:22 (4)	18:52	16:51	26	16:19 (2)	16:23	14 15:29 (3)
25	05:29	06:16	07:00 (5)	07:08	08:07 (4)	07:59	07:56		15:53 (1)	08:41	15:15 (3)
26	21:58	21:10	13 07:13 (5)	20:01	16 08:23 (4)	18:50	16:49	24	16:17 (2)	16:23	14 15:29 (3)
27	05:31	06:17	07:00 (5)	07:09	08:05 (4)	08:01	07:58		15:53 (1)	08:42	15:15 (3)
28	21:57	21:08	11 07:11 (5)	19:58	19 08:24 (4)	18:48	16:47	23	16:16 (2)	16:23	15 15:30 (3)
29	05:32	06:19	07:04 (5)	07:11	20 08:05 (4)	08:03	07:59		15:53 (1)	08:43	15:15 (3)
30	21:56	21:06	4 07:08 (5)	19:56	20 08:25 (4)	18:45	16:46	21	16:14 (2)	16:23	16 15:31 (3)
31	05:33	06:21		07:13	21 08:03 (4)	08:04	08:01		15:53 (1)	08:44	15:16 (3)
1	21:55	21:04		19:53	21 08:24 (4)	18:43	16:45	19	16:12 (2)	16:24	16 15:32 (3)
2	05:34	06:22		07:14	21 08:03 (4)	08:06	08:03		15:53 (1)	08:45	15:16 (3)
3	21:54	21:02		19:51	21 08:24 (4)	18:41	16:43	18	16:11 (1)	16:24	17 15:33 (3)
4	05:36	06:24		07:16	21 08:03 (4)	08:08	08:05		15:54 (1)	08:46	15:16 (3)
5	21:53	21:00		19:49	21 08:24 (4)	18:39	16:42	15	16:09 (1)	16:24	17 15:33 (3)
6	05:37	06:26		07:18	21 08:03 (4)	08:10	08:07		15:54 (1)	08:46	15:16 (3)
7	21:52	20:58		19:46	20 08:23 (4)	18:37	16:40	14	16:08 (1)	16:24	18 15:34 (3)
8	05:38	06:27		07:19	19 08:03 (4)	08:12	08:08		15:55 (1)	08:47	15:17 (3)
9	21:50	20:56		19:44	19 08:22 (4)	18:34	16:39	12	16:07 (1)	16:25	18 15:35 (3)
10	05:40	06:29		07:21	17 08:04 (4)	08:13	08:10		15:56 (1)	08:48	15:17 (3)
11	21:49	20:53		19:41	17 08:21 (4)	18:32	16:38	9	16:05 (1)	16:25	18 15:35 (3)
12	05:41	06:31		07:23	18 08:04 (4)	08:15	08:12		15:56 (1)	08:48	15:18 (3)
13	21:48	20:51		19:39	15 08:19 (4)	18:30	16:37	8	16:04 (1)	16:25	18 15:36 (3)
14	05:42	06:32		07:25	11 08:06 (4)	08:17	08:13		15:56 (1)	08:49	15:18 (3)
15	21:46	20:49		19:37	11 08:17 (4)	18:28	16:36	6	16:02 (1)	16:26	18 15:36 (3)
16	05:44	06:34		07:26		08:19	08:15		15:57 (1)	08:49	15:18 (3)
17	21:45	20:47		19:34		18:26	16:34	4	16:01 (1)	16:27	18 15:36 (3)
18	05:45	06:36	07:25 (7)	07:28		07:21	08:17		15:58 (1)	08:49	15:20 (3)
19	21:44	20:45	7 07:32 (7)	19:32		17:24	16:33	2	16:00 (1)	16:27	17 15:37 (3)
20	05:47	06:37	07:23 (7)	07:30		07:23	08:18			08:50	15:20 (3)
21	21:42	20:42	10 07:33 (7)	19:30		17:22	16:32			16:28	17 15:37 (3)
22	05:48	06:39	07:22 (7)	07:31		07:24	08:20			08:50	15:21 (3)
23	21:41	20:40	12 07:34 (7)	19:27		17:20	16:31			16:29	16 15:37 (3)
24	05:50	06:41	07:21 (7)	07:33		07:26	08:22			08:50	15:21 (3)
25	21:39	20:38	14 07:35 (7)	19:25		17:18	16:31			16:29	16 15:37 (3)
26	05:51	07:05 (5)	06:43	07:20 (7)	07:35	07:28	08:23			08:50	15:22 (3)
27	21:38	4 07:09 (5)	20:36	14 07:34 (7)	19:22	17:16	16:30			16:30	15 15:37 (3)
28	05:53	07:03 (5)	06:44	07:20 (7)	07:36	07:30	08:25			08:50	15:23 (3)
29	21:36	9 07:12 (5)	20:33	14 07:34 (7)	19:20	17:14	16:29			16:31	14 15:37 (3)
30	05:55	07:01 (5)	06:46	07:19 (7)		07:32				08:50	15:24 (3)
31	21:34	12 07:13 (5)	20:31	14 07:33 (7)		17:12				16:32	14 15:38 (3)
Potential sun hours		506	456	381		330	263			240	
Total, worst case		25	334	253			431			360	
Sun reduction		0.26	0.30	0.28			0.19			0.14	
Oper. time red.		1.00	1.00	1.00			1.00			1.00	
Wind dir. red.		0.66	0.66	0.68			0.63			0.61	
Total reduction		0.18	0.20	0.19			0.12			0.08	
Total, real		4	66	48			50			30	

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: AZ - H52

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
229 231 210 320 200 640 608 691 568 658 724 1,086 671 733 661 530 8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:09	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:52	22:06	21:33	20:29	19:18	17:10	16:28
2	08:50	08:21	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:36	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:27	19:15	17:08	16:28
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:21	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:29	18:22	20:17	21:09	21:55	22:05	21:27	20:22	19:11	17:04	16:26
5	08:50	08:16	07:18	07:06	06:01	05:19	05:22	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:26	20:20	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:40	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:08	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:13	19:01	16:57	16:25
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:49	08:37
	16:44	17:38	18:31	20:26	21:18	22:00	22:02	21:18	20:10	18:59	16:56	16:24
10	08:47	08:07	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:47	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:55	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:50	17:46	18:38	20:33	21:24	22:03	21:58	21:10	20:01	18:50	16:49	16:24
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:24
15	08:44	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:50	18:42	20:36	21:28	22:04	21:56	21:06	19:56	18:46	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:05	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:54	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:35	06:22	07:15	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:46
	16:58	17:55	18:47	20:42	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:07	08:46
	16:59	17:57	18:49	20:43	21:34	22:06	21:52	20:58	19:46	18:37	16:41	16:24
20	08:39	07:47	06:43	06:32	05:36	05:14	05:38	06:27	07:20	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:35	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:14	08:10	08:48
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:42	18:32	16:38	16:25
22	08:36	07:43	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:49	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:33	07:25	08:17	08:13	08:49
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:58	20:52	21:41	22:07	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:32	06:21	05:29	05:15	05:46	06:36	07:28	08:21	08:17	08:49
	17:10	18:09	18:59	20:54	21:43	22:07	21:44	20:45	19:32	18:24	16:34	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:56	21:44	22:07	21:42	20:42	19:30	18:22	16:33	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:49	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:07	21:41	20:40	19:27	18:20	16:32	16:29
28	08:28	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:22	08:50
	17:15	18:14	19:05	20:59	21:47	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:13	05:25	05:17	05:52	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:38	20:36	19:23	18:16	16:30	16:30
30	08:25		07:20	06:11	05:24	05:18	05:53	06:44	07:37	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: BA - H53

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
229 231 210 320 200 640 608 691 568 658 724 1,086 671 733 661 530 8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:09	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:52	22:06	21:33	20:29	19:18	17:10	16:28
2	08:50	08:21	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:36	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:27	19:15	17:08	16:28
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:21	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:29	18:22	20:17	21:09	21:55	22:05	21:27	20:22	19:11	17:04	16:26
5	08:50	08:16	07:18	07:06	06:01	05:19	05:22	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:26	20:20	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:40	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:08	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:13	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	22:00	22:01	21:18	20:10	18:59	16:56	16:24
10	08:47	08:07	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:47	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:55	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:03	21:58	21:10	20:01	18:50	16:49	16:24
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:24
15	08:44	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:50	18:42	20:36	21:28	22:04	21:56	21:06	19:56	18:46	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:05	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:54	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:35	06:22	07:15	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:46
	16:58	17:55	18:47	20:42	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:07	08:46
	16:59	17:57	18:49	20:43	21:34	22:06	21:52	20:58	19:46	18:37	16:41	16:24
20	08:39	07:47	06:43	06:32	05:36	05:14	05:38	06:27	07:20	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:35	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:48
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:42	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:49	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:33	07:25	08:17	08:13	08:49
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:58	20:52	21:41	22:07	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:46	06:36	07:28	08:21	08:17	08:49
	17:10	18:09	18:59	20:54	21:43	22:07	21:44	20:45	19:32	18:24	16:34	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:56	21:44	22:07	21:42	20:42	19:30	18:22	16:33	16:28
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	17:13	18:12	19:03	20:57	21:45	22:07	21:41	20:40	19:27	18:20	16:32	16:29
28	08:28	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:22	08:50
	17:15	18:14	19:05	20:59	21:47	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:13	05:25	05:17	05:52	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:38	20:36	19:23	18:16	16:30	16:30
30	08:25		07:20	06:11	05:24	05:18	05:53	06:44	07:37	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** BB - H54**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:09	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:52	22:06	21:33	20:29	19:18	17:10	16:28
2	08:50	08:21	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:36	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:27	19:15	17:08	16:28
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:21	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:29	18:22	20:17	21:09	21:55	22:05	21:27	20:22	19:11	17:04	16:26
5	08:50	08:16	07:18	07:06	06:01	05:19	05:22	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:26	20:20	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:40	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:08	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:13	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	22:00	22:01	21:18	20:10	18:59	16:56	16:24
10	08:47	08:07	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:47	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:55	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:03	21:58	21:10	20:01	18:50	16:49	16:24
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:24
15	08:44	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:50	18:42	20:36	21:28	22:04	21:56	21:06	19:56	18:46	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:54	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:35	06:22	07:15	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:46
	16:58	17:55	18:47	20:42	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:07	08:46
	16:59	17:57	18:49	20:43	21:34	22:06	21:52	20:58	19:46	18:37	16:41	16:24
20	08:39	07:47	06:43	06:32	05:36	05:14	05:38	06:27	07:20	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:35	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:42	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:49	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:33	07:25	08:17	08:13	08:49
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:58	20:52	21:41	22:07	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:46	06:36	07:28	08:21	08:17	08:49
	17:10	18:09	18:59	20:54	21:43	22:07	21:44	20:45	19:32	18:24	16:34	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:56	21:44	22:07	21:42	20:42	19:30	18:22	16:33	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:49	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:07	21:41	20:40	19:27	18:20	16:32	16:29
28	08:28	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:22	08:50
	17:15	18:14	19:05	20:59	21:47	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:13	05:25	05:17	05:52	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:38	20:36	19:23	18:16	16:30	16:30
30	08:25		07:20	06:11	05:24	05:18	05:53	06:44	07:37	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: BC - H55

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
229 231 210 320 200 640 608 691 568 658 724 1,086 671 733 661 530 8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:33	20:29	19:18	17:10	16:28
2	08:50	08:21	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:35	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:26	19:15	17:08	16:28
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:06	06:01	05:19	05:21	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:26	20:20	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:40	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:07	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	22:00	22:01	21:18	20:10	18:59	16:56	16:24
10	08:47	08:06	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:47	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:03	21:58	21:10	20:01	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:23
15	08:43	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:50	18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:45	16:24
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	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:58	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:49	20:43	21:34	22:05	21:52	20:58	19:46	18:37	16:41	16:24
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	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:34	16:39	16:25
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	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:42	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:32	07:25	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:57	20:52	21:41	22:07	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:46	06:36	07:28	08:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:43	22:07	21:44	20:45	19:32	18:24	16:34	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:55	21:44	22:07	21:42	20:42	19:30	18:22	16:33	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:48	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:41	20:40	19:27	18:20	16:32	16:29
28	08:28	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:22	08:50
	17:15	18:14	19:05	20:59	21:47	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:13	05:25	05:17	05:52	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:36	19:22	18:16	16:30	16:30
30	08:25		07:20	06:10	05:24	05:18	05:53	06:44	07:36	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: BD - H56

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
229 231 210 320 200 640 608 691 568 658 724 1,086 671 733 661 530 8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:09	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:52	22:06	21:33	20:29	19:18	17:10	16:28
2	08:50	08:21	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:36	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:27	19:15	17:08	16:28
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:21	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:29	18:22	20:17	21:09	21:55	22:05	21:27	20:22	19:11	17:04	16:26
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	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:26	20:20	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:40	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:08	06:59	07:50	07:47	08:36
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9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:49	08:37
	16:44	17:38	18:31	20:26	21:18	22:00	22:02	21:18	20:10	18:59	16:56	16:24
10	08:47	08:07	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:47	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:55	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
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	16:50	17:46	18:38	20:33	21:24	22:03	21:58	21:10	20:01	18:50	16:49	16:24
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
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	16:53	17:50	18:42	20:36	21:28	22:04	21:56	21:06	19:56	18:46	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:05	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:54	18:43	16:45	16:24
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18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:46
	16:58	17:55	18:47	20:42	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
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	16:59	17:57	18:49	20:43	21:34	22:06	21:52	20:58	19:46	18:37	16:41	16:24
20	08:39	07:47	06:43	06:32	05:36	05:14	05:38	06:27	07:20	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:35	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:14	08:10	08:48
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:42	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:49	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:33	07:25	08:17	08:13	08:49
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:58	20:52	21:41	22:07	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:32	06:21	05:29	05:15	05:46	06:36	07:28	08:21	08:17	08:49
	17:10	18:09	18:59	20:54	21:43	22:07	21:44	20:45	19:32	18:24	16:34	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:56	21:44	22:07	21:42	20:42	19:30	18:22	16:33	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:49	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:07	21:41	20:40	19:27	18:20	16:32	16:29
28	08:28	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:22	08:50
	17:15	18:14	19:05	20:59	21:47	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:13	05:25	05:17	05:52	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:38	20:36	19:23	18:16	16:30	16:30
30	08:25		07:20	06:11	05:24	05:18	05:53	06:44	07:37	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: BE - H57

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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:09	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:33	20:29	19:18	17:10	16:28
2	08:50	08:21	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:36	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:26	19:15	17:08	16:28
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:06	06:01	05:19	05:22	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:26	20:20	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:40	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:07	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	22:00	22:01	21:18	20:10	18:59	16:56	16:24
10	08:47	08:07	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:47	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:03	21:58	21:10	20:01	18:50	16:49	16:24
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:24
15	08:43	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:50	18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:58	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:49	20:43	21:34	22:05	21:52	20:58	19:46	18:37	16:41	16:24
20	08:39	07:47	06:43	06:32	05:36	05:14	05:38	06:27	07:20	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:34	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:42	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:32	07:25	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:57	20:52	21:41	22:07	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:46	06:36	07:28	08:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:43	22:07	21:44	20:45	19:32	18:24	16:34	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:55	21:44	22:07	21:42	20:42	19:30	18:22	16:33	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:48	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:41	20:40	19:27	18:20	16:32	16:29
28	08:28	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:22	08:50
	17:15	18:14	19:05	20:59	21:47	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:13	05:25	05:17	05:52	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:36	19:22	18:16	16:30	16:30
30	08:25		07:20	06:11	05:24	05:18	05:53	06:44	07:36	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: BF - H58

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
229 231 210 320 200 640 608 691 568 658 724 1,086 671 733 661 530 8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	09:23 (1)	08:22	07:27	07:15	06:09	05:22	05:18	05:56	06:48	07:38	07:34
2	16:34	19	09:42 (1)	17:23	18:16	20:12	21:04	21:52	22:06	21:33	20:29	19:18
3	08:50	09:23 (1)	08:21	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:36
4	16:35	19	09:42 (1)	17:25	18:18	20:13	21:06	21:53	22:06	21:31	20:27	19:15
5	08:50	09:22 (1)	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37
6	16:36	20	09:42 (1)	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13
7	08:50	09:22 (1)	08:17	07:21	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39
8	16:37	21	09:43 (1)	17:28	18:22	20:17	21:09	21:55	22:05	21:27	20:22	19:11
9	08:50	09:21 (1)	08:16	07:18	07:06	06:01	05:19	05:21	06:03	06:54	07:45	07:41
10	16:38	22	09:43 (1)	17:30	18:23	20:19	21:11	21:56	22:04	21:26	20:20	19:08
11	08:49	09:21 (1)	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43
12	16:39	23	09:44 (1)	17:32	18:25	20:20	21:13	21:57	22:04	21:24	20:17	19:06
13	08:49	09:20 (1)	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45
14	16:41	24	09:44 (1)	17:34	18:27	20:22	21:15	21:58	22:03	21:22	20:15	19:04
15	08:48	09:20 (1)	08:10	07:11	06:59	05:55	05:17	05:24	06:07	06:59	07:50	07:47
16	16:42	25	09:45 (1)	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:13	19:01
17	08:48	09:19 (1)	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:49
18	16:44	26	09:45 (1)	17:38	18:31	20:26	21:18	22:00	22:02	21:18	20:10	18:59
19	08:47	09:18 (1)	08:07	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50
20	16:45	27	09:45 (1)	17:40	18:32	20:28	21:20	22:01	22:01	21:16	20:08	18:57
21	08:47	09:17 (1)	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52
22	16:46	28	09:45 (1)	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:55
23	08:46	09:17 (1)	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54
24	16:48	28	09:45 (1)	17:44	18:36	20:31	21:23	22:02	22:02	21:12	20:03	18:52
25	08:45	09:19 (1)	08:01	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59	07:56
26	16:49	27	09:46 (1)	17:46	18:38	20:33	21:25	22:03	22:03	21:10	20:01	18:50
27	08:44	09:19 (1)	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58
28	16:51	27	09:46 (1)	17:48	18:40	20:35	21:26	22:03	22:03	21:08	19:58	18:48
29	08:44	09:20 (1)	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	08:00
30	16:53	26	09:46 (1)	17:50	18:42	20:36	21:28	22:04	22:04	21:06	19:56	18:45
31	08:43	09:20 (1)	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:05	08:01
32	16:54	25	09:45 (1)	17:51	18:43	20:38	21:29	22:04	22:04	21:04	19:54	18:43
33	08:42	09:21 (1)	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:15	08:06	08:03
34	16:56	24	09:45 (1)	17:53	18:45	20:40	21:31	22:05	22:05	21:02	19:51	18:41
35	08:41	09:22 (1)	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05
36	16:57	23	09:45 (1)	17:55	18:47	20:42	21:32	22:05	22:05	21:00	19:49	18:39
37	08:40	09:23 (1)	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:07
38	16:59	22	09:45 (1)	17:57	18:49	20:43	21:34	22:06	22:06	21:02	19:46	18:37
39	08:39	09:25 (1)	07:47	06:43	06:32	05:36	05:14	05:38	06:27	07:20	08:12	08:08
40	17:01	20	09:45 (1)	17:59	18:50	20:45	21:35	22:06	22:06	21:01	19:44	18:35
41	08:38	09:25 (1)	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:14	08:10
42	17:03	18	09:43 (1)	18:01	18:52	20:47	21:37	22:06	22:06	21:49	19:42	18:32
43	08:36	09:27 (1)	07:43	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12
44	17:04	16	09:43 (1)	18:03	18:54	20:49	21:38	22:06	22:06	21:48	19:39	18:30
45	08:35	09:30 (1)	07:40	06:36	06:25	05:32	05:15	05:43	06:32	07:25	08:17	08:14
46	17:06	11	09:41 (1)	18:05	18:56	20:50	21:40	22:07	22:07	21:47	19:37	18:28
47	08:34	09:33 (1)	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15
48	17:08	4	09:37 (1)	18:07	18:58	20:52	21:41	22:07	22:07	21:45	19:34	18:26
49	08:33			07:36	06:32	06:21	05:29	05:15	05:45	06:36	07:28	08:17
50	17:10			18:08	18:59	20:54	21:43	22:07	22:07	21:44	19:32	18:24
51	08:31			07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:18
52	17:12			18:10	19:01	20:56	21:44	22:07	22:07	21:42	19:30	18:22
53	08:30			07:32	06:27	06:17	05:27	05:16	05:48	06:39	07:31	08:20
54	17:13			18:12	19:03	20:57	21:45	22:07	22:07	21:41	19:27	18:19
55	08:28			07:30	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:22
56	17:15			18:14	19:05	20:59	21:47	22:07	22:07	21:39	19:28	18:18
57	08:27				07:22	06:13	05:25	05:17	05:52	06:43	07:35	08:23
58	17:17				20:06	21:01	21:48	22:06	22:06	21:38	19:23	18:16
59	08:25				07:20	06:10	05:24	05:18	05:53	06:44	07:37	08:25
60	17:19				20:08	21:03	21:49	22:06	22:06	21:36	19:20	18:14
61	08:24				07:17	06:07	05:23	05:15	05:55	06:46	07:32	08:20
62	17:21				20:10	21:50	22:06	22:06	22:06	21:34	19:18	18:12
Potential sun hours	256		276	367	418	489	503	506	456	381	330	263
Total, worst case		525										270
Sun reduction		0.16										0.19
Oper. time red.		1.00										1.00
Wind dir. red.		0.65										0.65
Total reduction		0.10										0.12
Total, real		53										33

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	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** BG - H59**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:09	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:33	20:29	19:18	17:10	16:28
2	08:50	08:21	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:36	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:26	19:15	17:08	16:28
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:06	06:01	05:19	05:22	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:26	20:20	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:40	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:07	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	22:00	22:01	21:18	20:10	18:59	16:56	16:24
10	08:47	08:07	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:47	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:03	21:58	21:10	20:01	18:50	16:49	16:24
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:23
15	08:43	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:50	18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:58	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:49	20:43	21:34	22:05	21:52	20:58	19:46	18:37	16:41	16:24
20	08:39	07:47	06:43	06:31	05:36	05:14	05:38	06:27	07:20	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:34	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:42	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:32	07:25	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:57	20:52	21:41	22:07	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:46	06:36	07:28	08:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:43	22:07	21:44	20:45	19:32	18:24	16:34	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:55	21:44	22:07	21:42	20:42	19:30	18:22	16:33	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:48	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:41	20:40	19:27	18:20	16:32	16:29
28	08:28	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:22	08:50
	17:15	18:14	19:05	20:59	21:47	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:13	05:25	05:17	05:52	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:36	19:22	18:16	16:30	16:30
30	08:25		07:20	06:10	05:24	05:18	05:53	06:44	07:36	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: BH - 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
229 231 210 320 200 640 608 691 568 658 724 1,086 671 733 661 530 8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:09	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:33	20:29	19:18	17:10	16:28
2	08:50	08:21	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:36	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:26	19:15	17:08	16:28
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:06	06:01	05:19	05:22	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:26	20:20	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:40	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:07	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	22:00	22:01	21:18	20:10	18:59	16:56	16:24
10	08:47	08:07	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:47	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:03	21:58	21:10	20:01	18:50	16:49	16:24
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:24
15	08:43	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:50	18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:58	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:49	20:43	21:34	22:05	21:52	20:58	19:46	18:37	16:41	16:24
20	08:39	07:47	06:43	06:32	05:36	05:14	05:38	06:27	07:20	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:34	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:42	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:32	07:25	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:57	20:52	21:41	22:07	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:46	06:36	07:28	08:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:43	22:07	21:44	20:45	19:32	18:24	16:34	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:55	21:44	22:07	21:42	20:42	19:30	18:22	16:33	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:48	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:41	20:40	19:27	18:20	16:32	16:29
28	08:28	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:22	08:50
	17:15	18:14	19:05	20:59	21:47	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:13	05:25	05:17	05:52	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:36	19:22	18:16	16:30	16:30
30	08:25		07:20	06:11	05:24	05:18	05:53	06:44	07:36	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
Kathryn Feeney / kfeeney@jodireland.com
Calculated:
16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** BI - 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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50 16:34	08:22 17:23	07:27 18:16	07:15 20:12	06:08 21:04	05:22 21:51	21:06 (2) 22:06	21:18 (3) 21:33	05:56 20:29	06:48 19:18	07:38 17:10	07:34 16:28
2	08:50 16:35	08:20 17:25	07:25 18:18	07:13 20:13	06:06 21:06	05:21 21:53	21:07 (2) 22:05	21:18 (3) 21:31	05:58 20:26	06:49 19:15	07:35 17:08	08:28 16:27
3	08:50 16:36	08:19 17:27	07:23 18:20	07:10 20:15	06:05 21:08	05:20 21:54	21:09 (2) 22:05	21:18 (3) 21:29	05:59 20:24	06:51 19:13	07:42 17:06	08:29 16:27
4	08:50 16:37	08:17 17:28	07:20 18:21	07:08 20:17	06:03 21:09	05:19 21:55	21:09 (2) 22:04	21:30 (3) 21:27	06:01 20:22	06:53 19:11	07:39 17:04	08:30 16:26
5	08:49 16:38	08:15 17:30	07:18 18:23	07:05 20:19	06:01 21:11	05:18 21:56	21:10 (2) 22:04	21:19 (3) 21:25	06:03 20:19	06:54 19:08	07:41 17:02	08:32 16:26
6	08:49 16:39	08:14 17:32	07:16 18:25	07:03 20:20	05:59 21:13	05:18 21:57	21:13 (3) 22:03	21:19 (3) 21:24	06:04 20:17	06:56 19:06	07:47 17:01	08:33 16:25
7	08:49 16:41	08:12 17:34	07:14 18:27	07:01 20:22	05:57 21:14	05:17 21:58	21:13 (3) 22:03	21:19 (2) 21:22	06:06 20:15	06:58 19:04	07:49 16:59	08:34 16:25
8	08:48 16:42	08:10 17:36	07:11 18:29	06:59 20:24	05:55 21:16	05:17 21:59	21:13 (3) 22:02	21:17 (2) 21:20	06:07 20:12	06:59 19:01	07:50 16:57	08:36 16:24
9	08:48 16:43	08:08 17:38	07:09 18:31	06:56 20:26	05:53 21:18	05:16 22:00	21:14 (3) 22:01	21:15 (2) 21:18	06:09 20:10	07:01 18:59	07:52 16:56	08:37 16:24
10	08:47 16:45	08:06 17:40	07:07 18:32	06:54 20:27	05:52 21:19	05:16 22:00	21:13 (3) 22:01	21:15 (2) 21:16	06:11 20:08	07:03 18:57	07:54 16:54	08:38 16:24
11	08:47 16:46	08:05 17:42	07:04 18:34	06:52 20:29	05:50 21:21	05:15 22:01	21:14 (3) 22:00	21:14 (2) 21:14	06:12 20:05	07:04 18:54	07:56 16:52	08:39 16:24
12	08:46 16:48	08:03 17:44	07:02 18:36	06:49 20:31	05:48 21:23	05:15 22:02	21:14 (3) 21:59	21:14 (2) 21:12	06:14 20:03	07:06 18:52	07:57 16:51	08:40 16:24
13	08:45 16:49	08:01 17:46	07:00 18:38	06:47 20:33	05:46 21:24	05:15 22:02	21:14 (3) 21:58	21:14 (2) 21:10	06:16 20:01	07:08 18:50	07:59 16:49	08:41 16:23
14	08:44 16:51	07:59 17:48	06:57 18:40	06:45 20:34	05:45 21:26	05:14 22:03	21:14 (3) 21:57	21:13 (2) 21:08	06:17 19:58	07:09 18:48	08:01 16:48	08:42 16:23
15	08:43 16:53	07:57 17:49	06:55 18:41	06:43 20:36	05:43 21:28	05:14 22:04	21:14 (3) 21:56	21:13 (2) 21:06	06:19 19:56	07:11 18:45	08:03 16:46	08:43 16:23
16	08:43 16:54	07:55 17:51	06:53 18:43	06:40 20:38	05:42 21:29	05:14 22:04	21:14 (3) 21:55	21:12 (2) 21:04	06:21 19:53	07:13 18:43	08:04 16:45	08:44 16:24
17	08:42 16:56	07:53 17:53	06:50 18:45	06:38 20:40	05:40 21:31	05:14 22:05	21:15 (3) 21:54	21:12 (2) 21:02	06:22 19:51	07:14 18:41	08:06 16:43	08:45 16:24
18	08:41 16:57	07:51 17:55	06:48 18:47	06:36 20:41	05:39 21:32	05:14 22:05	21:15 (3) 21:53	21:11 (2) 21:00	06:24 19:49	07:16 18:39	08:08 16:42	08:45 16:24
19	08:40 16:59	07:49 17:57	06:46 18:49	06:34 20:43	05:37 21:34	05:14 22:05	21:15 (3) 21:52	21:12 (2) 20:58	06:26 19:46	07:18 18:37	08:10 16:41	08:46 16:24
20	08:38 17:01	07:47 17:59	06:43 18:50	06:31 20:45	05:36 21:35	05:14 22:06	21:15 (3) 21:50	21:12 (2) 20:56	06:27 19:44	07:19 18:34	08:12 16:39	08:47 16:25
21	08:37 17:03	07:45 18:01	06:41 18:52	06:29 20:47	05:34 21:37	05:14 22:06	21:16 (3) 21:49	21:11 (2) 20:53	06:29 19:41	07:21 18:32	08:13 16:38	08:47 16:25
22	08:36 17:04	07:42 18:03	06:39 18:54	06:27 20:48	05:33 21:38	05:14 22:06	21:16 (3) 21:48	21:11 (2) 20:51	06:31 19:39	07:23 18:30	08:15 16:37	08:48 16:26
23	08:35 17:06	07:40 18:05	06:36 18:56	06:25 20:50	05:32 21:40	05:15 22:06	21:16 (3) 21:46	21:12 (2) 20:49	06:32 19:37	07:25 18:28	08:17 16:36	08:48 16:26
24	08:34 17:08	07:38 18:07	06:34 18:57	06:23 20:52	05:30 21:41	05:15 22:07	21:16 (3) 21:45	21:12 (2) 20:47	06:34 19:34	07:26 18:26	08:19 16:35	08:49 16:27
25	08:32 17:10	07:36 18:08	06:31 18:59	06:21 20:54	05:29 21:42	05:15 22:07	21:17 (3) 21:44	21:12 (2) 20:45	06:36 19:32	07:28 17:24	08:17 16:33	08:49 16:27
26	08:31 17:12	07:34 18:10	06:29 19:01	06:19 20:55	05:28 21:44	05:16 22:07	21:17 (3) 21:42	21:12 (2) 20:42	06:37 19:30	07:30 17:22	08:18 16:32	08:50 16:28
27	08:30 17:13	07:32 18:12	06:27 19:03	06:17 20:57	05:27 21:45	05:16 22:06	21:17 (3) 21:41	21:13 (2) 20:40	06:39 19:27	07:31 17:20	08:20 16:31	08:50 16:29
28	08:28 17:15	07:29 18:14	06:24 19:04	06:14 20:59	05:26 21:47	05:17 22:06	21:17 (3) 21:39	21:13 (2) 20:38	06:41 19:25	07:33 17:18	08:21 16:31	08:50 16:30
29	08:27 17:17		07:22 20:06	06:12 21:01	05:25 21:48	05:17 22:06	21:18 (3) 21:37	21:13 (2) 20:36	06:43 19:22	07:35 17:16	08:23 16:30	08:50 16:30
30	08:25 17:19		07:20 20:08	06:10 21:02	05:24 21:49	05:18 22:06	21:17 (3) 21:36	21:12 (2) 20:33	06:44 19:20	07:36 17:14	08:25 16:29	08:50 16:31
31	08:24 17:21		07:17 20:10	05:23 21:50	05:23 21:50	05:19 21:57	21:16 (2) 21:34	21:12 (2) 20:31	06:46 17:12	07:37 16:32	08:26 16:32	08:50 16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
Total, worst case					93	419	232					
Sun reduction					0.37	0.30	0.26					
Oper. time red.					1.00	1.00	1.00					
Wind dir. red.					0.66	0.65	0.66					
Total reduction					0.24	0.19	0.17					
Total, real					23	82	40					

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	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: BJ - 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
229 231 210 320 200 640 608 691 568 658 724 1,086 671 733 661 530 8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:09	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:33	20:29	19:18	17:10	16:28
2	08:50	08:21	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:36	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:27	19:15	17:08	16:28
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:29	18:22	20:17	21:09	21:55	22:05	21:27	20:22	19:11	17:04	16:26
5	08:50	08:16	07:18	07:06	06:01	05:19	05:22	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:26	20:20	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:40	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:08	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:13	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	22:00	22:01	21:18	20:10	18:59	16:56	16:24
10	08:47	08:07	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
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	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:55	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:03	21:58	21:10	20:01	18:50	16:49	16:24
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:24
15	08:44	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:50	18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:46	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:54	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:35	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:46
	16:58	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:07	08:46
	16:59	17:57	18:49	20:43	21:34	22:06	21:52	20:58	19:46	18:37	16:41	16:24
20	08:39	07:47	06:43	06:32	05:36	05:14	05:38	06:27	07:20	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:35	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:42	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:49	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:33	07:25	08:17	08:13	08:49
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:58	20:52	21:41	22:07	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:46	06:36	07:28	08:21	08:17	08:49
	17:10	18:09	18:59	20:54	21:43	22:07	21:44	20:45	19:32	18:24	16:34	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:55	21:44	22:07	21:42	20:42	19:30	18:22	16:33	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:49	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:07	21:41	20:40	19:27	18:20	16:32	16:29
28	08:28	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:22	08:50
	17:15	18:14	19:05	20:59	21:47	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:13	05:25	05:17	05:52	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:38	20:36	19:23	18:16	16:30	16:30
30	08:25		07:20	06:11	05:24	05:18	05:53	06:44	07:37	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** BK - 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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:09	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:33	20:29	19:18	17:10	16:28
2	08:50	08:21	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:36	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:27	19:15	17:08	16:28
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:29	18:22	20:17	21:09	21:55	22:05	21:27	20:22	19:11	17:04	16:26
5	08:49	08:16	07:18	07:06	06:01	05:19	05:22	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:26	20:20	19:08	17:03	16:26
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	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:08	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:13	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	22:00	22:01	21:18	20:10	18:59	16:56	16:24
10	08:47	08:07	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:47	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:55	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:03	21:58	21:10	20:01	18:50	16:49	16:24
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:24
15	08:44	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:50	18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:54	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:35	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:46
	16:58	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:07	08:46
	16:59	17:57	18:49	20:43	21:34	22:06	21:52	20:58	19:46	18:37	16:41	16:24
20	08:39	07:47	06:43	06:32	05:36	05:14	05:38	06:27	07:20	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:35	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:42	18:32	16:38	16:25
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	17:04	18:03	18:54	20:49	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
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	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
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	17:08	18:07	18:58	20:52	21:41	22:07	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:46	06:36	07:28	08:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:43	22:07	21:44	20:45	19:32	18:24	16:34	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:55	21:44	22:07	21:42	20:42	19:30	18:22	16:33	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:49	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:07	21:41	20:40	19:27	18:20	16:32	16:29
28	08:28	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:22	08:50
	17:15	18:14	19:05	20:59	21:47	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:13	05:25	05:17	05:52	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:38	20:36	19:23	18:16	16:30	16:30
30	08:25		07:20	06:11	05:24	05:18	05:53	06:44	07:37	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** BL - 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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:09	05:22	05:19	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:52	22:06	21:33	20:29	19:18	17:10	16:28
2	08:50	08:21	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:36	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:27	19:15	17:08	16:28
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
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5	08:50	08:16	07:18	07:06	06:01	05:19	05:22	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:26	20:20	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:40	17:32	18:25	20:20	21:13	21:57	22:04	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:08	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:13	19:01	16:57	16:25
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:49	08:37
	16:44	17:38	18:31	20:26	21:18	22:00	22:02	21:18	20:10	18:59	16:56	16:24
10	08:47	08:07	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:33	20:27	21:20	22:00	22:01	21:16	20:08	18:57	16:54	16:24
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	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:55	16:52	16:24
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	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
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	16:50	17:46	18:38	20:33	21:24	22:03	21:58	21:10	20:01	18:50	16:49	16:24
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:35	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:24
15	08:44	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:50	18:42	20:36	21:28	22:04	21:56	21:06	19:56	18:46	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:05	08:01	08:44
	16:54	17:52	18:43	20:38	21:29	22:04	21:55	21:04	19:54	18:43	16:45	16:24
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	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
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	16:58	17:55	18:47	20:42	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:07	08:46
	16:59	17:57	18:49	20:43	21:34	22:06	21:52	20:58	19:46	18:37	16:41	16:24
20	08:39	07:47	06:43	06:32	05:36	05:14	05:38	06:28	07:20	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:35	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:14	08:10	08:48
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:42	18:32	16:38	16:25
22	08:36	07:43	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:49	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:33	07:25	08:17	08:13	08:49
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:58	20:52	21:41	22:07	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:32	06:21	05:29	05:15	05:46	06:36	07:28	08:21	08:17	08:49
	17:10	18:09	18:59	20:54	21:43	22:07	21:44	20:45	19:32	18:24	16:34	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:56	21:44	22:07	21:42	20:42	19:30	18:22	16:33	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:49	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:07	21:41	20:40	19:27	18:20	16:32	16:29
28	08:28	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:22	08:50
	17:15	18:14	19:05	20:59	21:47	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:13	05:25	05:17	05:52	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:38	20:36	19:23	18:16	16:30	16:31
30	08:25		07:20	06:11	05:24	05:18	05:53	06:44	07:37	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** BM - H65**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:09	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:33	20:29	19:18	17:10	16:28
2	08:50	08:21	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:36	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:27	19:15	17:08	16:28
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:29	18:22	20:17	21:09	21:55	22:05	21:27	20:22	19:11	17:04	16:26
5	08:49	08:16	07:18	07:06	06:01	05:19	05:22	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:26	20:20	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
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	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:08	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:13	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	22:00	22:01	21:18	20:10	18:59	16:56	16:24
10	08:47	08:07	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:47	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:55	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:03	21:58	21:10	20:01	18:50	16:49	16:24
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:24
15	08:44	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:50	18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:54	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:35	06:22	07:14	08:06	08:03	08:45
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18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:46
	16:58	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:07	08:46
	16:59	17:57	18:49	20:43	21:34	22:06	21:52	20:58	19:46	18:37	16:41	16:24
20	08:39	07:47	06:43	06:32	05:36	05:14	05:38	06:27	07:20	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:35	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:42	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:33	07:25	08:17	08:13	08:49
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:57	20:52	21:41	22:07	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:46	06:36	07:28	08:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:43	22:07	21:44	20:45	19:32	18:24	16:34	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:55	21:44	22:07	21:42	20:42	19:30	18:22	16:33	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:49	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:07	21:41	20:40	19:27	18:20	16:32	16:29
28	08:28	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:22	08:50
	17:15	18:14	19:05	20:59	21:47	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:13	05:25	05:17	05:52	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:38	20:36	19:23	18:16	16:30	16:30
30	08:25		07:20	06:11	05:24	05:18	05:53	06:44	07:37	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: BN - H66

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
229 231 210 320 200 640 608 691 568 658 724 1,086 671 733 661 530 8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:09	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:33	20:29	19:18	17:10	16:28
2	08:50	08:21	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:36	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:26	19:15	17:08	16:28
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:06	06:01	05:19	05:22	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:26	20:20	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:40	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:08	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	22:00	22:01	21:18	20:10	18:59	16:56	16:24
10	08:47	08:07	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:47	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:55	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:03	21:58	21:10	20:01	18:50	16:49	16:24
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:24
15	08:43	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:50	18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:58	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:49	20:43	21:34	22:05	21:52	20:58	19:46	18:37	16:41	16:24
20	08:39	07:47	06:43	06:32	05:36	05:14	05:38	06:27	07:20	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:34	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:42	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:32	07:25	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:57	20:52	21:41	22:07	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:46	06:36	07:28	08:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:43	22:07	21:44	20:45	19:32	18:24	16:34	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:55	21:44	22:07	21:42	20:42	19:30	18:22	16:33	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:48	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:41	20:40	19:27	18:20	16:32	16:29
28	08:28	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:22	08:50
	17:15	18:14	19:05	20:59	21:47	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:13	05:25	05:17	05:52	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:36	19:22	18:16	16:30	16:30
30	08:25		07:20	06:11	05:24	05:18	05:53	06:44	07:36	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: BO - 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
229 231 210 320 200 640 608 691 568 658 724 1,086 671 733 661 530 8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:09	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:33	20:29	19:18	17:10	16:28
2	08:50	08:21	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:36	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:27	19:15	17:08	16:28
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:05	21:27	20:22	19:11	17:04	16:26
5	08:49	08:16	07:18	07:06	06:01	05:19	05:22	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:26	20:20	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:40	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:08	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:13	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	22:00	22:01	21:18	20:10	18:59	16:56	16:24
10	08:47	08:07	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:47	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:55	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:03	21:58	21:10	20:01	18:50	16:49	16:24
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:24
15	08:43	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:50	18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:54	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:35	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:46
	16:58	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:07	08:46
	16:59	17:57	18:49	20:43	21:34	22:06	21:52	20:58	19:46	18:37	16:41	16:24
20	08:39	07:47	06:43	06:32	05:36	05:14	05:38	06:27	07:20	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:35	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:42	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:33	07:25	08:17	08:13	08:49
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:57	20:52	21:41	22:07	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:46	06:36	07:28	08:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:43	22:07	21:44	20:45	19:32	18:24	16:34	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:55	21:44	22:07	21:42	20:42	19:30	18:22	16:33	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:49	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:07	21:41	20:40	19:27	18:20	16:32	16:29
28	08:28	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:22	08:50
	17:15	18:14	19:05	20:59	21:47	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:13	05:25	05:17	05:52	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:38	20:36	19:22	18:16	16:30	16:30
30	08:25		07:20	06:11	05:24	05:18	05:53	06:44	07:37	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** BP - 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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:09	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:33	20:29	19:18	17:10	16:28
2	08:50	08:21	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:36	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:27	19:15	17:08	16:28
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:06	06:01	05:19	05:22	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:26	20:20	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:40	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:08	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	22:00	22:01	21:18	20:10	18:59	16:56	16:24
10	08:47	08:07	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:47	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:55	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:03	21:58	21:10	20:01	18:50	16:49	16:24
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:24
15	08:43	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:50	18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:58	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:49	20:43	21:34	22:05	21:52	20:58	19:46	18:37	16:41	16:24
20	08:39	07:47	06:43	06:32	05:36	05:14	05:38	06:27	07:20	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:34	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:42	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:32	07:25	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:57	20:52	21:41	22:07	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:46	06:36	07:28	08:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:43	22:07	21:44	20:45	19:32	18:24	16:34	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:55	21:44	22:07	21:42	20:42	19:30	18:22	16:33	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:49	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:41	20:40	19:27	18:20	16:32	16:29
28	08:28	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:22	08:50
	17:15	18:14	19:05	20:59	21:47	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:13	05:25	05:17	05:52	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:36	19:22	18:16	16:30	16:30
30	08:25		07:20	06:11	05:24	05:18	05:53	06:44	07:36	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: BQ - 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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:09	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:33	20:29	19:18	17:10	16:28
2	08:50	08:21	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:36	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:27	19:15	17:08	16:28
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:06	06:01	05:19	05:22	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:26	20:20	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:40	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:08	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	22:00	22:01	21:18	20:10	18:59	16:56	16:24
10	08:47	08:07	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:47	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:55	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:03	21:58	21:10	20:01	18:50	16:49	16:24
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:24
15	08:43	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:50	18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:58	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:49	20:43	21:34	22:05	21:52	20:58	19:46	18:37	16:41	16:24
20	08:39	07:47	06:43	06:32	05:36	05:14	05:38	06:27	07:20	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:34	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:42	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:33	07:25	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:57	20:52	21:41	22:07	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:46	06:36	07:28	08:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:43	22:07	21:44	20:45	19:32	18:24	16:34	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:55	21:44	22:07	21:42	20:42	19:30	18:22	16:33	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:49	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:41	20:40	19:27	18:20	16:32	16:29
28	08:28	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:22	08:50
	17:15	18:14	19:05	20:59	21:47	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:13	05:25	05:17	05:52	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:36	19:22	18:16	16:30	16:30
30	08:25		07:20	06:11	05:24	05:18	05:53	06:44	07:36	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
Kathryn Feeney / kfeeney@jodireland.com
Calculated:
16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: BS - 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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50 16:34	08:22 17:23	07:27 18:16	07:15 20:12	06:08 21:04	05:22 21:51	21:11 (2) 22:06	21:22 (2) 21:33	06:48 20:29	07:38 19:18	07:34 17:10	08:26 16:28
2	08:50 16:35	08:20 17:25	07:25 18:18	07:13 20:13	06:06 21:06	05:21 21:53	21:11 (2) 22:05	21:22 (2) 21:31	06:49 20:26	07:40 19:15	07:35 17:08	08:28 16:27
3	08:50 16:36	08:19 17:27	07:23 18:20	07:10 20:15	06:05 21:08	05:20 21:54	21:13 (2) 22:05	21:21 (2) 21:29	06:51 20:24	07:42 19:13	07:37 17:06	08:29 16:27
4	08:50 16:37	08:17 17:28	07:20 18:21	07:08 20:17	06:03 21:09	05:19 21:55	21:13 (2) 22:04	21:21 (2) 21:27	06:53 20:22	07:43 19:11	07:39 17:04	08:30 16:26
5	08:49 16:38	08:15 17:30	07:18 18:23	07:05 20:19	06:01 21:11	05:18 21:56	21:13 (2) 22:04	21:21 (2) 21:25	06:54 20:19	07:45 19:08	07:41 17:02	08:32 16:26
6	08:49 16:39	08:14 17:32	07:16 18:25	07:03 20:20	05:59 21:13	05:18 21:57	21:14 (2) 22:03	21:21 (2) 21:24	06:56 20:17	07:47 19:06	07:43 17:01	08:33 16:25
7	08:49 16:41	08:12 17:34	07:14 18:27	07:01 20:22	05:57 21:14	05:17 21:58	21:14 (2) 22:03	21:20 (2) 21:22	06:58 20:15	07:49 19:04	07:45 16:59	08:34 16:25
8	08:48 16:42	08:10 17:36	07:11 18:29	06:59 20:24	05:55 21:16	05:17 21:59	21:15 (2) 22:02	21:20 (2) 21:20	06:59 20:12	07:50 19:01	07:47 16:57	08:36 16:24
9	08:48 16:44	08:08 17:38	07:09 18:31	06:56 20:26	05:53 21:18	05:16 22:00	21:16 (2) 22:01	21:19 (2) 21:18	07:01 20:10	07:52 18:59	07:48 16:56	08:37 16:24
10	08:47 16:45	08:06 17:40	07:07 18:32	06:54 20:27	05:52 21:19	05:16 22:00	21:16 (2) 22:01	21:19 (2) 21:16	07:03 20:08	07:54 18:57	07:50 16:54	08:38 16:24
11	08:47 16:46	08:05 17:42	07:04 18:34	06:52 20:29	05:50 21:21	05:15 22:01	21:17 (2) 22:00	21:19 (2) 21:14	07:04 20:05	07:56 18:54	07:52 16:52	08:39 16:24
12	08:46 16:48	08:03 17:44	07:02 18:36	06:49 20:31	05:48 21:23	05:15 22:02	21:18 (2) 21:59	21:20 (2) 21:12	07:06 20:03	07:57 18:52	07:54 16:51	08:40 16:24
13	08:45 16:49	08:01 17:46	07:00 18:38	06:47 20:33	05:46 21:24	05:15 22:02	21:18 (2) 21:58	21:20 (2) 21:10	07:08 20:01	07:59 18:50	07:56 16:49	08:41 16:23
14	08:44 16:51	07:59 17:48	06:57 18:40	06:45 20:34	05:45 21:26	05:14 22:03	21:19 (2) 21:57	21:21 (2) 21:08	07:09 19:58	08:01 18:48	07:58 16:48	08:42 16:23
15	08:43 16:53	07:57 17:49	06:55 18:41	06:43 20:36	05:43 21:28	05:14 22:04	21:20 (2) 21:56	21:19 (2) 21:06	07:11 19:56	08:03 18:45	07:59 16:46	08:43 16:23
16	08:43 16:54	07:55 17:51	06:53 18:43	06:40 20:38	05:42 21:29	05:14 22:04	21:21 (2) 21:55	21:19 (2) 21:04	07:13 19:53	08:04 18:43	08:01 16:45	08:44 16:24
17	08:42 16:56	07:53 17:53	06:50 18:45	06:38 20:40	05:40 21:31	05:14 22:05	21:22 (2) 21:54	21:19 (2) 21:02	07:14 19:51	08:06 18:41	08:03 16:43	08:45 16:24
18	08:41 16:57	07:51 17:55	06:48 18:47	06:36 20:41	05:39 21:32	05:14 22:05	21:23 (2) 21:53	21:19 (2) 21:00	07:16 19:49	08:08 18:39	08:05 16:42	08:45 16:24
19	08:40 16:59	07:49 17:57	06:46 18:49	06:34 20:43	05:37 21:34	05:14 22:05	21:26 (3) 21:52	21:20 (2) 20:58	07:18 19:46	08:10 18:37	08:06 16:41	08:46 16:24
20	08:38 17:01	07:47 17:59	06:43 18:50	06:31 20:45	05:36 21:35	05:14 22:06	21:27 (3) 21:50	21:21 (2) 20:56	07:19 19:44	08:12 18:34	08:08 16:39	08:47 16:25
21	08:37 17:03	07:45 18:01	06:41 18:52	06:29 20:47	05:34 21:37	05:14 22:06	21:28 (3) 21:49	21:22 (2) 20:53	07:21 19:41	08:13 18:32	08:10 16:38	08:47 16:25
22	08:36 17:04	07:42 18:03	06:39 18:54	06:27 20:48	05:33 21:38	05:14 22:06	21:28 (3) 21:48	21:23 (2) 20:51	07:23 19:39	08:15 18:30	08:12 16:37	08:48 16:26
23	08:35 17:06	07:40 18:05	06:36 18:56	06:25 20:50	05:32 21:40	05:15 22:06	21:28 (3) 21:46	21:24 (2) 20:49	07:25 19:37	08:17 18:28	08:13 16:36	08:48 16:26
24	08:34 17:08	07:38 18:07	06:34 18:57	06:23 20:52	05:30 21:41	05:15 22:06	21:24 (2) 21:45	21:23 (2) 20:47	07:26 19:34	08:19 18:26	08:15 16:35	08:49 16:27
25	08:32 17:10	07:36 18:08	06:31 18:59	06:21 20:54	05:29 21:42	05:15 22:07	21:24 (2) 21:44	21:22 (2) 20:45	07:28 19:32	08:21 17:24	08:17 16:33	08:49 16:27
26	08:31 17:12	07:34 18:10	06:29 19:01	06:19 20:55	05:28 21:44	05:16 22:07	21:23 (2) 21:42	21:21 (2) 20:42	07:30 19:30	08:23 17:22	08:18 16:32	08:50 16:28
27	08:30 17:13	07:32 18:12	06:27 19:03	06:17 20:57	05:27 21:45	05:16 22:06	21:23 (2) 21:41	21:20 (2) 20:40	07:31 19:27	08:24 17:20	08:20 16:31	08:50 16:29
28	08:28 17:15	07:29 18:14	06:24 19:04	06:14 20:59	05:17 21:47	05:17 22:06	21:22 (2) 21:39	21:19 (2) 20:38	07:33 19:25	08:26 17:18	08:21 16:31	08:50 16:30
29	08:27 17:17	07:22 18:06	06:12 19:01	05:25 21:01	05:17 21:48	05:17 22:06	21:23 (2) 21:37	21:20 (2) 20:36	07:35 19:22	08:28 17:16	08:23 16:30	08:50 16:30
30	08:25 17:19	07:20 18:08	06:10 19:02	05:24 21:02	05:18 21:49	05:18 22:06	21:22 (2) 21:36	21:21 (2) 20:33	07:36 19:20	08:30 17:14	08:25 16:29	08:50 16:31
31	08:24 17:21	07:17 18:10	06:08 19:10	05:23 21:50	05:23 21:50	05:23 21:50	21:21 (2) 21:34	21:20 (2) 20:31	07:37 17:12	08:31 16:32	08:26 16:32	08:50 16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
Total, worst case					24	240	121					
Sun reduction					0.37	0.30	0.26					
Oper. time red.					1.00	1.00	1.00					
Wind dir. red.					0.65	0.65	0.65					
Total reduction					0.24	0.19	0.17					
Total, real					6	47	21					

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

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

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: BT - 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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:51 (1)	07:15	06:09	05:22	05:18	05:56	06:48	07:38	08:26
2	16:34	17:23	18:16	3 07:54 (1)	20:12	21:04	21:52	22:06	21:33	20:29	19:18	16:28
3	08:50	08:21	07:25	07:49 (1)	07:13	06:07	05:21	05:19	05:58	06:49	07:40	08:28
4	16:35	17:25	18:18	6 07:55 (1)	20:13	21:06	21:53	22:06	21:31	20:27	19:15	16:28
5	08:50	08:19	07:23	07:47 (1)	07:10	06:05	05:20	05:20	05:59	06:51	07:42	08:29
6	16:36	17:27	18:20	9 07:56 (1)	20:15	21:08	21:54	22:05	21:29	20:24	19:13	16:27
7	08:50	08:17	07:21	07:44 (1)	07:08	06:03	05:19	05:21	06:01	06:53	07:43	08:31
8	16:37	17:29	18:22	11 07:55 (1)	20:17	21:09	21:55	22:05	21:27	20:22	19:11	16:26
9	08:50	08:16	07:18	07:42 (1)	07:06	06:01	05:19	05:22	06:03	06:54	07:45	08:32
10	16:38	17:30	2 08:44 (2)	18:23	13 07:55 (1)	20:19	21:11	21:56	22:04	21:26	20:20	16:26
11	08:49	08:14	07:16	07:40 (1)	07:03	05:59	05:18	05:22	06:04	06:56	07:47	08:33
12	16:40	17:32	5 08:45 (2)	18:25	15 07:55 (1)	20:21	21:13	21:57	22:04	21:24	20:17	16:25
13	08:49	08:12	07:14	07:37 (1)	07:01	05:57	05:17	05:23	06:06	06:58	07:49	08:35
14	16:41	17:34	8 08:46 (2)	18:27	16 07:53 (1)	20:22	21:15	21:58	22:03	21:22	20:15	16:25
15	08:48	08:10	07:11	07:36 (1)	06:59	05:55	05:17	05:24	06:08	06:59	07:50	08:36
16	16:42	17:36	11 08:47 (2)	18:29	16 07:52 (1)	20:24	21:16	21:59	22:02	21:20	20:13	16:24
17	08:48	08:09	07:09	07:37 (1)	06:56	05:53	05:16	05:25	06:09	07:01	07:52	08:37
18	16:44	17:38	14 08:48 (2)	18:31	14 07:51 (1)	20:26	21:18	22:00	22:02	21:18	20:10	16:24
19	08:47	08:07	07:07	07:38 (1)	06:54	05:52	05:16	05:26	06:11	07:03	07:54	08:38
20	16:45	17:40	16 08:48 (2)	18:33	10 07:48 (1)	20:28	21:20	22:01	22:01	21:16	20:08	16:24
21	08:47	08:05	07:05	06:52	05:50	05:15	05:27	06:12	07:04	07:56	08:47	08:39
22	16:46	17:42	18 08:48 (2)	18:34	20:29	21:21	22:01	22:00	21:14	20:06	18:55	16:24
23	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	08:48	08:40
24	16:48	17:44	20 08:48 (2)	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:24
25	08:45	08:01	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59	08:50	08:41
26	16:49	17:46	22 08:48 (2)	18:38	20:33	21:25	22:03	21:58	21:10	20:01	18:50	16:24
27	08:44	07:59	06:58	06:45	05:45	05:14	05:31	06:17	07:10	08:01	08:51	08:42
28	16:51	17:48	24 08:48 (2)	18:40	20:35	21:26	22:03	21:57	21:08	19:58	18:48	16:24
29	08:44	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	08:52	08:43
30	16:53	17:50	26 08:48 (2)	18:42	20:36	21:28	22:04	21:56	21:06	19:56	18:46	16:24
31	08:43	07:55	06:53	06:40	05:40	05:14	05:33	06:21	07:13	08:05	08:54	08:44
32	16:54	17:52	27 08:47 (2)	18:43	20:38	21:29	22:04	21:55	21:04	19:54	18:43	16:24
33	08:42	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:15	08:06	08:55	08:45
34	16:56	17:53	29 08:47 (2)	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:24
35	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:56	08:46
36	16:58	17:55	27 08:46 (2)	18:47	20:42	21:32	22:05	21:53	21:00	19:49	18:39	16:24
37	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:57	08:46
38	16:59	17:57	24 08:44 (2)	18:49	20:43	21:34	22:06	21:52	20:58	19:46	18:37	16:24
39	08:39	07:47	06:43	06:32	05:36	05:14	05:38	06:28	07:20	08:12	08:58	08:47
40	17:01	17:59	14 08:42 (2)	18:50	20:45	21:35	22:06	21:51	20:56	19:44	18:35	16:25
41	08:38	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:14	09:00 (2)	08:48
42	17:03	18:01	7 08:38 (2)	18:52	20:47	21:37	22:06	21:49	20:54	19:42	18:32	16:25
43	08:36	07:43	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	09:02 (3)	08:48
44	17:04	18:03	18:54	20:49	21:38	22:06	21:48	20:51	19:39	18:30	20 09:13 (2)	16:26
45	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:33	07:25	08:17	09:04 (3)	08:49
46	17:06	18:05	18:56	20:50	21:40	22:07	21:47	20:49	19:37	18:28	25 09:14 (2)	16:26
47	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	09:04 (3)	08:49
48	17:08	18:07	18:58	20:52	21:41	22:07	21:45	20:47	19:34	18:26	27 09:15 (2)	16:27
49	08:33	07:36	06:32	06:21	05:29	05:15	05:46	06:36	07:28	08:21	09:04 (3)	08:49
50	17:10	18:09	18:59	20:54	21:43	22:07	21:44	20:45	19:32	18:24	28 08:16 (2)	16:27
51	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	09:05 (3)	08:50
52	17:12	18:10	19:01	20:56	21:44	22:07	21:42	20:43	19:30	18:22	27 08:17 (2)	16:28
53	08:30	07:32	06:27	06:17	05:27	05:16	05:49	06:39	07:31	08:25	09:06 (3)	08:50
54	17:13	18:12	19:03	20:57	21:45	22:07	21:41	20:40	19:27	18:20	25 08:17 (2)	16:29
55	08:28	07:30	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	09:07 (3)	08:50
56	17:15	18:14	19:05	20:59	21:47	22:07	21:39	20:38	19:25	18:18	24 08:18 (2)	16:30
57	08:27	07:22	06:13	06:03	05:25	05:17	05:52	06:43	07:35	08:28	09:08 (3)	08:50
58	17:17	18:16	19:06	21:01	21:48	22:06	21:38	20:36	19:23	18:16	22 08:18 (2)	16:30
59	08:25	07:20	06:11	06:01	05:24	05:18	05:53	06:44	07:37	08:30	09:09 (3)	08:50
60	17:19	18:18	19:08	21:03	21:49	22:06	21:36	20:34	19:20	18:14	20 08:18 (2)	16:31
61	08:24	07:17	06:10	06:00	05:23	05:17	05:55	06:46	07:39	08:32	09:10 (3)	08:50
62	17:21	18:20	19:10	21:05	21:50	22:07	21:34	20:31	19:17	18:12	18 08:18 (2)	16:32
63	Potential sun hours	256	276	367	418	489	503	506	456	381	330	263
64	Total, worst case		294	113							364	54
65	Sun reduction		0.21	0.24							0.24	0.19
66	Oper. time red.		1.00	1.00							1.00	1.00
67	Wind dir. red.		0.67	0.67							0.67	0.67
68	Total reduction		0.14	0.16							0.16	0.12
69	Total, real		41	19							58	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	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** BV - 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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:09	05:22	05:19	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:52	22:06	21:33	20:29	19:18	17:10	16:28
2	08:50	08:21	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:36	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:27	19:15	17:08	16:28
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:21	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:29	18:22	20:17	21:09	21:55	22:05	21:27	20:22	19:11	17:04	16:26
5	08:50	08:16	07:18	07:06	06:01	05:19	05:22	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:26	20:20	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:40	17:32	18:25	20:20	21:13	21:57	22:04	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:08	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:13	19:01	16:57	16:25
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:49	08:37
	16:44	17:38	18:31	20:26	21:18	22:00	22:02	21:18	20:10	18:59	16:56	16:24
10	08:47	08:07	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:33	20:27	21:20	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:47	08:05	07:04	06:52	05:50	05:15	05:27	06:13	07:04	07:56	07:52	08:39
	16:47	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:55	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:29	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:50	17:46	18:38	20:33	21:24	22:03	21:58	21:10	20:01	18:50	16:49	16:24
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:10	08:01	07:58	08:42
	16:51	17:48	18:40	20:35	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:24
15	08:44	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:50	18:42	20:36	21:28	22:04	21:56	21:06	19:56	18:46	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:05	08:01	08:44
	16:54	17:52	18:43	20:38	21:29	22:04	21:55	21:04	19:54	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:35	06:22	07:15	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:46
	16:58	17:55	18:47	20:42	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:07	08:46
	16:59	17:57	18:49	20:43	21:34	22:06	21:52	20:58	19:46	18:37	16:41	16:24
20	08:39	07:47	06:43	06:32	05:36	05:14	05:38	06:28	07:20	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:35	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:14	08:10	08:48
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:54	19:42	18:32	16:38	16:25
22	08:36	07:43	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:49	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:33	07:25	08:17	08:13	08:49
	17:06	18:05	18:56	20:50	21:40	22:07	21:47	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:58	20:52	21:41	22:07	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:32	06:21	05:29	05:15	05:46	06:36	07:28	08:21	08:17	08:49
	17:10	18:09	18:59	20:54	21:43	22:07	21:44	20:45	19:32	18:24	16:34	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:56	21:44	22:07	21:42	20:43	19:30	18:22	16:33	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:49	06:39	07:31	08:24	08:20	08:50
	17:14	18:12	19:03	20:57	21:45	22:07	21:41	20:40	19:27	18:20	16:32	16:29
28	08:28	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:22	08:50
	17:15	18:14	19:05	20:59	21:47	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:13	05:25	05:17	05:52	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:38	20:36	19:23	18:16	16:30	16:31
30	08:25		07:20	06:11	05:24	05:18	05:53	06:44	07:37	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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

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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: BW - 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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50 16:34	08:22 17:23	07:27 18:16	07:15 20:12	06:09 21:04	05:22 21:52	05:19 22:06	05:56 21:33	06:26 (3) 20:29	06:48 19:18	07:38 17:10	07:34 16:28
2	08:50 16:35	08:21 17:25	07:25 18:18	07:13 20:13	06:07 21:06	05:21 21:53	05:19 22:05	05:58 21:31	06:27 (3) 20:27	06:49 19:15	07:36 17:08	08:28 16:28
3	08:50 16:36	08:19 17:27	07:23 18:20	07:10 20:15	06:05 21:08	05:20 21:54	05:20 22:05	05:59 21:29	06:29 (3) 20:24	06:51 19:13	07:37 17:06	08:29 16:27
4	08:50 16:37	08:17 17:29	07:21 18:22	07:08 20:17	06:03 21:09	05:19 21:55	05:21 22:05	06:01 21:27	06:30 (3) 20:22	06:53 19:11	07:39 17:04	08:30 16:26
5	08:50 16:38	08:16 17:30	07:18 18:23	07:06 20:19	06:01 21:11	05:19 21:56	05:22 22:04	06:03 21:26	06:54 20:20	07:45 19:08	07:41 17:03	08:32 16:26
6	08:49 16:40	08:14 17:32	07:16 18:25	07:03 20:20	05:59 21:13	05:18 21:57	05:22 22:04	06:04 21:24	06:56 20:17	07:47 19:06	07:43 17:01	08:33 16:25
7	08:49 16:41	08:12 17:34	07:14 18:27	07:01 20:22	05:57 21:15	05:17 21:58	05:23 22:03	06:06 21:22	06:58 20:15	07:49 19:04	07:45 16:59	08:34 16:25
8	08:48 16:42	08:10 17:36	07:11 18:29	07:00 20:24	05:55 21:16	05:17 21:59	05:24 22:02	06:08 21:20	06:59 20:13	07:50 19:01	07:47 16:57	08:36 16:25
9	08:48 16:44	08:08 17:38	07:09 18:31	07:00 20:26	05:53 21:18	05:16 22:00	05:25 22:02	06:09 21:18	07:01 20:10	07:52 18:59	07:49 16:56	08:37 16:24
10	08:47 16:45	08:07 17:40	07:07 18:33	06:54 20:28	05:52 21:20	05:16 22:00	05:26 22:01	06:11 21:16	07:03 20:08	07:54 18:57	07:50 16:54	08:38 16:24
11	08:47 16:47	08:05 17:42	07:04 18:34	06:52 20:29	05:50 21:21	05:15 22:01	05:27 22:00	06:13 21:14	07:04 20:05	07:56 18:55	07:52 16:52	08:39 16:24
12	08:46 16:48	08:03 17:44	07:02 18:36	06:49 20:31	05:48 21:23	05:15 22:02	05:29 21:59	06:14 21:12	07:06 20:03	07:57 18:52	07:54 16:51	08:40 16:24
13	08:45 16:50	08:01 17:46	07:00 18:38	06:47 20:33	05:47 21:24	05:15 22:03	05:30 21:58	06:16 21:10	07:08 20:01	07:59 18:50	07:56 16:49	08:41 16:24
14	08:44 16:51	07:59 17:48	06:58 18:40	06:45 20:35	05:45 21:26	05:15 22:03	05:31 21:57	06:17 (3) 21:08	07:10 19:58	08:01 18:48	07:58 16:48	08:42 16:24
15	08:44 16:53	07:57 17:50	06:55 18:42	06:43 20:36	05:43 21:28	05:14 22:04	05:32 21:56	06:15 (3) 21:06	07:11 19:56	08:03 18:46	07:59 16:46	08:43 16:24
16	08:43 16:54	07:55 17:52	06:53 18:43	06:40 20:38	05:42 21:29	05:14 22:04	05:33 21:55	06:13 (3) 21:04	07:13 19:54	08:05 18:43	08:01 16:45	08:44 16:24
17	08:42 16:56	07:53 17:53	06:50 18:45	06:38 20:40	05:40 21:31	05:14 22:05	05:35 21:54	06:12 (3) 21:02	07:15 19:51	08:06 18:41	08:03 16:43	08:45 16:24
18	08:41 16:58	07:51 17:55	06:48 18:47	06:36 20:42	05:39 21:32	05:14 22:05	05:36 21:53	06:12 (3) 21:00	07:16 19:49	08:08 18:39	08:05 16:42	08:46 16:24
19	08:40 16:59	07:49 17:57	06:46 18:49	06:34 20:43	05:37 21:34	05:14 22:06	05:37 21:52	06:12 (3) 20:58	07:18 19:46	08:10 18:37	08:07 16:41	08:46 16:24
20	08:39 17:01	07:47 17:59	06:43 18:50	06:32 20:45	05:36 21:35	05:14 22:06	05:39 21:50	06:11 (3) 20:56	07:20 19:44	08:12 18:35	08:08 16:39	08:47 16:25
21	08:37 17:03	07:45 18:01	06:41 18:52	06:29 20:47	05:34 21:37	05:14 22:06	05:40 21:49	06:10 (3) 20:54	07:21 19:42	08:14 18:32	08:10 16:38	08:48 16:25
22	08:36 17:04	07:43 18:03	06:39 18:54	06:27 20:49	05:33 21:38	05:14 22:06	05:41 21:48	06:12 (3) 20:51	07:23 19:39	08:15 18:30	08:12 16:37	08:48 16:26
23	08:35 17:06	07:40 18:05	06:36 18:56	06:25 20:50	05:32 21:40	05:15 22:07	05:43 21:47	06:13 (3) 20:49	07:25 19:37	08:17 18:28	08:13 16:36	08:49 16:26
24	08:34 17:08	07:38 18:07	06:34 18:58	06:23 20:52	05:30 21:41	05:15 22:07	05:44 21:45	06:14 (3) 20:47	07:26 19:34	08:19 18:26	08:15 16:35	08:49 16:27
25	08:32 17:10	07:36 18:09	06:32 18:59	06:21 20:54	05:29 21:43	05:15 22:07	05:46 21:44	06:16 (3) 20:45	07:28 19:32	07:21 18:24	08:17 16:34	08:49 16:27
26	08:31 17:12	07:34 18:10	06:29 19:01	06:19 20:56	05:28 21:44	05:16 22:07	05:47 21:42	06:17 (3) 20:43	07:30 19:30	07:23 18:22	08:18 16:33	08:50 16:28
27	08:30 17:14	07:32 18:12	06:27 19:03	06:17 20:57	05:27 21:45	05:16 22:07	05:49 21:41	06:18 (3) 20:40	07:31 19:27	07:25 18:20	08:20 16:32	08:50 16:29
28	08:28 17:15	07:30 18:14	06:24 19:05	06:15 20:59	05:26 21:47	05:17 22:06	05:50 21:39	06:20 (3) 20:38	07:33 19:25	07:26 18:18	08:22 16:31	08:50 16:30
29	08:27 17:17	07:22 18:06	06:13 19:01	06:13 20:59	05:25 21:47	05:17 22:06	05:52 21:38	06:21 (3) 20:36	07:35 19:23	07:28 18:16	08:23 16:30	08:50 16:31
30	08:25 17:19	07:20 18:08	06:11 19:03	06:11 21:03	05:24 21:49	05:18 22:06	05:53 21:36	06:23 (3) 20:33	07:37 19:20	07:30 17:14	08:25 16:29	08:50 16:31
31	08:24 17:21	07:17 18:10	06:10 19:04	06:10 21:04	05:23 21:50	05:19 22:06	05:55 21:34	06:24 (3) 20:31	07:32 17:12	07:24 16:29	08:26 16:32	08:50 16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
Total, worst case					242		237		6			
Sun reduction					0.37		0.26		0.30			
Oper. time red.					1.00		1.00		1.00			
Wind dir. red.					0.64		0.64		0.64			
Total reduction					0.24		0.17		0.19			
Total, real					57		40		1			

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case

Shadow receptor: BX - 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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

January		February		March		April		May		June	
1	08:50	15:57 (3)	08:22	07:27	07:15	08:14 (4)	06:08	06:56 (7)	05:22	06:21 (5)	
	16:34	1	15:58 (3)	17:23	18:16	20:12	1	08:15 (4)	21:04	16	07:12 (7)
2	08:50	15:56 (3)	08:21	07:25	07:12	08:08 (4)	06:06	06:56 (7)	05:21	4	06:25 (5)
	16:35	2	15:58 (3)	17:25	18:18	20:13	13	08:21 (4)	21:06	15	07:11 (7)
3	08:50	15:57 (3)	08:19	07:23	07:10	08:04 (4)	06:04	06:58 (7)	05:20	8	06:27 (5)
	16:36	3	16:00 (3)	17:26	18:20	20:15	18	08:22 (4)	21:08	13	07:11 (7)
4	08:50	15:57 (3)	08:17	07:20	07:08	08:03 (4)	06:03	06:59 (7)	05:19	11	06:29 (5)
	16:37	5	16:02 (3)	17:28	18:21	20:17	21	08:24 (4)	21:09	10	07:09 (7)
5	08:50	15:57 (3)	08:15	07:18	07:05	08:01 (4)	06:01	07:01 (7)	05:18	13	06:30 (5)
	16:38	5	16:02 (3)	17:30	18:23	20:19	24	08:25 (4)	21:11	6	07:07 (7)
6	08:49	15:58 (3)	08:14	16:59 (1)	07:16	07:03	07:59 (4)	05:59	05:18	15	06:31 (5)
	16:39	6	16:04 (3)	17:32	17:02 (1)	18:25	26	08:25 (4)	21:13	6	07:07 (7)
7	08:49	15:58 (3)	08:12	16:59 (1)	07:14	07:01	07:59 (4)	05:57	05:17	16	06:32 (5)
	16:41	7	16:05 (3)	17:34	17:04 (1)	18:27	27	08:26 (4)	21:14	17	06:32 (5)
8	08:48	15:58 (3)	08:10	16:58 (1)	07:11	06:58	07:58 (4)	05:55	05:17	18	06:33 (5)
	16:42	8	16:06 (3)	17:36	17:06 (2)	18:29	28	08:26 (4)	21:16	18	06:33 (5)
9	08:48	15:59 (3)	08:08	16:58 (1)	07:09	06:56	07:57 (4)	05:53	05:16	19	06:34 (5)
	16:43	10	16:09 (3)	17:38	17:08 (2)	18:31	28	08:25 (4)	21:18	18	06:33 (5)
10	08:47	15:59 (3)	08:07	16:57 (1)	07:07	06:54	07:57 (4)	05:52	05:16	19	06:34 (5)
	16:45	11	16:10 (3)	17:40	17:10 (2)	18:32	29	08:26 (4)	21:19	20	06:35 (5)
11	08:47	15:59 (3)	08:05	16:57 (1)	07:04	06:52	07:56 (4)	05:50	05:15	21	06:35 (5)
	16:46	12	16:11 (3)	17:42	17:13 (2)	18:34	29	08:25 (4)	21:21	21	06:35 (5)
12	08:46	15:59 (3)	08:03	16:58 (1)	07:02	06:49	07:57 (4)	05:48	05:15	22	06:36 (5)
	16:48	14	16:13 (3)	17:44	17:15 (2)	18:36	28	08:25 (4)	21:23	22	06:36 (5)
13	08:45	16:00 (3)	08:01	16:58 (1)	07:00	06:47	07:56 (4)	05:46	05:15	23	06:37 (5)
	16:49	14	16:14 (3)	17:46	17:17 (2)	18:38	28	08:24 (4)	21:24	22	06:37 (5)
14	08:44	16:00 (3)	07:59	16:58 (1)	06:57	06:45	07:56 (4)	05:45	05:14	23	06:38 (5)
	16:51	16	16:16 (3)	17:48	17:19 (2)	18:40	27	08:23 (4)	21:26	22	06:37 (5)
15	08:44	16:01 (3)	07:57	16:59 (1)	06:55	06:43	07:57 (4)	05:43	05:14	23	06:38 (5)
	16:52	17	16:18 (3)	17:49	17:21 (1)	18:41	25	08:22 (4)	21:28	22	06:37 (5)
16	08:43	16:01 (3)	07:55	17:00 (1)	06:53	06:40	07:58 (4)	05:42	05:14	23	06:37 (5)
	16:54	19	16:20 (3)	17:51	17:22 (1)	18:43	23	08:21 (4)	21:29	22	06:37 (5)
17	08:42	16:02 (3)	07:53	17:01 (1)	06:50	06:38	07:59 (4)	05:40	05:14	23	06:37 (5)
	16:56	20	16:22 (3)	17:53	17:21 (1)	18:45	21	08:20 (4)	21:31	22	06:37 (5)
18	08:41	16:03 (3)	07:51	17:02 (1)	06:48	06:36	08:00 (4)	05:38	05:14	23	06:37 (5)
	16:57	21	16:24 (3)	17:55	17:20 (1)	18:47	18	08:18 (4)	21:32	22	06:37 (5)
19	08:40	16:04 (3)	07:49	17:03 (1)	06:46	06:34	08:01 (4)	05:37	05:14	23	06:37 (5)
	16:59	21	16:25 (3)	17:57	17:17 (1)	18:49	14	08:15 (4)	21:34	22	06:37 (5)
20	08:39	16:04 (3)	07:47	17:07 (1)	06:43	06:31	08:03 (4)	05:36	05:14	23	06:37 (5)
	17:01	20	16:24 (3)	17:59	17:14 (1)	18:50	9	08:12 (4)	21:35	22	06:37 (5)
21	08:37	16:05 (3)	07:45	17:05 (1)	06:41	06:29	08:12 (4)	21:35	05:14	23	06:37 (5)
	17:03	19	16:24 (3)	18:01	18:52	20:47		21:37	05:14	23	06:37 (5)
22	08:36	16:07 (3)	07:42	17:06 (1)	06:39	06:27	07:02 (7)	05:33	05:14	23	06:37 (5)
	17:04	17	16:24 (3)	18:03	18:54	20:48	7	07:09 (7)	21:38	22	06:38 (5)
23	08:35	16:08 (3)	07:40	17:07 (1)	06:36	06:25	07:00 (7)	05:32	05:15	23	06:38 (5)
	17:06	14	16:22 (3)	18:05	18:56	20:50	11	07:11 (7)	21:40	22	06:38 (5)
24	08:34	16:10 (3)	07:38	17:08 (1)	06:34	06:23	06:58 (7)	05:30	05:15	23	06:38 (5)
	17:08	11	16:21 (3)	18:07	18:57	20:52	15	07:13 (7)	21:41	22	06:38 (5)
25	08:32	16:13 (3)	07:36	17:09 (1)	06:31	06:21	06:57 (7)	05:29	05:15	23	06:38 (5)
	17:10	5	16:18 (3)	18:08	18:59	20:54	16	07:13 (7)	21:43	22	06:39 (5)
26	08:31	16:14 (3)	07:34	17:10 (1)	06:29	06:19	06:57 (7)	05:28	05:16	23	06:39 (5)
	17:11		18:10	19:01	20:55	17	07:14 (7)	21:44	05:16	23	06:39 (5)
27	08:30	16:15 (3)	07:32	17:11 (1)	06:27	06:17	06:56 (7)	05:27	05:16	23	06:39 (5)
	17:13		18:12	19:03	20:57	18	07:14 (7)	21:45	05:16	23	06:39 (5)
28	08:28	16:16 (3)	07:29	17:12 (1)	06:24	06:14	06:56 (7)	05:26	05:16	23	06:39 (5)
	17:15		18:14	19:04	20:59	18	07:14 (7)	21:47	05:16	23	06:39 (5)
29	08:27	16:17 (3)	07:27	17:13 (1)	06:22	06:12	06:56 (7)	05:24	05:17	23	06:39 (5)
	17:17		18:14	19:04	20:59	17	07:13 (7)	21:48	05:18	23	06:39 (5)
30	08:25	16:18 (3)	07:25	17:14 (1)	06:20	06:10	06:56 (7)	05:23	05:18	23	06:39 (5)
	17:19		18:16	19:05	20:59	17	07:13 (7)	21:49	05:18	23	06:39 (5)
31	08:24	16:19 (3)	07:24	17:15 (1)	06:19	06:09	06:56 (7)	05:22	05:18	23	06:39 (5)
	17:21		18:17	19:06	20:59	17	07:13 (7)	21:49	05:18	23	06:39 (5)
Potential sun hours	256		276	367	418		489		503		
Total, worst case	298		215		573		60		569		
Sun reduction	0.16		0.21		0.35		0.37		0.30		
Oper. time red.	1.00		1.00		1.00		1.00		1.00		
Wind dir. red.	0.62		0.64		0.68		0.66		0.64		
Total reduction	0.10		0.13		0.24		0.24		0.19		
Total, real	29		29		137		15		109		

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case

Shadow receptor: BX - 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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

July		August		September		October		November		December					
1	05:18	06:19 (5)	05:56	06:48	07:55 (4)	07:38	07:34	16:27 (1)	08:26	15:41 (3)					
	22:06	20	06:39 (5)	21:33	20:29	29	08:24 (4)	19:18	17:10	13	16:40 (2)	16:28	13	15:54 (3)	
2	05:19	06:20 (5)	05:58	06:49	07:55 (4)	07:40	07:36	16:27 (1)	08:28	15:42 (3)					
	22:05	19	06:39 (5)	21:31	20:26	30	08:25 (4)	19:15	17:08	11	16:38 (2)	16:27	11	15:53 (3)	
3	05:20	06:20 (5)	05:59	06:51	07:55 (4)	07:42	07:37	16:28 (1)	08:29	15:42 (3)					
	22:05	19	06:39 (5)	21:29	20:24	28	08:23 (4)	19:13	17:06	8	16:36 (2)	16:27	10	15:52 (3)	
4	05:21	06:21 (5)	06:01	06:53	07:55 (4)	07:43	07:39	16:28 (1)	08:30	15:43 (3)					
	22:05	18	06:39 (5)	21:27	20:22	28	08:23 (4)	19:11	17:04	6	16:34 (1)	16:26	9	15:52 (3)	
5	05:21	06:21 (5)	06:02	06:54	07:55 (4)	07:45	07:41	16:29 (1)	08:32	15:43 (3)					
	22:04	18	06:39 (5)	21:26	20:19	27	08:22 (4)	19:08	17:02	3	16:32 (1)	16:26	7	15:50 (3)	
6	05:22	06:22 (5)	06:04	06:56	07:55 (4)	07:47	07:43	16:30 (1)	08:33	15:44 (3)					
	22:03	17	06:39 (5)	21:24	20:17	26	08:21 (4)	19:06	17:01			16:25	6	15:50 (3)	
7	05:23	06:23 (5)	06:06	06:58	07:56 (4)	07:49	07:45	16:31 (1)	08:34	15:44 (3)					
	22:03	15	06:38 (5)	21:22	20:15	24	08:20 (4)	19:04	16:59			16:25	6	15:50 (3)	
8	05:24	06:23 (5)	06:07	07:09 (7)	06:59	07:50	07:47	16:32 (1)	08:36	15:44 (3)					
	22:02	14	06:37 (5)	21:20	8	07:17 (7)	20:12	21	08:18 (4)	19:01	16:57	16:24	5	15:49 (3)	
9	05:25	06:24 (5)	06:09	07:08 (7)	07:01	07:52	07:48	16:33 (1)	08:37	15:46 (3)					
	22:01	12	06:36 (5)	21:18	11	07:19 (7)	20:10	18	08:16 (4)	18:59	16:55	16:24	3	15:49 (3)	
10	05:26	06:25 (5)	06:11	07:06 (7)	07:03	07:54	07:50	16:34 (1)	08:38	15:46 (3)					
	22:01	10	06:35 (5)	21:16	14	07:20 (7)	20:08	13	08:14 (4)	18:57	16:54	16:24	2	15:48 (3)	
11	05:27	06:27 (5)	06:12	07:06 (7)	07:04	07:56	07:52	16:35 (1)	08:39	15:47 (3)					
	22:00	7	06:34 (5)	21:14	15	07:21 (7)	20:05	5	08:09 (4)	18:54	16:52	16:24	1	15:48 (3)	
12	05:28	06:28 (5)	06:14	07:04 (7)	07:06	07:57	07:54	16:36 (1)	08:40	15:47 (3)					
	21:59		21:12	17	07:21 (7)	20:03	18:52	16:51	16:23	1	15:48 (3)				
13	05:29	06:29 (5)	06:16	07:04 (7)	07:08	07:59	07:56	16:37 (1)	08:41	15:48 (3)					
	21:58		21:10	18	07:22 (7)	20:01	18:50	16:49	16:23						
14	05:31	06:31 (5)	06:17	07:03 (7)	07:09	08:01	07:58	16:48	16:22						
	21:57		21:08	18	07:21 (7)	19:58	18:48	16:47	16:23						
15	05:32	06:32 (5)	06:19	07:03 (7)	07:11	08:03	07:59	16:46	16:23						
	21:56		21:06	18	07:21 (7)	19:56	18:45	16:45	16:23						
16	05:33	06:33 (5)	06:21	07:04 (7)	07:13	08:04	08:01	16:44	16:24						
	21:55		21:04	17	07:21 (7)	19:53	18:43	16:45	16:24						
17	05:34	06:34 (5)	06:22	07:03 (7)	07:14	08:06	08:03	15:47 (3)	08:45						
	21:54		21:02	17	07:20 (7)	19:51	18:41	16:43	5	15:52 (3)	16:24				
18	05:36	06:36 (5)	06:24	07:04 (7)	07:16	08:08	08:05	15:44 (3)	08:46						
	21:53		21:00	16	07:20 (7)	19:49	18:39	16:42	11	15:55 (3)	16:24				
19	05:37	06:37 (5)	06:26	07:04 (7)	07:18	08:10	08:07	15:43 (3)	08:46						
	21:52		20:58	14	07:18 (7)	19:46	18:37	16:40	14	15:57 (3)	16:24				
20	05:38	06:38 (5)	06:27	07:06 (7)	07:19	08:12	08:08	15:42 (3)	08:47						
	21:50		20:56	11	07:17 (7)	19:44	18:34	16:39	17	15:59 (3)	16:25				
21	05:40	06:40 (5)	06:29	07:08 (7)	07:21	08:13	08:10	15:42 (3)	08:48						
	21:49		20:53	6	07:14 (7)	19:41	18:32	16:38	18	16:00 (3)	16:25				
22	05:41	06:41 (5)	06:31	07:23	07:23	08:15	08:12	15:41 (3)	08:48						
	21:48		20:51		19:39	18:30	18:30	16:37	20	16:01 (3)	16:25				
23	05:42	06:42 (5)	06:32	08:08 (4)	07:25	08:17	08:17	17:33 (1)	08:13	15:40 (3)	08:49				
	21:46		20:49	9	08:17 (4)	19:37	18:28	17:48 (1)	16:36	21	16:01 (3)	16:26			
24	05:44	06:44 (5)	06:34	08:04 (4)	07:26	08:19	08:19	17:31 (1)	08:15	15:40 (3)	08:49				
	21:45		20:47	15	08:19 (4)	19:34	18:26	17:50 (1)	16:34	21	16:01 (3)	16:27			
25	05:45	06:45 (5)	06:36	08:02 (4)	07:28	07:21	07:21	16:30 (1)	08:17	15:40 (3)	08:49				
	21:44		20:45	19	08:21 (4)	19:32	17:24	16:51 (1)	16:33	20	16:00 (3)	16:27			
26	05:47	06:47 (5)	06:37	08:00 (4)	07:30	07:23	07:23	16:29 (1)	08:18	15:40 (3)	08:50				
	21:42		20:42	22	08:22 (4)	19:30	17:22	16:52 (1)	16:32	19	15:59 (3)	16:28			
27	05:48	06:48 (5)	06:39	07:59 (4)	07:31	07:24	07:24	16:28 (1)	08:20	15:41 (3)	08:50				
	21:41		20:40	24	08:23 (4)	19:27	17:20	16:50 (1)	16:31	17	15:58 (3)	16:29			
28	05:50	06:50 (5)	06:41	07:59 (4)	07:33	07:26	07:26	16:28 (1)	08:22	15:40 (3)	08:50				
	21:39		20:38	25	08:24 (4)	19:25	17:18	16:48 (2)	16:31	16	15:56 (3)	16:29			
29	05:51	06:51 (5)	06:42	07:57 (4)	07:35	07:28	07:28	16:27 (1)	08:23	15:41 (3)	08:50				
	21:38		20:36	27	08:24 (4)	19:22	17:16	16:46 (2)	16:30	15	15:56 (3)	16:30			
30	05:53	06:53 (5)	06:44	07:57 (4)	07:36	07:30	07:30	16:27 (1)	08:25	15:41 (3)	08:50				
	21:36		20:33	28	08:25 (4)	19:20	17:14	16:44 (2)	16:29	14	15:55 (3)	16:31			
31	05:55	06:55 (5)	06:46	07:55 (4)		07:32	07:32	16:27 (1)			08:50				
	21:34		20:31	29	08:24 (4)		17:12	16:42 (2)			16:32				
Potential sun hours	506		456		381		330		263		240				
Total, worst case		169		398		249		269			74				
Sun reduction		0.26		0.30		0.28		0.19			0.14				
Oper. time red.		1.00		1.00		1.00		1.00			1.00				
Wind dir. red.		0.64		0.67		0.68		0.63			0.62				
Total reduction		0.17		0.20		0.19		0.12			0.09				
Total, real		29		79		48		32			6				

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
Kathryn Feeney / kfeeney@jodireland.com
Calculated:
16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** BY - 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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50 16:34	08:22 17:23	07:27 18:16	07:15 20:12	06:09 21:04	05:22 21:52	05:51 (3) 22:06	05:50 (3) 22:06	06:07 (3) 22:06	07:38 19:18	07:34 17:10	08:26 16:28
2	08:50 16:35	08:21 17:25	07:25 18:18	07:13 20:13	06:07 21:06	05:21 21:53	05:50 (3) 22:05	05:51 (3) 22:05	05:58 22:07	07:40 19:15	07:36 17:08	08:28 16:28
3	08:50 16:36	08:19 17:27	07:23 18:20	07:10 20:15	06:05 21:08	05:20 21:54	05:50 (3) 22:05	05:51 (3) 22:05	05:59 22:07	07:42 19:13	07:37 17:06	08:29 16:27
4	08:50 16:37	08:17 17:29	07:21 18:22	07:08 20:17	06:03 21:09	05:19 21:55	05:49 (3) 22:05	05:52 (3) 22:05	06:01 22:07	07:43 19:11	07:39 17:04	08:30 16:26
5	08:50 16:38	08:16 17:30	07:18 18:23	07:06 20:19	06:01 21:11	05:19 21:56	05:49 (3) 22:04	05:53 (3) 22:04	06:03 22:06	07:45 19:08	07:41 17:03	08:32 16:26
6	08:49 16:40	08:14 17:32	07:16 18:25	07:03 20:20	05:59 21:13	05:18 21:57	05:48 (3) 22:04	05:54 (3) 22:04	06:04 22:07	07:47 19:06	07:43 17:01	08:33 16:25
7	08:49 16:41	08:12 17:34	07:14 18:27	07:01 20:22	05:57 21:15	05:17 21:58	05:48 (3) 22:03	05:55 (3) 22:03	06:06 22:06	07:49 19:04	07:45 16:59	08:34 16:25
8	08:48 16:42	08:10 17:36	07:11 18:29	06:59 20:24	05:55 21:16	05:17 21:59	05:47 (3) 22:02	05:56 (3) 22:02	06:08 22:07	07:50 19:01	07:47 16:57	08:36 16:25
9	08:48 16:44	08:08 17:38	07:09 18:31	06:56 20:26	05:53 21:18	05:16 22:00	05:47 (3) 22:02	05:57 (3) 22:02	06:09 22:07	07:52 18:59	07:49 16:56	08:37 16:24
10	08:47 16:45	08:07 17:40	07:07 18:33	06:54 20:27	05:52 21:20	05:16 22:00	05:46 (3) 22:01	05:58 (3) 22:01	06:11 22:08	07:54 18:57	07:50 16:54	08:38 16:24
11	08:47 16:47	08:05 17:42	07:04 18:34	06:52 20:29	05:50 21:21	05:15 22:01	05:46 (3) 22:00	05:59 (3) 22:00	06:13 22:04	07:56 18:55	07:52 16:52	08:39 16:24
12	08:46 16:48	08:03 17:44	07:02 18:36	06:49 20:31	05:48 21:23	05:15 22:02	05:46 (3) 21:59	06:00 (3) 22:02	06:14 22:03	07:57 18:52	07:54 16:51	08:40 16:24
13	08:45 16:50	08:01 17:46	07:00 18:38	06:47 20:33	05:47 21:24	05:15 22:03	05:46 (3) 21:58	06:01 (3) 22:03	06:16 22:10	07:59 18:50	07:56 16:49	08:41 16:24
14	08:44 16:51	07:59 17:48	06:57 18:40	06:45 20:35	05:45 21:26	05:15 22:03	05:45 (3) 21:57	06:02 (3) 22:03	06:17 22:08	08:01 18:48	07:58 16:48	08:42 16:24
15	08:44 16:53	07:57 17:50	06:55 18:42	06:43 20:36	05:43 21:28	05:14 22:04	05:45 (3) 21:56	06:03 (3) 22:06	06:19 22:06	08:03 18:46	07:59 16:46	08:43 16:24
16	08:43 16:54	07:55 17:52	06:53 18:43	06:40 20:38	05:42 21:29	05:14 22:04	05:45 (3) 21:55	06:04 (3) 22:04	06:21 22:04	08:05 18:45	08:01 16:45	08:44 16:24
17	08:42 16:56	07:53 17:53	06:50 18:45	06:38 20:40	05:40 21:31	05:14 22:05	05:45 (3) 21:54	06:05 (3) 22:02	06:23 22:02	08:06 18:41	08:03 16:43	08:45 16:24
18	08:41 16:58	07:51 17:55	06:48 18:47	06:36 20:42	05:39 21:32	05:14 22:05	05:45 (3) 21:53	06:07 (3) 22:02	06:24 22:00	08:08 18:39	08:05 16:42	08:46 16:24
19	08:40 16:59	07:49 17:57	06:46 18:49	06:34 20:43	05:37 21:34	05:14 22:06	05:45 (3) 21:52	06:09 (3) 22:06	06:26 22:06	08:10 18:37	08:07 16:41	08:46 16:24
20	08:39 17:01	07:47 17:59	06:43 18:50	06:32 20:45	05:36 21:35	05:14 22:06	05:45 (3) 21:50	06:09 (3) 22:06	06:28 22:06	08:12 18:35	08:08 16:39	08:47 16:25
21	08:37 17:03	07:45 18:01	06:41 18:52	06:29 20:47	05:34 21:37	05:14 22:06	05:46 (3) 21:49	06:05 (3) 22:06	06:29 22:06	08:14 18:32	08:10 16:38	08:48 16:25
22	08:36 17:04	07:43 18:03	06:39 18:54	06:27 20:49	05:33 21:38	05:14 22:06	05:46 (3) 21:48	06:31 22:05	07:23 19:39	08:15 18:30	08:12 16:37	08:48 16:26
23	08:35 17:06	07:40 18:05	06:36 18:56	06:25 20:50	05:32 21:40	05:15 22:07	05:46 (3) 21:47	06:33 22:09	07:25 19:37	08:17 18:28	08:13 16:36	08:49 16:26
24	08:34 17:08	07:38 18:07	06:34 18:58	06:23 20:52	05:30 21:41	05:15 22:07	05:47 (3) 21:45	06:34 22:07	07:26 19:34	08:19 18:26	08:15 16:35	08:49 16:27
25	08:32 17:10	07:36 18:09	06:32 18:59	06:21 20:54	05:29 21:43	05:15 22:07	05:47 (3) 21:44	06:36 22:07	07:28 19:32	08:21 18:26	08:17 16:34	08:49 16:27
26	08:31 17:12	07:34 18:10	06:29 19:01	06:19 20:56	05:28 21:44	05:16 22:07	05:47 (3) 21:42	06:38 22:07	07:30 19:30	08:23 18:22	08:18 16:33	08:50 16:28
27	08:30 17:14	07:32 18:12	06:27 19:03	06:17 20:57	05:27 21:45	05:16 22:07	05:48 (3) 21:41	06:39 22:07	07:31 19:27	08:25 18:20	08:20 16:32	08:50 16:29
28	08:28 17:15	07:30 18:14	06:24 19:05	06:15 20:59	05:26 21:47	05:17 22:06	05:48 (3) 21:39	06:41 22:06	07:33 19:25	08:26 18:18	08:22 16:30	08:50 16:30
29	08:27 17:17	07:22 18:06	06:13 19:01	06:13 20:59	05:25 21:48	05:17 22:06	05:49 (3) 21:38	06:43 22:06	07:35 19:23	08:28 18:16	08:23 16:30	08:50 16:31
30	08:25 17:19	07:20 18:08	06:11 19:03	06:11 21:03	05:24 21:49	05:18 22:06	05:49 (3) 21:36	06:44 22:06	07:37 19:20	08:30 18:14	08:25 16:29	08:50 16:31
31	08:24 17:21	07:17 18:10	06:08 19:10	06:08 21:10	05:23 21:50	05:19 22:06	06:06 (3) 21:34	06:46 22:06	07:39 19:20	08:32 18:12	08:26 16:32	08:50 16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
Total, worst case					36	494		193				
Sun reduction					0.37	0.30		0.26				
Oper. time red.					1.00	1.00		1.00				
Wind dir. red.					0.62	0.62		0.62				
Total reduction					0.23	0.19		0.17				
Total, real					8	92		32				

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
Kathryn Feeney / kfeeney@jodireland.com
Calculated:
16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** BZ - 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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December	
1	08:50 16:34	08:22 17:23	07:27 18:16	07:15 20:12	06:09 21:04	05:22 21:52	05:51 (3) 22:06	05:19 22:06	05:57 (3) 21:33	05:56 20:29	06:48 19:18	07:38 17:10	07:34 16:28
2	08:50 16:35	08:21 17:25	07:25 18:18	07:13 20:13	06:07 21:06	05:21 21:53	05:50 (3) 22:05	05:19 22:05	05:57 (3) 21:31	05:58 20:27	06:49 19:15	07:40 17:08	07:36 16:28
3	08:50 16:36	08:19 17:27	07:23 18:20	07:10 20:15	06:05 21:08	05:20 21:54	05:50 (3) 22:05	05:19 22:05	05:56 (3) 21:29	05:59 20:24	06:51 19:13	07:42 17:06	07:37 16:27
4	08:50 16:37	08:17 17:29	07:21 18:22	07:08 20:17	06:03 21:09	05:19 21:55	05:49 (3) 22:05	05:21 22:05	05:57 (3) 21:27	06:01 20:22	06:53 19:11	07:43 17:04	07:39 16:26
5	08:50 16:38	08:16 17:30	07:18 18:23	07:06 20:19	06:01 21:11	05:19 21:56	05:50 (3) 22:04	05:22 22:04	05:57 (3) 21:26	06:03 20:20	06:54 19:08	07:45 17:03	07:41 16:26
6	08:49 16:40	08:14 17:32	07:16 18:25	07:03 20:20	05:59 21:13	05:18 21:57	05:50 (3) 22:04	05:22 22:04	05:57 (3) 21:24	06:04 20:17	06:56 19:06	07:47 17:01	07:43 16:25
7	08:49 16:41	08:12 17:34	07:14 18:27	07:01 20:22	05:57 21:15	05:17 21:58	05:51 (3) 22:03	05:23 22:03	05:57 (3) 21:22	06:06 20:15	06:58 19:04	07:49 16:59	07:45 16:25
8	08:48 16:42	08:10 17:36	07:11 18:29	06:59 20:24	05:55 21:16	05:17 21:59	05:51 (3) 22:02	05:24 22:02	05:57 (3) 21:20	06:08 20:13	06:59 19:01	07:50 16:57	07:47 16:25
9	08:48 16:44	08:08 17:38	07:09 18:31	06:56 20:26	05:53 21:18	05:16 22:00	05:52 (3) 22:02	05:25 22:02	05:57 (3) 21:18	06:09 20:10	07:01 18:59	07:52 16:56	07:49 16:24
10	08:47 16:45	08:07 17:40	07:07 18:33	06:54 20:28	05:52 21:20	05:16 22:00	05:52 (3) 22:01	05:26 22:01	05:58 (3) 21:16	06:11 20:08	07:03 18:57	07:54 16:54	07:50 16:24
11	08:47 16:47	08:05 17:42	07:04 18:34	06:52 20:29	05:50 21:21	05:15 22:01	05:53 (3) 22:00	05:27 22:00	05:59 (3) 21:14	06:13 20:05	07:04 18:55	07:56 16:52	07:52 16:24
12	08:46 16:48	08:03 17:44	07:02 18:36	06:49 20:31	05:48 21:23	05:15 22:02	05:54 (3) 22:00	05:29 22:00	06:00 (3) 21:12	06:14 20:03	07:06 18:52	07:57 16:51	07:54 16:24
13	08:45 16:50	08:01 17:46	07:00 18:38	06:47 20:33	05:47 21:24	05:15 22:03	05:54 (3) 22:00	05:30 22:00	06:01 (3) 21:10	06:16 20:01	07:08 18:50	07:59 16:49	07:56 16:24
14	08:44 16:51	07:59 17:48	06:57 18:40	06:45 20:35	05:45 21:26	05:15 22:03	05:54 (3) 22:00	05:31 22:00	06:02 (3) 21:08	06:17 19:58	07:10 18:48	08:01 16:48	07:58 16:24
15	08:44 16:53	07:57 17:50	06:55 18:42	06:43 20:36	05:43 21:28	05:14 22:04	05:55 (3) 22:00	05:32 22:00	06:03 (3) 21:06	06:19 19:56	07:11 18:46	08:03 16:46	07:59 16:24
16	08:43 16:54	07:55 17:52	06:53 18:43	06:40 20:38	05:42 21:29	05:14 22:04	05:55 (3) 22:00	05:33 22:00	06:04 (3) 21:04	06:21 19:54	07:13 18:43	08:05 16:45	08:01 16:24
17	08:42 16:56	07:53 17:53	06:50 18:45	06:38 20:40	05:40 21:31	05:14 22:05	05:56 (3) 22:00	05:35 22:00	06:05 (3) 21:02	06:23 19:51	07:15 18:41	08:06 16:43	08:03 16:24
18	08:41 16:58	07:51 17:55	06:48 18:47	06:36 20:42	05:39 21:32	05:14 22:05	05:56 (3) 22:00	05:36 22:00	06:07 (3) 21:02	06:24 19:49	07:16 18:39	08:08 16:42	08:05 16:24
19	08:40 16:59	07:49 17:57	06:46 18:49	06:34 20:43	05:37 21:34	05:14 22:06	05:56 (3) 22:00	05:37 22:00	06:08 (3) 21:05	06:26 19:46	07:18 18:37	08:10 16:41	08:07 16:24
20	08:39 17:01	07:47 17:59	06:43 18:50	06:32 20:45	05:36 21:35	05:14 22:06	05:57 (3) 22:00	05:39 22:00	06:09 (3) 21:04	06:28 19:44	07:20 18:35	08:12 16:39	08:08 16:25
21	08:37 17:03	07:45 18:01	06:41 18:52	06:29 20:47	05:34 21:37	05:14 22:06	05:58 (3) 22:00	05:40 22:00	06:10 (3) 21:02	06:29 19:42	07:21 18:32	08:14 16:38	08:10 16:25
22	08:36 17:04	07:43 18:03	06:39 18:54	06:27 20:49	05:33 21:38	05:14 22:06	05:58 (3) 22:00	05:41 22:00	06:12 (3) 21:01	06:31 19:39	07:23 18:30	08:15 16:37	08:12 16:26
23	08:35 17:06	07:40 18:05	06:36 18:56	06:25 20:50	05:32 21:40	05:15 22:07	05:57 (3) 22:00	05:43 22:00	06:13 (3) 21:04	06:33 19:37	07:25 18:28	08:17 16:36	08:13 16:26
24	08:34 17:08	07:38 18:07	06:34 18:58	06:23 20:52	05:30 21:41	05:15 22:07	05:58 (3) 22:00	05:44 22:00	06:14 (3) 21:04	06:34 19:34	07:26 18:26	08:19 16:35	08:15 16:27
25	08:32 17:10	07:36 18:09	06:32 18:59	06:21 20:54	05:29 21:43	05:15 22:07	05:58 (3) 22:00	05:46 22:00	06:16 (3) 21:04	06:36 19:32	07:28 18:24	08:21 16:34	08:17 16:27
26	08:31 17:12	07:34 18:10	06:29 19:01	06:19 20:56	05:28 21:44	05:16 22:07	05:57 (3) 22:00	05:47 22:00	06:17 (3) 21:04	06:38 19:30	07:30 18:22	08:23 16:33	08:18 16:28
27	08:30 17:14	07:32 18:12	06:27 19:03	06:17 20:57	05:27 21:45	05:16 22:07	05:58 (3) 22:00	05:49 22:00	06:18 (3) 21:04	06:39 19:27	07:31 18:20	08:25 16:32	08:20 16:29
28	08:28 17:15	07:30 18:14	06:24 19:05	06:15 20:59	05:26 21:47	05:17 22:06	05:57 (3) 22:00	05:50 22:00	06:19 (3) 21:03	06:41 19:25	07:33 18:18	08:26 16:31	08:22 16:30
29	08:27 17:17	07:22 18:06	06:13 19:01	05:25 21:01	05:25 21:48	05:17 22:06	05:58 (3) 22:00	05:52 22:00	06:43 19:23	06:43 18:23	07:35 17:16	08:28 16:30	08:23 16:31
30	08:25 17:19	07:20 18:08	06:11 19:03	05:24 21:03	05:24 21:49	05:18 22:06	05:57 (3) 22:00	05:53 22:00	06:44 19:20	07:37 18:14	07:30 16:29	08:30 16:31	08:25 16:31
31	08:24 17:21	07:17 18:10	06:08 19:10	05:23 21:50	05:23 21:50	05:17 22:06	06:11 (3) 22:00	05:55 22:00	06:46 19:31	07:41 18:12	07:32 16:30	08:34 16:32	08:50 16:32
Potential sun hours	256	276	367	418	488	503	506		456	381	330	263	240
Total, worst case					140	420	342						
Sun reduction					0.37	0.30	0.26						
Oper. time red.					1.00	1.00	1.00						
Wind dir. red.					0.63	0.63	0.63						
Total reduction					0.23	0.19	0.17						
Total, real					33	79	57						

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar**Calculation:** 6778 Moanmore Lower Worst Case **Shadow receptor:** CA - 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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50 16:34	08:22 17:23	07:27 18:16	07:15 19:40 (3)	06:08 21:04	20:23 (1) 21:51	05:18 22:06	05:56 21:33	06:48 20:29	19:41 (3) 20:01 (2)	07:38 19:18	07:34 17:10
2	08:50 16:35	08:20 17:25	07:25 18:18	07:12 19:39 (3)	06:06 21:06	20:23 (1) 21:53	05:19 22:05	05:58 21:31	06:49 20:26	19:39 (3) 19:59 (2)	07:40 19:15	07:35 17:08
3	08:50 16:36	08:19 17:26	07:23 18:20	07:10 19:38 (3)	06:04 21:08	20:25 (1) 21:54	05:20 22:05	05:59 21:29	06:51 20:24	19:37 (3) 19:56 (2)	07:42 19:13	07:37 17:06
4	08:50 16:37	08:17 17:28	07:20 18:21	07:08 19:38 (3)	06:03 21:09	20:25 (1) 21:55	05:21 22:04	06:01 21:27	06:53 20:22	19:36 (3) 19:55 (2)	07:43 19:11	07:39 17:04
5	08:49 16:38	08:15 17:30	07:18 18:23	07:05 19:38 (3)	06:01 21:11	20:26 (1) 21:56	05:21 22:04	06:03 21:25	20:41 (1) 20:46 (1)	19:34 (3) 19:52 (3)	07:45 19:08	07:41 17:02
6	08:49 16:39	08:14 17:32	07:16 18:25	07:03 19:37 (3)	05:59 21:13	20:27 (1) 21:57	05:22 22:03	06:04 21:24	20:38 (1) 20:49 (1)	19:34 (3) 19:50 (3)	07:47 19:06	07:43 17:01
7	08:49 16:41	08:12 17:34	07:14 18:27	07:01 19:38 (3)	05:57 21:14	20:30 (1) 21:58	05:23 22:03	06:06 21:22	20:37 (1) 20:52 (1)	19:33 (3) 19:48 (3)	07:49 19:04	07:45 16:59
8	08:48 16:42	08:10 17:36	07:11 18:29	06:58 19:39 (3)	05:55 21:16	20:30 (1) 21:59	05:24 22:02	06:07 21:20	20:35 (1) 20:50 (1)	19:32 (3) 19:45 (3)	07:50 19:01	07:47 16:57
9	08:48 16:43	08:08 17:38	07:09 18:31	06:56 19:39 (3)	05:53 21:18	20:31 (1) 22:00	05:25 22:01	06:09 21:18	20:34 (1) 20:49 (1)	19:32 (3) 19:43 (3)	07:52 18:59	07:48 16:55
10	08:47 16:45	08:06 17:40	07:07 18:32	06:54 19:40 (3)	05:52 21:19	20:32 (1) 22:00	05:26 22:01	06:11 21:16	20:33 (1) 20:47 (1)	19:33 (3) 19:41 (3)	07:54 18:57	07:50 16:54
11	08:47 16:46	08:05 17:42	07:04 18:34	06:52 20:29	05:50 21:21	20:33 (1) 22:01	05:27 22:00	06:12 21:14	20:45 (1) 20:52 (1)	19:32 (3) 19:38 (3)	07:56 18:54	07:52 16:52
12	08:46 16:48	08:03 17:44	07:02 18:36	06:49 20:31	05:48 21:23	20:32 (1) 22:02	05:28 21:59	06:14 21:12	20:46 (1) 20:53 (1)	19:33 (3) 19:39 (3)	07:57 18:52	07:54 16:51
13	08:45 16:49	08:01 17:46	07:00 18:38	06:47 20:33	05:46 21:24	20:33 (1) 22:02	05:29 21:58	06:16 21:10	20:47 (1) 20:54 (1)	19:34 (3) 19:41 (3)	07:59 18:50	07:56 16:49
14	08:44 16:51	07:59 17:48	06:57 18:40	06:45 20:34	05:45 21:26	20:34 (1) 22:03	05:31 21:57	06:17 21:08	20:51 (1) 20:58 (1)	19:35 (3) 19:42 (3)	08:01 18:48	07:58 16:48
15	08:43 16:52	07:57 17:49	06:55 18:41	06:43 20:36	05:43 21:28	20:35 (1) 22:04	05:32 21:56	06:19 21:06	20:52 (1) 20:59 (1)	19:36 (3) 19:43 (3)	08:03 18:45	07:59 16:46
16	08:43 16:54	07:55 17:51	06:53 18:43	06:40 20:38	05:42 21:29	20:36 (1) 22:05	05:33 21:54	06:21 21:02	20:53 (1) 20:59 (1)	19:37 (3) 19:44 (3)	08:04 18:41	08:01 16:43
17	08:42 16:56	07:53 17:53	06:50 18:45	06:38 20:40	05:40 21:31	20:37 (1) 22:06	05:34 21:54	06:22 21:02	20:54 (1) 20:59 (1)	19:38 (3) 19:45 (3)	08:06 18:41	08:03 16:40
18	08:41 16:57	07:51 17:55	06:48 18:47	06:36 20:41	05:39 21:32	20:38 (1) 22:07	05:36 21:53	06:24 21:00	20:55 (1) 20:59 (1)	19:39 (3) 19:46 (3)	08:08 18:39	08:05 16:42
19	08:40 16:59	07:49 17:57	06:46 18:49	06:34 20:43	05:37 21:34	20:39 (1) 22:08	05:37 21:52	06:26 20:58	20:56 (1) 20:59 (1)	19:40 (3) 19:47 (3)	08:10 18:37	08:06 16:40
20	08:38 17:01	07:47 17:59	06:43 18:50	06:31 20:45	05:36 21:35	20:40 (1) 22:09	05:38 21:50	06:27 20:56	20:57 (1) 20:59 (1)	19:41 (3) 19:44 (3)	08:12 18:34	08:08 16:39
21	08:37 17:03	07:45 18:01	06:41 18:52	06:29 20:47	05:34 21:37	20:41 (1) 22:10	05:40 21:49	06:29 20:53	20:58 (1) 20:59 (1)	19:42 (3) 19:45 (3)	08:13 18:35	08:10 16:38
22	08:36 17:04	07:42 18:03	06:38 18:54	06:27 20:48	05:33 21:38	20:42 (1) 22:11	05:41 21:48	06:31 20:51	20:59 (1) 20:59 (1)	19:43 (3) 19:46 (3)	08:15 18:37	08:12 16:37
23	08:35 17:06	07:40 18:05	06:36 18:56	06:25 20:50	05:32 21:40	20:43 (1) 22:12	05:43 21:46	06:32 20:49	20:59 (1) 20:59 (1)	19:44 (3) 19:47 (3)	08:17 18:39	08:13 16:36
24	08:34 17:08	07:38 18:07	06:34 18:57	06:23 20:52	05:30 21:41	20:44 (1) 22:13	05:44 21:45	06:34 20:47	20:59 (1) 20:59 (1)	19:45 (3) 19:48 (3)	08:19 18:41	08:15 16:34
25	08:32 17:10	07:36 18:08	06:31 18:59	06:21 20:54	05:29 21:42	20:45 (1) 22:14	05:45 21:44	06:36 20:45	20:59 (1) 20:59 (1)	19:46 (3) 19:49 (3)	08:21 18:43	08:17 16:33
26	08:31 17:12	07:34 18:10	06:29 19:01	06:19 20:55	05:28 21:44	20:46 (1) 22:15	05:47 21:42	06:37 20:42	20:59 (1) 20:59 (1)	19:47 (3) 19:50 (3)	08:23 18:45	08:18 16:32
27	08:30 17:13	07:32 18:12	06:27 19:03	06:17 20:57	05:27 21:45	20:47 (1) 22:16	05:48 21:41	06:39 20:40	20:59 (1) 20:59 (1)	19:51 (3) 19:54 (3)	08:24 18:47	08:20 16:31
28	08:28 17:15	07:29 18:14	06:24 19:04	06:14 20:59	05:26 21:47	20:48 (1) 22:17	05:50 21:39	06:41 20:38	20:59 (1) 20:59 (1)	19:52 (3) 19:55 (3)	08:25 18:49	08:50 16:29
29	08:27 17:17	07:22 18:06	06:22 19:06	06:12 21:01	05:25 21:48	20:49 (1) 22:18	05:51 21:37	06:43 20:36	20:59 (1) 20:59 (1)	19:53 (3) 19:56 (3)	08:26 18:51	08:50 16:30
30	08:25 17:19	07:20 18:08	06:20 19:08	06:10 21:02	05:24 21:49	20:50 (1) 22:19	05:53 21:36	06:44 20:33	20:59 (1) 20:59 (1)	19:57 (3) 19:59 (3)	08:27 18:53	08:50 16:31
31	08:24 17:21	07:17 18:10	06:19 19:09	06:09 21:09	05:23 21:50	20:51 (1) 22:20	05:55 21:34	06:46 20:31	20:59 (1) 20:59 (1)	19:58 (3) 19:59 (3)	08:28 18:54	08:50 16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
Total, worst case												
Sun reduction			0.24	0.35	0.37			0.30	0.28			
Oper. time red.			1.00	1.00	1.00			1.00	1.00			
Wind dir. red.			0.68	0.68	0.68			0.68	0.68			
Total reduction			0.17	0.24	0.25			0.20	0.19			
Total, real			0	55	23			32	33			

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	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** CB - 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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December				
1	08:50	08:22	07:27	07:15	06:09	05:22	05:19	05:50 (3)	05:56	06:48	07:38	07:34	08:26			
	16:34	17:23	18:16	20:12	21:04	21:52	22:06	7	05:57 (3)	21:33	20:29	19:18	17:10	16:28		
2	08:50	08:21	07:25	07:13	06:07	05:21	05:19	05:51 (3)	05:58	06:49	07:40	07:36	08:28			
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	7	05:58 (3)	21:31	20:27	19:15	17:08	16:28		
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:51 (3)	05:59	06:51	07:42	07:37	08:29			
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	6	05:57 (3)	21:29	20:24	19:13	17:06	16:27		
4	08:50	08:17	07:21	07:08	06:03	05:19	05:49 (3)	05:52 (3)	06:01	06:53	07:43	07:39	08:30			
	16:37	17:29	18:22	20:17	21:09	21:55	1	05:50 (3)	22:05	5	05:57 (3)	21:27	20:22	19:11	17:04	16:26
5	08:50	08:16	07:18	07:06	06:01	05:19	05:49 (3)	05:52 (3)	06:03	06:54	07:45	07:41	08:32			
	16:38	17:30	18:23	20:19	21:11	21:56	2	05:51 (3)	22:04	5	05:58 (3)	21:26	20:20	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:48 (3)	05:52 (3)	06:04	06:56	07:47	07:43	08:33			
	16:40	17:32	18:25	20:20	21:13	21:57	3	05:51 (3)	22:04	4	05:58 (3)	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:48 (3)	05:53 (3)	06:06	06:58	07:49	07:45	08:34			
	16:41	17:34	18:27	20:22	21:15	21:58	4	05:52 (3)	22:03	3	05:58 (3)	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:47 (3)	05:52 (3)	06:08	06:59	07:50	07:47	08:36			
	16:42	17:36	18:29	20:24	21:16	21:59	5	05:52 (3)	22:02	2	05:58 (3)	21:20	20:13	19:01	16:57	16:25
9	08:48	08:08	07:09	06:56	05:53	05:16	05:47 (3)	05:52 (3)	06:09	07:01	07:52	07:49	08:37			
	16:44	17:38	18:31	20:26	21:18	22:00	6	05:53 (3)	22:02	1	05:58 (3)	21:18	20:10	18:59	16:56	16:24
10	08:47	08:07	07:07	06:54	05:52	05:16	05:46 (3)	05:52 (3)	06:11	07:03	07:54	07:50	08:38			
	16:45	17:40	18:33	20:27	21:20	22:00	6	05:52 (3)	22:01	21:16	20:08	18:57	16:54	16:24		
11	08:47	08:05	07:04	06:52	05:50	05:15	05:46 (3)	05:52 (3)	06:13	07:04	07:56	07:52	08:39			
	16:47	17:42	18:34	20:29	21:21	22:01	7	05:53 (3)	22:00	21:14	20:05	18:55	16:52	16:24		
12	08:46	08:03	07:02	06:49	05:48	05:15	05:46 (3)	05:52 (3)	06:14	07:06	07:57	07:54	08:40			
	16:48	17:44	18:36	20:31	21:23	22:02	7	05:53 (3)	21:59	21:12	20:03	18:52	16:51	16:24		
13	08:45	08:01	07:00	06:47	05:47	05:15	05:46 (3)	05:53 (3)	06:16	07:08	07:59	07:56	08:41			
	16:50	17:46	18:38	20:33	21:24	22:03	8	05:54 (3)	21:58	21:10	20:01	18:50	16:49	16:24		
14	08:44	07:59	06:57	06:45	05:45	05:15	05:45 (3)	05:53 (3)	06:17	07:10	08:01	07:58	08:42			
	16:51	17:48	18:40	20:35	21:26	22:03	8	05:53 (3)	21:57	21:08	19:58	18:48	16:48	16:24		
15	08:44	07:57	06:55	06:43	05:43	05:14	05:45 (3)	05:52 (3)	06:19	07:11	08:03	07:59	08:43			
	16:53	17:50	18:42	20:36	21:28	22:04	9	05:54 (3)	21:56	21:06	19:56	18:46	16:46	16:24		
16	08:43	07:55	06:53	06:40	05:42	05:14	05:45 (3)	05:53 (3)	06:21	07:13	08:05	08:01	08:44			
	16:54	17:52	18:43	20:38	21:29	22:04	9	05:54 (3)	21:55	21:04	19:54	18:43	16:45	16:24		
17	08:42	07:53	06:50	06:38	05:40	05:14	05:45 (3)	05:53 (3)	06:22	07:15	08:06	08:03	08:45			
	16:56	17:53	18:45	20:40	21:31	22:05	9	05:54 (3)	21:54	21:02	19:51	18:41	16:43	16:24		
18	08:41	07:51	06:48	06:36	05:39	05:14	05:45 (3)	05:53 (3)	06:24	07:16	08:08	08:05	08:46			
	16:58	17:55	18:47	20:42	21:32	22:05	9	05:54 (3)	21:53	21:00	19:49	18:39	16:42	16:24		
19	08:40	07:49	06:46	06:34	05:37	05:14	05:45 (3)	05:53 (3)	06:26	07:18	08:10	08:07	08:46			
	16:59	17:57	18:49	20:43	21:34	22:06	10	05:55 (3)	21:52	20:58	19:46	18:37	16:41	16:24		
20	08:39	07:47	06:43	06:32	05:36	05:14	05:45 (3)	05:53 (3)	06:28	07:20	08:12	08:08	08:47			
	17:01	17:59	18:50	20:45	21:35	22:06	10	05:55 (3)	21:50	20:56	19:44	18:35	16:39	16:25		
21	08:37	07:45	06:41	06:29	05:34	05:14	05:46 (3)	05:54 (3)	06:29	07:21	08:14	08:10	08:48			
	17:03	18:01	18:52	20:47	21:37	22:06	10	05:56 (3)	21:49	20:54	19:42	18:32	16:38	16:25		
22	08:36	07:43	06:39	06:27	05:33	05:14	05:46 (3)	05:54 (3)	06:31	07:23	08:15	08:12	08:48			
	17:04	18:03	18:54	20:49	21:38	22:06	10	05:56 (3)	21:48	20:51	19:39	18:30	16:37	16:26		
23	08:35	07:40	06:36	06:25	05:32	05:15	05:46 (3)	05:54 (3)	06:33	07:25	08:17	08:13	08:49			
	17:06	18:05	18:56	20:50	21:40	22:07	10	05:56 (3)	21:47	20:49	19:37	18:28	16:36	16:26		
24	08:34	07:38	06:34	06:23	05:30	05:15	05:47 (3)	05:54 (3)	06:34	07:26	08:19	08:15	08:49			
	17:08	18:07	18:58	20:52	21:41	22:07	10	05:57 (3)	21:45	20:47	19:34	18:26	16:35	16:27		
25	08:32	07:36	06:32	06:21	05:29	05:15	05:47 (3)	05:54 (3)	06:36	07:28	08:21	08:17	08:49			
	17:10	18:09	18:59	20:54	21:43	22:07	9	05:56 (3)	21:44	20:45	19:32	17:24	16:34	16:27		
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47 (3)	05:54 (3)	06:38	07:30	08:23	08:18	08:50			
	17:12	18:10	19:01	20:56	21:44	22:07	9	05:56 (3)	21:42	20:43	19:30	17:22	16:33	16:28		
27	08:30	07:32	06:27	06:17	05:27	05:16	05:48 (3)	05:54 (3)	06:39	07:31	08:25	08:20	08:50			
	17:14	18:12	19:03	20:57	21:45	22:07	9	05:57 (3)	21:41	20:40	19:27	17:20	16:32	16:29		
28	08:28	07:30	06:24	06:15	05:26	05:17	05:48 (3)	05:55 (3)	06:41	07:33	08:26	08:22	08:50			
	17:15	18:14	19:05	20:59	21:47	22:06	9	05:57 (3)	21:39	20:38	19:25	17:18	16:31	16:30		
29	08:27	07:22	06:13	06:03	05:17	05:17	05:49 (3)	05:55 (3)	06:43	07:35	08:28	08:23	08:50			
	17:17	18:16	19:07	21:01	21:48	22:06	8	05:57 (3)	21:38	20:36	19:23	17:16	16:30	16:31		
30	08:25	07:20	06:11	06:01	05:24	05:18	05:49 (3)	05:55 (3)	06:44	07:37	08:30	08:25	08:50			
	17:19	18:18	19:09	21:03	21:49	22:06	8	05:57 (3)	21:36	20:33	19:20	17:14	16:29	16:31		
31	08:24	07:17	06:08	06:00	05:23	05:17	05:55 (3)	05:55 (3)	06:46	07:39	08:32	08:27	08:50			
	17:21	18:20	19:11	21:05	21:50	22:07	21:34	21:34	20:31	19:18	17:12	16:27	16:32			
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240				
Total, worst case						205										
Sun reduction						0.30										
Oper. time red.						1.00										
Wind dir. red.						0.63										
Total reduction						0.19										
Total, real						38										

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** CC - 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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:09	05:22	05:19	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:33	20:29	19:18	17:10	16:28
2	08:50	08:21	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:36	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:27	19:15	17:08	16:28
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:21	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:29	18:22	20:17	21:09	21:55	22:05	21:27	20:22	19:11	17:04	16:26
5	08:50	08:16	07:18	07:06	06:01	05:19	05:22	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:26	20:20	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:40	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:08	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:13	19:01	16:57	16:25
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	22:00	22:01	21:18	20:10	18:59	16:56	16:24
10	08:47	08:07	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:47	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:55	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:29	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:50	17:46	18:38	20:33	21:24	22:03	21:58	21:10	20:01	18:50	16:49	16:24
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:24
15	08:44	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:50	18:42	20:36	21:28	22:04	21:56	21:06	19:56	18:46	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:54	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:35	06:22	07:15	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:46
	16:58	17:55	18:47	20:42	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:07	08:46
	16:59	17:57	18:49	20:43	21:34	22:06	21:52	20:58	19:46	18:37	16:41	16:24
20	08:39	07:47	06:43	06:32	05:36	05:14	05:38	06:27	07:20	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:35	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:42	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:49	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:33	07:25	08:17	08:13	08:49
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:58	20:52	21:41	22:07	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:46	06:36	07:28	08:21	08:17	08:49
	17:10	18:09	18:59	20:54	21:43	22:07	21:44	20:45	19:32	18:24	16:34	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:56	21:44	22:07	21:42	20:42	19:30	18:22	16:33	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:49	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:07	21:41	20:40	19:27	18:20	16:32	16:29
28	08:28	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:22	08:50
	17:15	18:14	19:05	20:59	21:47	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:13	05:25	05:17	05:52	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:38	20:36	19:23	18:16	16:30	16:30
30	08:25		07:20	06:11	05:24	05:18	05:53	06:44	07:37	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** CD - 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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December		
1	08:50	08:22	07:27	07:15	06:08	05:22	21:07 (3)	05:18	21:14 (3)	05:56	06:48	07:38	07:34	08:26
2	16:34	17:23	18:16	20:12	21:04	21:51	21:18 (3)	22:06	21:31 (3)	21:32	20:29	19:18	17:10	16:28
3	08:50	08:20	07:25	07:13	06:06	05:21	21:07 (3)	05:19	21:14 (3)	05:58	06:49	07:40	07:35	08:28
4	16:35	17:25	18:18	20:13	21:06	21:53	21:19 (3)	22:05	21:32 (3)	21:31	20:26	19:15	17:08	16:27
5	08:50	08:19	07:23	07:10	06:05	05:20	21:07 (3)	05:20	21:13 (3)	05:59	06:51	07:42	07:37	08:29
6	16:36	17:27	18:20	20:15	21:08	21:54	21:21 (3)	22:05	21:30 (3)	21:29	20:24	19:13	17:06	16:27
7	08:50	08:17	07:20	07:08	06:03	05:19	21:07 (3)	05:21	21:14 (3)	06:01	06:53	07:43	07:39	08:30
8	16:37	17:28	18:21	20:17	21:09	21:55	21:21 (3)	22:04	21:30 (3)	21:27	20:22	19:11	17:04	16:26
9	08:49	08:15	07:18	07:05	06:01	05:18	21:07 (3)	05:21	21:14 (3)	06:03	06:54	07:45	07:41	08:32
10	16:38	17:30	18:23	20:19	21:11	21:56	21:22 (3)	22:04	21:30 (3)	21:25	20:19	19:08	17:02	16:26
11	08:49	08:14	07:16	07:03	05:59	05:18	21:08 (3)	05:22	21:14 (3)	06:04	06:56	07:47	07:43	08:33
12	16:39	17:32	18:25	20:20	21:13	21:57	21:23 (3)	22:03	21:30 (3)	21:24	20:17	19:06	17:01	16:25
13	08:49	08:12	07:14	07:01	05:57	05:17	21:08 (3)	05:23	21:14 (3)	06:06	06:58	07:49	07:45	08:34
14	16:41	17:34	18:27	20:22	21:14	21:58	21:24 (3)	22:03	21:29 (3)	21:22	20:15	19:04	16:59	16:25
15	08:48	08:10	07:11	06:59	05:55	05:17	21:08 (3)	05:24	21:15 (3)	06:07	06:59	07:50	07:47	08:36
16	16:42	17:36	18:29	20:24	21:16	21:59	21:25 (3)	22:02	21:29 (3)	21:20	20:12	19:01	16:57	16:24
17	08:48	08:08	07:09	06:56	05:53	05:16	21:09 (3)	05:25	21:14 (3)	06:09	07:01	07:52	07:48	08:37
18	16:43	17:38	18:31	20:26	21:18	21:59	21:26 (3)	22:01	21:27 (3)	21:18	20:10	18:59	16:56	16:24
19	08:47	08:06	07:07	06:54	05:52	05:16	21:09 (3)	05:26	21:14 (3)	06:11	07:03	07:54	07:50	08:38
20	16:45	17:40	18:32	20:27	21:19	22:00	21:26 (3)	22:01	21:27 (3)	21:16	20:08	18:57	16:54	16:24
21	08:46	08:05	07:04	06:52	05:50	05:15	21:09 (3)	05:27	21:14 (3)	06:12	07:04	07:56	07:52	08:39
22	16:46	17:42	18:34	20:29	21:21	22:01	21:27 (3)	22:00	21:26 (3)	21:14	20:05	18:54	16:52	16:24
23	08:46	08:03	07:02	06:49	05:48	05:15	21:10 (3)	05:28	21:14 (3)	06:14	07:06	07:57	07:54	08:40
24	16:48	17:44	18:36	20:31	21:23	22:02	21:28 (3)	21:59	21:25 (3)	21:12	20:03	18:52	16:51	16:24
25	08:45	08:01	07:00	06:47	05:46	05:15	21:10 (3)	05:30	21:15 (3)	06:16	07:08	07:59	07:56	08:41
26	16:49	17:46	18:38	20:33	21:24	22:02	21:28 (3)	21:58	21:25 (3)	21:10	20:01	18:50	16:49	16:23
27	08:44	07:59	06:57	06:45	05:45	05:14	21:10 (3)	05:31	21:15 (3)	06:17	07:09	08:01	07:58	08:42
28	16:51	17:48	18:40	20:34	21:26	22:03	21:29 (3)	21:57	21:24 (3)	21:08	19:58	18:48	16:48	16:23
29	08:43	07:57	06:55	06:43	05:43	05:14	21:10 (3)	05:32	21:15 (3)	06:19	07:11	08:03	07:59	08:43
30	16:53	17:49	18:41	20:36	21:28	22:04	21:29 (3)	21:56	21:23 (3)	21:06	19:56	18:45	16:46	16:23
31	08:43	07:55	06:53	06:40	05:42	05:14	21:11 (3)	05:33	21:14 (3)	06:21	07:13	08:04	08:01	08:44
32	16:54	17:51	18:43	20:38	21:29	22:04	21:30 (3)	21:55	21:22 (3)	21:04	19:53	18:43	16:45	16:24
33	08:42	07:53	06:50	06:38	05:40	05:14	21:11 (3)	05:34	21:12 (3)	06:22	07:14	08:06	08:03	08:45
34	16:56	17:53	18:45	20:40	21:31	22:05	21:30 (3)	21:54	21:21 (3)	21:02	19:51	18:41	16:43	16:24
35	08:41	07:51	06:48	06:36	05:39	05:14	21:11 (3)	05:36	21:11 (3)	06:24	07:16	08:08	08:05	08:45
36	16:57	17:55	18:47	20:41	21:32	22:05	21:30 (3)	21:53	21:20 (3)	21:00	19:49	18:39	16:42	16:24
37	08:40	07:49	06:46	06:34	05:37	05:14	21:11 (3)	05:37	21:11 (3)	06:26	07:18	08:10	08:06	08:46
38	16:59	17:57	18:49	20:43	21:34	22:05	21:31 (3)	21:52	21:20 (3)	20:58	19:46	18:37	16:40	16:24
39	08:38	07:47	06:43	06:31	05:36	05:14	21:12 (3)	05:38	21:10 (3)	06:27	07:19	08:12	08:08	08:47
40	17:01	17:59	18:50	20:45	21:35	22:06	21:31 (3)	21:50	21:18 (3)	20:56	19:44	18:34	16:39	16:25
41	08:37	07:45	06:41	06:29	05:34	05:14	21:13 (3)	05:40	21:10 (3)	06:29	07:21	08:13	08:10	08:47
42	17:03	18:01	18:52	20:47	21:37	22:06	21:32 (3)	21:49	21:17 (3)	20:53	19:41	18:32	16:38	16:25
43	08:36	07:42	06:39	06:27	05:33	05:14	21:13 (3)	05:41	21:09 (3)	06:31	07:23	08:15	08:12	08:48
44	17:04	18:03	18:54	20:48	21:38	22:06	21:32 (3)	21:48	21:15 (3)	20:51	19:39	18:30	16:37	16:26
45	08:35	07:40	06:36	06:25	05:32	05:15	21:13 (3)	05:43	21:09 (3)	06:32	07:25	08:17	08:13	08:48
46	17:06	18:05	18:56	20:50	21:40	22:06	21:32 (3)	21:46	21:15 (3)	20:49	19:37	18:28	16:36	16:26
47	08:34	07:38	06:34	06:23	05:30	05:15	21:12 (3)	05:44	21:09 (3)	06:34	07:26	08:19	08:15	08:49
48	17:08	18:07	18:57	20:52	21:41	22:06	21:32 (3)	21:45	21:13 (3)	20:47	19:34	18:26	16:35	16:27
49	08:32	07:36	06:31	06:21	05:29	05:15	21:13 (3)	05:45	21:09 (3)	06:36	07:28	08:21	08:17	08:49
50	17:10	18:08	18:59	20:54	21:42	22:07	21:32 (3)	21:44	21:13 (3)	20:45	19:32	18:24	16:33	16:27
51	08:31	07:34	06:29	06:19	05:28	05:16	21:13 (3)	05:47	21:09 (3)	06:37	07:30	08:23	08:18	08:50
52	17:12	18:10	19:01	20:55	21:44	22:07	21:32 (3)	21:42	21:11 (3)	20:42	19:30	18:22	16:32	16:28
53	08:30	07:32	06:27	06:17	05:27	05:16	21:14 (3)	05:48	21:14 (3)	06:39	07:31	08:24	08:20	08:50
54	17:13	18:12	19:03	20:57	21:45	22:07	21:32 (3)	21:41	21:13 (3)	20:40	19:27	18:20	16:31	16:29
55	08:28	07:29	06:24	06:14	05:26	05:17	21:13 (3)	05:50	21:13 (3)	06:41	07:33	08:26	08:21	08:50
56	17:15	18:14	19:04	20:59	21:46	22:06	21:32 (3)	21:39	21:14 (3)	20:38	19:25	18:18	16:31	16:30
57	08:27	07:22	06:12	06:02	05:17	05:17	21:14 (3)	05:51	21:14 (3)	06:43	07:35	08:28	08:23	08:50
58	17:17	18:16	19:06	20:59	21:46	22:06	21:32 (3)	21:37	21:13 (3)	20:36	19:22	18:16	16:30	16:30
59	08:25	07:20	06:10	06:00	05:24	05:18	21:13 (3)	05:53	21:13 (3)	06:44	07:36	08:29	08:25	08:50
60	17:19	18:18	19:08	21:02	21:49	22:06	21:31 (3)	21:36	21:13 (3)	20:33	19:20	18:14	16:29	16:31
61	08:24	07:17	06:07	05:23	05:23	05:17	21:13 (3)	05:55	21:13 (3)	06:46	07:38	08:31	08:27	08:50
62	17:21	18:20	19:10	21:50	22:37	23:24	21:34	22:31	21:34	22:31	21:34	22:31	21:34	22:31
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240		
Total, worst case					101	524								
Sun reduction					0.37	0.30								
Oper. time red.					1.00	1.00								
Wind dir. red.					0.66	0.65								
Total reduction					0.24	0.19								
Total, real					24	102								

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: CE - 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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:09	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:33	20:29	19:18	17:10	16:28
2	08:50	08:21	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:36	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:27	19:15	17:08	16:28
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:06	06:01	05:19	05:22	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:26	20:20	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:40	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:08	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	22:00	22:01	21:18	20:10	18:59	16:56	16:24
10	08:47	08:07	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:47	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:55	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:03	21:58	21:10	20:01	18:50	16:49	16:24
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:24
15	08:43	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:50	18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:58	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:49	20:43	21:34	22:05	21:52	20:58	19:46	18:37	16:41	16:24
20	08:39	07:47	06:43	06:32	05:36	05:14	05:38	06:27	07:20	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:35	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:42	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:33	07:25	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:57	20:52	21:41	22:07	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:46	06:36	07:28	08:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:43	22:07	21:44	20:45	19:32	18:24	16:34	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:55	21:44	22:07	21:42	20:42	19:30	18:22	16:33	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:49	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:41	20:40	19:27	18:20	16:32	16:29
28	08:28	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:22	08:50
	17:15	18:14	19:05	20:59	21:47	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:13	05:25	05:17	05:52	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:36	19:22	18:16	16:30	16:30
30	08:25		07:20	06:11	05:24	05:18	05:53	06:44	07:37	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: CF - 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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December		
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	21:25 (2)	05:56	06:48	07:38	07:34	08:26	
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	6	21:31 (2)	21:32	19:18	17:10	16:28	
2	08:50	08:20	07:25	07:13	06:06	05:21	21:18 (2)	05:19	21:26 (2)	05:58	06:49	07:40	07:35	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	1	21:19 (2)	22:05	21:31 (2)	21:31	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10	06:05	05:20	21:18 (2)	05:20	21:25 (2)	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	3	21:21 (2)	22:05	21:30 (2)	21:29	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	21:18 (2)	05:21	21:25 (2)	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	3	21:21 (2)	22:04	21:30 (2)	21:27	19:11	17:04	16:26
5	08:49	08:15	07:18	07:05	06:01	05:19	21:18 (2)	05:21	21:25 (2)	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	4	21:22 (2)	22:04	21:30 (2)	21:25	19:08	17:02	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	21:19 (2)	05:22	21:25 (2)	06:04	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:13	21:57	4	21:23 (2)	22:03	21:30 (2)	21:24	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	21:19 (2)	05:23	21:26 (2)	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	5	21:24 (2)	22:03	21:29 (2)	21:22	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	21:20 (2)	05:24	21:26 (2)	06:07	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	5	21:25 (2)	22:02	21:29 (2)	21:20	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	21:20 (2)	05:25	21:25 (2)	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	21:59	6	21:26 (2)	22:01	21:27 (2)	21:18	18:59	16:56	16:24
10	08:47	08:06	07:07	06:54	05:52	05:16	21:20 (2)	05:26	21:25 (2)	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	6	21:26 (2)	22:01	21:27 (2)	21:16	18:57	16:54	16:24
11	08:46	08:05	07:04	06:52	05:50	05:15	21:21 (2)	05:27	21:25 (2)	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	6	21:27 (2)	22:00	21:26 (2)	21:14	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	21:22 (2)	05:28	21:26 (2)	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	6	21:28 (2)	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:46	05:15	21:21 (2)	05:30	21:26 (2)	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:02	7	21:28 (2)	21:58	21:10	20:01	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	05:45	05:14	21:22 (2)	05:31	21:27 (2)	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	7	21:29 (2)	21:57	21:08	19:58	18:48	16:48	16:23
15	08:43	07:57	06:55	06:43	05:43	05:14	21:22 (2)	05:32	21:28 (2)	06:19	07:11	08:03	07:59	08:43
	16:53	17:49	18:41	20:36	21:28	22:04	7	21:29 (2)	21:56	21:06	19:56	18:45	16:46	16:23
16	08:43	07:55	06:53	06:40	05:42	05:14	21:23 (2)	05:33	21:30 (2)	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	7	21:30 (2)	21:55	21:04	19:53	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	21:23 (2)	05:34	21:31 (2)	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	7	21:30 (2)	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	21:23 (2)	05:36	21:32 (2)	06:24	07:16	08:08	08:05	08:45
	16:57	17:55	18:47	20:41	21:32	22:05	7	21:30 (2)	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	21:23 (2)	05:37	21:33 (2)	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:49	20:43	21:34	22:05	8	21:31 (2)	21:52	20:58	19:46	18:37	16:41	16:24
20	08:38	07:47	06:43	06:31	05:36	05:14	21:23 (2)	05:38	21:34 (2)	06:27	07:19	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	8	21:31 (2)	21:50	20:56	19:44	18:34	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	21:25 (2)	05:40	21:35 (2)	06:29	07:21	08:13	08:10	08:47
	17:03	18:01	18:52	20:47	21:37	22:06	7	21:32 (2)	21:49	20:53	19:41	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:14	21:25 (2)	05:41	21:36 (2)	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	7	21:32 (2)	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	21:24 (2)	05:43	21:37 (2)	06:32	07:25	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	8	21:32 (2)	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	21:24 (2)	05:44	21:38 (2)	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:57	20:52	21:41	22:06	8	21:32 (2)	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	21:25 (2)	05:45	21:39 (2)	06:36	07:28	07:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:42	22:07	7	21:32 (2)	21:44	20:45	19:32	17:24	16:33	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	21:25 (2)	05:47	21:40 (2)	06:37	07:30	07:23	08:18	08:50
	17:12	18:10	19:01	20:55	21:44	22:07	7	21:32 (2)	21:42	20:42	19:30	17:22	16:32	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	21:25 (2)	05:48	21:41 (2)	06:39	07:31	07:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	7	21:32 (2)	21:41	20:40	19:27	17:20	16:31	16:29
28	08:28	07:29	06:24	06:14	05:26	05:17	21:25 (2)	05:50	21:42 (2)	06:41	07:33	07:26	08:21	08:50
	17:15	18:14	19:04	20:59	21:46	22:06	7	21:32 (2)	21:39	20:38	19:25	17:18	16:31	16:30
29	08:27		07:22	06:12	05:25	05:17	21:25 (2)	05:51	21:43 (2)	06:43	07:35	07:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	7	21:32 (2)	21:37	20:36	19:22	17:16	16:30	16:30
30	08:25		07:20	06:10	05:24	05:18	21:25 (2)	05:53	21:44 (2)	06:44	07:36	07:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	6	21:31 (2)	21:36	20:33	19:20	17:14	16:29	16:31
31	08:24		07:17		05:23			05:55	21:45 (2)	06:46		07:32		08:50
	17:21		20:10		21:50			21:34	21:46 (2)	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240		
Total, worst case						178		42						
Sun reduction						0.30		0.26						
Oper. time red.						1.00		1.00						
Wind dir. red.						0.65		0.65						
Total reduction						0.19		0.17						
Total, real						35		7						

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
Kathryn Feeney / kfeeney@jodireland.com
Calculated:
16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** CG - 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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50 16:34	08:22 17:23	07:27 18:16	07:15 18:12	06:09 21:04	05:22 21:52	05:18 22:06	05:56 21:33	06:48 20:29	07:38 19:18	08:09 (1) 17:10	07:34 16:28
2	08:50 16:35	08:21 17:25	07:25 18:18	07:13 18:13	06:07 21:06	05:21 21:53	05:19 22:06	05:58 21:31	06:49 20:27	07:40 19:15	08:07 (1) 17:08	07:36 16:28
3	08:50 16:36	08:19 17:27	07:23 18:20	07:10 18:15	06:05 21:08	05:20 21:54	05:20 22:05	05:59 21:29	06:51 20:24	07:42 19:13	08:07 (1) 17:06	07:38 16:27
4	08:50 16:37	08:17 17:29	07:21 18:22	07:08 18:23	06:03 21:09	05:19 21:55	05:21 22:05	06:01 21:27	06:53 20:22	07:43 19:11	08:09 (1) 17:04	07:39 16:26
5	08:50 16:38	08:16 17:30	07:18 18:23	07:06 18:25	06:01 21:11	05:19 21:56	05:22 22:04	06:03 21:26	06:54 20:20	07:45 19:08	08:11 (1) 17:03	07:41 16:26
6	08:49 16:40	08:14 17:32	07:16 18:25	07:03 18:27	05:59 21:13	05:18 21:57	05:22 22:04	06:04 21:24	06:56 20:17	07:47 19:06	08:13 (1) 17:01	07:43 16:25
7	08:49 16:41	08:12 17:34	07:14 18:27	07:01 18:31	05:57 21:15	05:17 21:58	05:23 22:03	06:06 21:22	06:58 20:15	07:49 19:04	08:14 (1) 16:59	07:45 16:25
8	08:48 16:42	08:10 17:36	07:11 18:29	06:59 18:33	05:55 21:16	05:17 21:59	05:24 22:02	06:08 21:20	06:59 20:13	07:50 19:01	08:16 (1) 16:57	07:47 16:24
9	08:48 16:44	08:09 17:38	07:09 18:31	06:56 18:33	05:53 21:18	05:16 22:00	05:25 22:02	06:09 21:18	07:01 20:10	07:52 18:59	08:18 (1) 16:56	07:49 16:24
10	08:47 16:45	08:07 17:40	07:07 18:33	06:54 18:33	05:52 21:20	05:16 22:01	05:26 22:01	06:11 21:16	07:03 20:08	07:54 18:57	08:21 (1) 16:54	07:50 16:24
11	08:47 16:46	08:05 17:42	07:05 18:34	06:52 18:34	05:50 21:21	05:15 22:01	05:27 22:00	06:12 21:14	07:04 20:06	07:56 18:55	08:22 (1) 16:52	07:52 16:24
12	08:46 16:48	08:03 17:44	07:02 18:36	06:49 18:36	05:48 21:23	05:15 22:02	05:28 21:59	06:14 21:12	07:06 20:03	07:57 18:52	08:23 (1) 16:51	07:54 16:24
13	08:45 16:49	08:01 17:46	07:00 18:38	06:47 18:39	05:47 21:25	05:15 22:03	05:30 21:58	06:16 21:10	07:08 20:01	07:59 18:50	08:24 (1) 16:49	07:56 16:24
14	08:45 16:51	07:59 17:48	06:58 18:40	06:45 18:40	05:45 21:26	05:14 22:03	05:31 21:57	06:17 21:08	07:10 19:58	08:01 18:48	08:25 (1) 16:48	07:58 16:24
15	08:44 16:53	07:57 17:50	06:55 18:42	06:43 18:42	05:43 21:28	05:14 22:04	05:32 21:56	06:19 21:06	07:11 19:56	08:03 18:46	08:26 (1) 16:46	08:00 16:24
16	08:43 16:54	07:55 17:52	06:53 18:43	06:40 18:43	05:42 21:29	05:14 22:04	05:33 21:55	06:21 21:04	07:13 19:54	08:05 18:43	08:27 (2) 16:45	08:01 16:24
17	08:42 16:56	07:53 17:53	06:50 18:45	06:38 18:45	05:40 21:31	05:14 22:05	05:34 21:54	06:22 21:02	07:15 19:51	08:06 18:41	08:28 (2) 16:43	08:03 16:24
18	08:41 16:58	07:51 17:55	06:48 18:47	06:36 18:47	05:39 21:32	05:14 22:05	05:36 21:53	06:24 21:00	07:16 19:49	08:08 18:39	08:29 (2) 16:42	08:05 16:24
19	08:40 16:59	07:49 17:57	06:46 18:49	06:34 18:49	05:37 21:34	05:14 22:06	05:37 21:52	06:26 20:58	07:18 19:46	08:10 18:37	08:30 (3) 16:41	08:07 16:24
20	08:39 17:01	07:47 17:59	06:43 18:50	06:32 18:50	05:36 21:35	05:14 22:06	05:38 21:51	06:28 20:56	07:20 19:44	08:12 18:35	08:31 (3) 16:39	08:08 16:25
21	08:38 17:03	07:45 18:01	06:41 18:52	06:29 18:52	05:34 21:37	05:14 22:06	05:40 21:49	06:29 20:54	07:21 19:42	08:14 18:32	08:32 (3) 16:38	08:10 16:25
22	08:36 17:04	07:43 18:03	06:39 18:54	06:27 18:54	05:33 21:38	05:14 22:06	05:41 21:48	06:31 20:51	07:23 19:39	08:15 18:30	08:33 (2) 16:37	08:12 16:26
23	08:35 17:06	07:40 18:05	06:36 18:56	06:25 18:56	05:32 21:40	05:15 22:07	05:43 21:47	06:33 20:49	07:25 19:37	08:17 18:28	08:34 (2) 16:36	08:14 16:26
24	08:34 17:08	07:38 18:07	06:34 18:58	06:23 18:58	05:30 21:41	05:15 22:07	05:44 21:45	06:34 20:47	07:26 19:34	08:19 18:26	08:35 (2) 16:35	08:15 16:27
25	08:33 17:10	07:36 18:09	06:32 18:59	06:21 18:59	05:29 21:43	05:15 22:07	05:46 21:44	06:36 20:45	07:28 19:32	08:21 17:24	08:36 (2) 16:34	08:17 16:27
26	08:31 17:12	07:34 18:10	06:29 19:01	06:19 19:01	05:28 21:44	05:16 22:07	05:47 21:42	06:38 20:43	07:30 19:30	08:23 17:22	08:37 (2) 16:33	08:19 16:28
27	08:30 17:13	07:32 18:12	06:27 19:03	06:17 19:03	05:27 21:45	05:16 22:07	05:49 21:41	06:39 20:40	07:31 19:27	08:25 17:20	08:38 (2) 16:32	08:20 16:29
28	08:28 17:15	07:30 18:14	06:24 19:05	06:15 19:05	05:26 21:47	05:17 22:07	05:50 21:39	06:41 20:38	07:33 19:25	08:27 17:18	08:39 (2) 16:31	08:22 16:30
29	08:27 17:17		07:22 20:06	06:13 20:06	05:25 21:48	05:17 22:06	05:52 21:38	06:43 20:36	07:35 19:23	08:29 17:16	08:40 (2) 16:30	08:23 16:30
30	08:25 17:19		07:20 20:08	06:11 20:08	05:24 21:49	05:18 22:06	05:53 21:36	06:44 20:34	07:37 19:20	08:31 (1) 17:14	08:41 (2) 16:29	08:25 16:31
31	08:24 17:21		07:17 20:10	06:10 20:10	05:23 21:50	05:15 22:06	05:55 21:34	06:46 20:31	07:38 19:20	08:32 (1) 17:12	08:42 (2) 16:28	08:26 16:32
Potential sun hours	256	276	367	418	489	503	506	456	381	330	263	240
Total, worst case		227		97					3		325	
Sun reduction		0.21		0.24					0.28		0.24	
Oper. time red.		1.00		1.00					1.00		1.00	
Wind dir. red.		0.67		0.67					0.67		0.67	
Total reduction		0.14		0.16					0.19		0.16	
Total, real		32		16					1		52	

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	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** CH - 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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:09	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:33	20:29	19:18	17:10	16:28
2	08:50	08:21	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:36	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:27	19:15	17:08	16:28
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:06	06:01	05:19	05:22	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:26	20:20	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:40	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:08	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	22:00	22:01	21:18	20:10	18:59	16:56	16:24
10	08:47	08:07	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:47	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:55	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:03	21:58	21:10	20:01	18:50	16:49	16:24
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:24
15	08:43	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:50	18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:58	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:49	20:43	21:34	22:05	21:52	20:58	19:46	18:37	16:41	16:24
20	08:39	07:47	06:43	06:32	05:36	05:14	05:38	06:27	07:20	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:34	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:42	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:33	07:25	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:57	20:52	21:41	22:07	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:46	06:36	07:28	08:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:43	22:07	21:44	20:45	19:32	18:24	16:34	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:55	21:44	22:07	21:42	20:42	19:30	18:22	16:33	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:49	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:41	20:40	19:27	18:20	16:32	16:29
28	08:28	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:22	08:50
	17:15	18:14	19:05	20:59	21:47	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:13	05:25	05:17	05:52	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:36	19:22	18:16	16:30	16:30
30	08:25		07:20	06:11	05:24	05:18	05:53	06:44	07:36	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** CI - 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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:09	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:33	20:29	19:18	17:10	16:28
2	08:50	08:21	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:35	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:26	19:15	17:08	16:28
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:06	06:01	05:19	05:22	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:25	20:20	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:40	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:07	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	22:00	22:01	21:18	20:10	18:59	16:56	16:24
10	08:47	08:06	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:47	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:02	21:58	21:10	20:01	18:50	16:49	16:24
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:23
15	08:43	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:50	18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:58	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:49	20:43	21:34	22:05	21:52	20:58	19:46	18:37	16:41	16:24
20	08:38	07:47	06:43	06:31	05:36	05:14	05:38	06:27	07:19	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:34	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:42	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:32	07:25	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:57	20:52	21:41	22:07	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:46	06:36	07:28	08:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:42	22:07	21:44	20:45	19:32	18:24	16:34	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:55	21:44	22:07	21:42	20:42	19:30	18:22	16:33	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:48	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:41	20:40	19:27	18:20	16:32	16:29
28	08:28	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:21	08:50
	17:15	18:14	19:05	20:59	21:47	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:13	05:25	05:17	05:52	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:36	19:22	18:16	16:30	16:30
30	08:25		07:20	06:10	05:24	05:18	05:53	06:44	07:36	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** CJ - H88**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:33	20:29	19:18	17:10	16:28
2	08:50	08:21	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:35	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:26	19:15	17:08	16:28
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:06	06:01	05:19	05:22	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:25	20:20	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:40	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:07	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	22:00	22:01	21:18	20:10	18:59	16:56	16:24
10	08:47	08:06	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:47	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:02	21:58	21:10	20:01	18:50	16:49	16:24
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:23
15	08:43	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:50	18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:58	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:49	20:43	21:34	22:05	21:52	20:58	19:46	18:37	16:41	16:24
20	08:38	07:47	06:43	06:31	05:36	05:14	05:38	06:27	07:19	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:34	16:39	16:25
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	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:42	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:32	07:25	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:57	20:52	21:41	22:07	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:46	06:36	07:28	08:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:42	22:07	21:44	20:45	19:32	18:24	16:34	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:55	21:44	22:07	21:42	20:42	19:30	18:22	16:33	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:48	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:41	20:40	19:27	18:20	16:32	16:29
28	08:28	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:21	08:50
	17:15	18:14	19:05	20:59	21:47	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:13	05:25	05:17	05:52	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:36	19:22	18:16	16:30	16:30
30	08:25		07:20	06:10	05:24	05:18	05:53	06:44	07:36	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
Kathryn Feeney / kfeeney@jodireland.com
Calculated:
16/12/2024 15:13/4.0.552

SHADOW - Calendar**Calculation:** 6778 Moanmore Lower Worst Case **Shadow receptor:** CK - H89**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50 16:34	08:22 17:23	07:27 18:16	07:15 20:12	06:08 21:04	05:22 21:51	21:04 (3) 22:06	21:12 (3) 21:32	05:56 20:29	06:48 19:18	07:38 17:10	07:34 16:28
2	08:50 16:35	08:20 17:25	07:25 18:18	07:13 20:13	06:06 21:06	05:21 21:53	21:04 (3) 22:05	21:13 (3) 21:31	05:58 20:26	06:49 19:15	07:35 17:08	08:28 16:27
3	08:50 16:36	08:19 17:26	07:23 18:20	07:10 20:15	06:05 21:08	05:20 21:54	21:05 (3) 22:05	21:12 (3) 21:29	05:59 20:24	06:51 19:13	07:42 17:06	08:29 16:27
4	08:50 16:37	08:17 17:28	07:20 18:21	07:08 20:17	06:03 21:09	05:19 21:55	21:05 (3) 22:04	21:12 (3) 21:27	06:01 20:22	06:53 19:11	07:39 17:04	08:30 16:26
5	08:49 16:38	08:15 17:30	07:18 18:23	07:05 20:19	06:01 21:11	05:18 21:56	21:05 (3) 22:04	21:12 (3) 21:25	06:03 20:19	06:54 19:08	07:41 17:02	08:32 16:26
6	08:49 16:39	08:14 17:32	07:16 18:25	07:03 20:20	05:59 21:13	05:18 21:57	21:06 (3) 22:03	21:12 (3) 21:24	06:04 20:17	06:56 19:06	07:47 17:01	08:33 16:25
7	08:49 16:41	08:12 17:34	07:14 18:27	07:01 20:22	05:57 21:14	05:17 21:58	21:07 (3) 22:03	21:12 (3) 21:22	06:06 20:15	06:58 19:04	07:49 16:59	08:34 16:25
8	08:48 16:42	08:10 17:36	07:11 18:29	06:59 20:24	05:55 21:16	05:17 21:59	21:07 (3) 22:02	21:12 (3) 21:20	06:07 20:12	06:59 19:01	07:50 16:57	08:36 16:24
9	08:48 16:43	08:08 17:38	07:09 18:31	06:56 20:26	05:53 21:18	05:16 21:59	21:07 (3) 22:01	21:12 (3) 21:18	06:09 20:10	07:01 18:59	07:52 16:56	08:37 16:24
10	08:47 16:45	08:06 17:40	07:07 18:32	06:54 20:27	05:52 21:19	05:16 22:00	21:07 (3) 22:01	21:12 (3) 21:16	06:11 20:08	07:03 18:57	07:54 16:54	08:38 16:24
11	08:46 16:46	08:05 17:42	07:04 18:34	06:52 20:29	05:50 21:21	05:15 22:01	21:08 (3) 22:00	21:12 (3) 21:14	06:12 20:05	07:04 18:54	07:56 16:52	08:39 16:24
12	08:46 16:48	08:03 17:44	07:02 18:36	06:49 20:31	05:48 21:23	05:15 22:02	21:09 (3) 21:59	21:11 (3) 21:12	06:14 20:03	07:06 18:52	07:57 16:51	08:40 16:24
13	08:45 16:49	08:01 17:46	07:00 18:38	06:47 20:33	05:46 21:24	05:15 22:02	21:08 (3) 21:58	21:12 (3) 21:10	06:16 20:01	07:08 18:50	07:59 16:49	08:41 16:23
14	08:44 16:51	07:59 17:48	06:57 18:40	06:45 20:34	05:45 21:26	05:14 22:03	21:28 (3) 21:57	21:25 (3) 21:08	06:17 19:58	07:09 18:48	08:01 16:48	08:42 16:23
15	08:43 16:53	07:57 17:49	06:55 18:41	06:43 20:36	05:43 21:28	05:14 22:04	21:09 (3) 21:56	21:12 (3) 21:06	06:19 19:56	07:11 18:45	08:03 16:46	08:43 16:23
16	08:43 16:54	07:55 17:51	06:53 18:43	06:40 20:38	05:42 21:29	05:14 22:04	21:10 (3) 21:55	21:12 (3) 21:04	06:21 19:53	07:13 18:43	08:04 16:45	08:44 16:24
17	08:42 16:56	07:53 17:53	06:50 18:45	06:38 20:40	05:40 21:31	05:14 22:05	21:12 (3) 21:54	21:12 (3) 21:02	06:22 19:51	07:14 18:41	08:06 16:43	08:45 16:24
18	08:41 16:57	07:51 17:55	06:48 18:47	06:36 20:41	05:39 21:32	05:14 22:05	21:11 (3) 21:53	21:12 (3) 21:00	06:24 19:49	07:16 18:39	08:08 16:42	08:46 16:25
19	08:40 16:59	07:49 17:57	06:46 18:49	06:34 20:43	05:37 21:34	05:14 22:05	21:11 (3) 21:52	21:11 (3) 20:58	06:26 19:46	07:18 18:37	08:10 16:40	08:46 16:24
20	08:38 17:01	07:47 17:59	06:43 18:50	06:31 20:45	05:36 21:35	05:14 22:06	21:11 (3) 21:50	21:10 (3) 20:56	06:27 19:44	07:19 18:34	08:12 16:39	08:47 16:25
21	08:37 17:03	07:45 18:01	06:41 18:52	06:29 20:47	05:34 21:37	05:14 22:06	21:12 (3) 21:49	21:09 (3) 20:53	06:29 19:41	07:21 18:32	08:13 16:38	08:47 16:25
22	08:36 17:04	07:42 18:03	06:38 18:54	06:27 20:48	05:33 21:38	05:14 22:06	21:12 (3) 21:48	21:08 (3) 20:51	06:31 19:39	07:23 18:30	08:15 16:37	08:48 16:25
23	08:35 17:06	07:40 18:05	06:36 18:56	06:25 20:50	05:32 21:40	05:15 22:06	21:12 (3) 21:46	21:08 (3) 20:49	06:32 19:37	07:25 18:28	08:17 16:36	08:48 16:26
24	08:34 17:08	07:38 18:07	06:34 18:57	06:23 20:52	05:30 21:41	05:15 22:06	21:11 (3) 21:45	21:07 (3) 20:47	06:34 19:34	07:26 18:26	08:19 16:35	08:49 16:27
25	08:32 17:10	07:36 18:08	06:31 18:59	06:21 20:54	05:29 21:42	05:15 22:07	21:12 (3) 21:44	21:08 (3) 20:45	06:36 19:32	07:28 17:24	08:17 16:33	08:49 16:27
26	08:31 17:12	07:34 18:10	06:29 19:01	06:19 20:55	05:28 21:44	05:16 22:07	21:12 (3) 21:42	21:07 (3) 20:42	06:37 19:30	07:30 17:22	08:18 16:32	08:50 16:28
27	08:30 17:13	07:32 18:12	06:27 19:03	06:17 20:57	05:27 21:45	05:16 22:07	21:12 (3) 21:41	21:07 (3) 20:40	06:39 19:27	07:31 17:20	08:20 16:31	08:50 16:29
28	08:28 17:15	07:29 18:14	06:24 19:04	06:14 20:59	05:26 21:46	05:17 22:06	21:12 (3) 21:39	21:07 (3) 20:38	06:41 19:25	07:33 17:18	08:21 16:31	08:50 16:30
29	08:27 17:17		07:22 20:06	06:12 21:01	05:25 21:48	05:17 22:06	21:12 (3) 21:37	06:43 20:36	07:35 19:22	07:28 17:16	08:23 16:30	08:50 16:30
30	08:25 17:19		07:20 20:08	06:10 21:02	05:24 21:49	05:18 22:06	21:12 (3) 21:36	06:44 20:33	07:36 19:20	07:30 17:14	08:25 16:29	08:50 16:31
31	08:24 17:21		07:17 20:10		05:23 21:50	05:13 21:17 (3)	21:31 (3) 21:34	06:46 20:31		07:32 17:12		08:50 16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
Total, worst case					122	550						
Sun reduction					0.37	0.30						
Oper. time red.					1.00	1.00						
Wind dir. red.					0.66	0.66						
Total reduction					0.24	0.20						
Total, real					30	107						

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	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** CL - H90**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:09	05:22	05:19	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:33	20:29	19:18	17:10	16:28
2	08:50	08:21	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:36	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:27	19:15	17:08	16:28
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:21	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:29	18:22	20:17	21:09	21:55	22:05	21:27	20:22	19:11	17:04	16:26
5	08:50	08:16	07:18	07:06	06:01	05:19	05:22	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:26	20:20	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:40	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:08	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:13	19:01	16:57	16:25
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	22:00	22:01	21:18	20:10	18:59	16:56	16:24
10	08:47	08:07	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:47	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:55	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:29	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:50	17:46	18:38	20:33	21:24	22:03	21:58	21:10	20:01	18:50	16:49	16:24
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:24
15	08:44	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:50	18:42	20:36	21:28	22:04	21:56	21:06	19:56	18:46	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:54	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:35	06:22	07:15	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:46
	16:58	17:55	18:47	20:42	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:07	08:46
	16:59	17:57	18:49	20:43	21:34	22:06	21:52	20:58	19:46	18:37	16:41	16:24
20	08:39	07:47	06:43	06:32	05:36	05:14	05:38	06:27	07:20	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:35	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:42	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:49	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:33	07:25	08:17	08:13	08:49
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:58	20:52	21:41	22:07	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:46	06:36	07:28	08:21	08:17	08:49
	17:10	18:09	18:59	20:54	21:43	22:07	21:44	20:45	19:32	18:24	16:34	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:56	21:44	22:07	21:42	20:42	19:30	18:22	16:33	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:49	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:07	21:41	20:40	19:27	18:20	16:32	16:29
28	08:28	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:22	08:50
	17:15	18:14	19:05	20:59	21:47	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:13	05:25	05:17	05:52	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:38	20:36	19:23	18:16	16:30	16:31
30	08:25		07:20	06:11	05:24	05:18	05:53	06:44	07:37	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: CM - H91

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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:09	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:33	20:29	19:18	17:10	16:28
2	08:50	08:21	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:35	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:26	19:15	17:08	16:28
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:06	06:01	05:19	05:22	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:25	20:20	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:40	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:07	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	22:00	22:01	21:18	20:10	18:59	16:56	16:24
10	08:47	08:06	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:47	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:02	21:58	21:10	20:01	18:50	16:49	16:24
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:23
15	08:43	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:50	18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:58	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:49	20:43	21:34	22:05	21:52	20:58	19:46	18:37	16:41	16:24
20	08:38	07:47	06:43	06:31	05:36	05:14	05:38	06:27	07:19	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:34	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:42	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:32	07:25	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:57	20:52	21:41	22:07	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:46	06:36	07:28	08:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:42	22:07	21:44	20:45	19:32	18:24	16:34	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:55	21:44	22:07	21:42	20:42	19:30	18:22	16:33	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:48	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:41	20:40	19:27	18:20	16:32	16:29
28	08:28	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:21	08:50
	17:15	18:14	19:05	20:59	21:47	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:13	05:25	05:17	05:52	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:36	19:22	18:16	16:30	16:30
30	08:25		07:20	06:10	05:24	05:18	05:53	06:44	07:36	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** CN - H92**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December				
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	21:27 (2)	05:56	06:48	07:38	07:34	08:26			
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	4	21:31 (2)	21:32	20:29	19:18	17:10	16:28		
2	08:50	08:20	07:25	07:13	06:06	05:21	05:19	21:27 (2)	05:58	06:49	07:40	07:35	08:28			
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	4	21:31 (2)	21:31	20:26	19:15	17:08	16:27		
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	21:27 (2)	05:59	06:51	07:42	07:37	08:29			
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	3	21:30 (2)	21:29	20:24	19:13	17:06	16:27		
4	08:50	08:17	07:20	07:08	06:03	05:19	21:20 (2)	05:21	21:27 (2)	06:01	06:53	07:43	07:39	08:30		
	16:37	17:28	18:21	20:17	21:09	21:55	1	21:21 (2)	22:04	3	21:30 (2)	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:05	06:01	05:19	21:20 (2)	05:21	21:27 (2)	06:03	06:54	07:45	07:41	08:32		
	16:38	17:30	18:23	20:19	21:11	21:56	2	21:22 (2)	22:04	3	21:30 (2)	21:25	20:19	19:08	17:02	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	21:21 (2)	05:22	21:27 (2)	06:04	06:56	07:47	07:43	08:33		
	16:39	17:32	18:25	20:20	21:13	21:57	2	21:23 (2)	22:03	3	21:30 (2)	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	21:21 (2)	05:23	21:28 (2)	06:06	06:58	07:49	07:45	08:34		
	16:41	17:34	18:27	20:22	21:14	21:58	3	21:24 (2)	22:03	1	21:29 (2)	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	21:22 (2)	05:24	21:28 (2)	06:07	06:59	07:50	07:47	08:36		
	16:42	17:36	18:29	20:24	21:16	21:59	3	21:25 (2)	22:02	1	21:29 (2)	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	21:22 (2)	05:25	21:28 (2)	06:09	07:01	07:52	07:48	08:37		
	16:44	17:38	18:31	20:26	21:18	21:59	4	21:26 (2)	22:01	21:18	20:10	18:59	16:56	16:24		
10	08:47	08:06	07:07	06:54	05:52	05:16	21:22 (2)	05:26	21:28 (2)	06:11	07:03	07:54	07:50	08:38		
	16:45	17:40	18:32	20:27	21:19	22:00	4	21:26 (2)	22:01	21:16	20:08	18:57	16:54	16:24		
11	08:46	08:05	07:04	06:52	05:50	05:15	21:23 (2)	05:27	21:28 (2)	06:12	07:04	07:56	07:52	08:39		
	16:46	17:42	18:34	20:29	21:21	22:01	4	21:27 (2)	22:00	21:14	20:05	18:54	16:52	16:24		
12	08:46	08:03	07:02	06:49	05:48	05:15	21:23 (2)	05:28	21:28 (2)	06:14	07:06	07:57	07:54	08:40		
	16:48	17:44	18:36	20:31	21:23	22:02	5	21:28 (2)	21:59	21:12	20:03	18:52	16:51	16:24		
13	08:45	08:01	07:00	06:47	05:46	05:15	21:23 (2)	05:30	21:28 (2)	06:16	07:08	07:59	07:56	08:41		
	16:49	17:46	18:38	20:33	21:24	22:02	5	21:28 (2)	21:58	21:10	20:01	18:50	16:49	16:23		
14	08:44	07:59	06:57	06:45	05:45	05:14	21:23 (2)	05:31	21:28 (2)	06:17	07:09	08:01	07:58	08:42		
	16:51	17:48	18:40	20:34	21:26	22:03	6	21:29 (2)	21:57	21:08	19:58	18:48	16:48	16:23		
15	08:43	07:57	06:55	06:43	05:43	05:14	21:24 (2)	05:32	21:28 (2)	06:19	07:11	08:03	07:59	08:43		
	16:53	17:49	18:41	20:36	21:28	22:04	5	21:29 (2)	21:56	21:06	19:56	18:45	16:46	16:23		
16	08:43	07:55	06:53	06:40	05:42	05:14	21:24 (2)	05:33	21:28 (2)	06:21	07:13	08:04	08:01	08:44		
	16:54	17:51	18:43	20:38	21:29	22:04	6	21:30 (2)	21:55	21:04	19:53	18:43	16:45	16:24		
17	08:42	07:53	06:50	06:38	05:40	05:14	21:24 (2)	05:34	21:28 (2)	06:22	07:14	08:06	08:03	08:45		
	16:56	17:53	18:45	20:40	21:31	22:05	6	21:30 (2)	21:54	21:02	19:51	18:41	16:43	16:24		
18	08:41	07:51	06:48	06:36	05:39	05:14	21:25 (2)	05:36	21:28 (2)	06:24	07:16	08:08	08:05	08:45		
	16:57	17:55	18:47	20:41	21:32	22:05	5	21:30 (2)	21:53	21:00	19:49	18:39	16:42	16:24		
19	08:40	07:49	06:46	06:34	05:37	05:14	21:25 (2)	05:37	21:28 (2)	06:26	07:18	08:10	08:06	08:46		
	16:59	17:57	18:49	20:43	21:34	22:05	6	21:31 (2)	21:52	20:58	19:46	18:37	16:41	16:24		
20	08:38	07:47	06:43	06:31	05:36	05:14	21:25 (2)	05:38	21:28 (2)	06:27	07:19	08:12	08:08	08:47		
	17:01	17:59	18:50	20:45	21:35	22:06	6	21:31 (2)	21:50	20:56	19:44	18:34	16:39	16:25		
21	08:37	07:45	06:41	06:29	05:34	05:14	21:26 (2)	05:40	21:28 (2)	06:29	07:21	08:13	08:10	08:47		
	17:03	18:01	18:52	20:47	21:37	22:06	6	21:32 (2)	21:49	20:53	19:41	18:32	16:38	16:25		
22	08:36	07:42	06:39	06:27	05:33	05:14	21:26 (2)	05:41	21:28 (2)	06:31	07:23	08:15	08:12	08:48		
	17:04	18:03	18:54	20:48	21:38	22:06	6	21:32 (2)	21:48	20:51	19:39	18:30	16:37	16:26		
23	08:35	07:40	06:36	06:25	05:32	05:15	21:26 (2)	05:43	21:28 (2)	06:32	07:25	08:17	08:13	08:48		
	17:06	18:05	18:56	20:50	21:40	22:06	6	21:32 (2)	21:46	20:49	19:37	18:28	16:36	16:26		
24	08:34	07:38	06:34	06:23	05:30	05:15	21:26 (2)	05:44	21:28 (2)	06:34	07:26	08:19	08:15	08:49		
	17:08	18:07	18:57	20:52	21:41	22:06	6	21:32 (2)	21:45	20:47	19:34	18:26	16:35	16:27		
25	08:32	07:36	06:31	06:21	05:29	05:15	21:26 (2)	05:45	21:28 (2)	06:36	07:28	07:21	08:17	08:49		
	17:10	18:08	18:59	20:54	21:42	22:07	6	21:32 (2)	21:44	20:45	19:32	17:24	16:33	16:27		
26	08:31	07:34	06:29	06:19	05:28	05:16	21:26 (2)	05:47	21:28 (2)	06:37	07:30	07:23	08:18	08:50		
	17:12	18:10	19:01	20:55	21:44	22:07	6	21:32 (2)	21:42	20:42	19:30	17:22	16:32	16:28		
27	08:30	07:32	06:27	06:17	05:27	05:16	21:27 (2)	05:48	21:28 (2)	06:39	07:31	07:24	08:20	08:50		
	17:13	18:12	19:03	20:57	21:45	22:06	5	21:32 (2)	21:41	20:40	19:27	17:20	16:31	16:29		
28	08:28	07:29	06:24	06:14	05:26	05:17	21:26 (2)	05:50	21:28 (2)	06:41	07:33	07:26	08:21	08:50		
	17:15	18:14	19:04	20:59	21:46	22:06	6	21:32 (2)	21:39	20:38	19:25	17:18	16:31	16:30		
29	08:27	07:22	07:22	06:12	05:25	05:17	21:27 (2)	05:51	21:28 (2)	06:43	07:35	07:28	08:23	08:50		
	17:17	07:20	20:06	21:01	21:48	22:06	5	21:32 (2)	21:37	20:36	19:22	17:16	16:30	16:30		
30	08:25	07:20	07:20	06:10	05:24	05:18	21:26 (2)	05:53	21:28 (2)	06:44	07:36	07:30	08:25	08:50		
	17:19	07:22	20:08	21:02	21:49	22:06	5	21:31 (2)	21:36	20:33	19:20	17:14	16:29	16:31		
31	08:24	07:17	07:17	06:09	05:23	05:17	21:25 (2)	05:55	21:26 (2)	06:46	07:38	07:32	08:26	08:50		
	17:21	07:20	20:10	21:03	21:50	22:06	21:34	20:31	17:12	16:32	16:32	16:32	16:32	16:32		
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240				
Total, worst case						130										
Sun reduction						0.30										
Oper. time red.						1.00										
Wind dir. red.						0.65										
Total reduction						0.19										
Total, real						25										

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
Kathryn Feeney / kfeeney@jodireland.com
Calculated:
16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** CO - H93

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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:09	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	18:16	20:12	21:04	21:52	22:06	21:33	20:29	19:18	16:28
2	08:50	08:21	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	08:12 (1)	07:36
	16:35	17:25	18:18	20:13	21:06	21:53	22:06	21:31	20:27	19:15	9	17:08
3	08:50	08:19	07:23	07:47 (1)	07:10	06:05	05:20	05:59	06:51	07:42	08:09 (1)	07:38
	16:36	17:27	18:20	1	07:48 (1)	20:15	21:08	21:54	22:05	21:29	20:24	17:06
4	08:50	08:17	07:21	07:44 (1)	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39
	16:37	17:29	18:22	4	07:48 (1)	20:17	21:09	21:55	22:05	21:27	20:22	17:04
5	08:50	08:16	07:18	07:42 (1)	07:06	06:01	05:19	05:22	06:03	06:54	07:45	07:41
	16:38	17:30	18:23	7	07:49 (1)	20:19	21:11	21:56	22:04	21:26	20:20	17:03
6	08:49	08:14	07:16	07:40 (1)	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43
	16:40	17:32	18:25	9	07:49 (1)	20:21	21:13	21:57	22:04	21:24	20:17	17:01
7	08:49	08:12	07:14	07:37 (1)	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45
	16:41	17:34	18:27	11	07:48 (1)	20:22	21:15	21:58	22:03	21:22	20:15	17:04
8	08:48	08:10	07:11	07:35 (1)	06:59	05:55	05:17	05:24	06:08	06:59	07:50	07:47
	16:42	17:36	18:29	13	07:48 (1)	20:24	21:16	21:59	22:02	21:20	20:13	17:01
9	08:48	08:09	07:09	07:33 (1)	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:49
	16:44	17:38	18:31	14	07:47 (1)	20:26	21:18	22:00	22:02	21:18	20:10	17:59
10	08:47	08:07	07:07	07:31 (1)	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50
	16:45	17:40	18:33	14	07:45 (1)	20:28	21:20	22:01	22:01	21:16	20:08	17:57
11	08:47	08:05	08:30 (2)	07:05	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52
	16:46	17:42	3	08:33 (2)	18:34	11	07:43 (1)	20:29	21:21	22:01	21:14	20:06
12	08:46	08:03	08:28 (2)	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54
	16:48	17:44	6	08:34 (2)	18:36	4	07:40 (1)	20:31	21:23	22:02	21:59	21:12
13	08:45	08:01	08:26 (2)	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59	07:56
	16:49	17:46	8	08:34 (2)	18:38	20:33	21:25	22:03	21:58	21:10	20:01	18:50
14	08:45	07:59	08:24 (2)	06:58	06:45	05:45	05:14	05:31	06:17	07:10	08:01	07:58
	16:51	17:48	11	08:35 (2)	18:40	20:35	21:26	22:03	21:57	21:08	19:58	18:48
15	08:44	07:57	08:22 (2)	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	08:00
	16:53	17:50	13	08:35 (2)	18:42	20:36	21:28	22:04	21:56	21:06	19:56	18:46
16	08:43	07:55	08:20 (2)	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:05	08:01
	16:54	17:52	16	08:36 (2)	18:43	20:38	21:29	22:04	21:55	21:04	19:54	18:43
17	08:42	07:53	08:18 (2)	06:50	06:38	05:40	05:14	05:34	06:22	07:15	08:06	08:03
	16:56	17:53	18	08:36 (2)	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41
18	08:41	07:51	08:16 (2)	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05
	16:58	17:55	20	08:36 (2)	18:47	20:42	21:32	22:05	21:53	21:00	19:49	18:39
19	08:40	07:49	08:14 (2)	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:07
	16:59	17:57	21	08:35 (2)	18:49	20:43	21:34	22:06	21:52	20:58	19:46	18:37
20	08:39	07:47	08:12 (2)	06:43	06:32	05:36	05:14	05:38	06:28	07:20	08:12	08:08
	17:01	17:59	22	08:34 (2)	18:50	20:45	21:35	22:06	21:51	20:56	19:44	18:35
21	08:38	07:45	08:13 (2)	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:14	08:10
	17:03	18:01	20	08:33 (2)	18:52	20:47	21:37	22:06	21:49	20:54	19:42	18:32
22	08:36	07:43	08:15 (2)	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12
	17:04	18:03	17	08:32 (2)	18:54	20:49	21:38	22:06	21:48	20:51	19:39	18:30
23	08:35	07:40	08:16 (2)	06:36	06:25	05:32	05:15	05:43	06:33	07:25	08:17	08:14
	17:06	18:05	15	08:31 (2)	18:56	20:50	21:40	22:07	21:47	20:49	19:37	18:28
24	08:34	07:38	08:19 (2)	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:16
	17:08	18:07	9	08:28 (2)	18:58	20:52	21:41	22:07	21:45	20:47	19:34	18:26
25	08:33	07:36	06:32	06:32	06:21	05:29	05:15	05:46	06:36	07:28	08:21	08:17
	17:10	18:09	18:59	06:29	20:54	21:43	22:07	21:44	20:45	19:32	17:24	17:17
26	08:31	07:34	06:29	06:29	06:19	05:28	05:16	05:47	06:38	07:30	07:23	07:15
	17:12	18:10	19:01	06:27	20:56	21:44	22:07	21:42	20:43	19:30	17:22	17:15
27	08:30	07:32	06:27	06:27	06:17	05:27	05:16	05:49	06:39	07:31	07:25	07:17
	17:13	18:12	19:03	06:24	20:57	21:45	22:07	21:41	20:40	19:27	17:20	17:13
28	08:28	07:30	06:24	06:24	06:15	05:26	05:17	05:50	06:41	07:33	07:26	07:19
	17:15	18:14	19:05	06:22	20:59	21:47	22:07	21:39	20:38	19:25	17:18	17:11
29	08:27		07:22	06:22	06:13	05:25	05:17	05:52	06:43	07:35	07:28	07:21
	17:17		20:06	21:01	21:48	22:06	21:38	20:36	19:23	17:16	17:10	17:03
30	08:25		07:20	06:11	05:24	05:18	05:53	06:44	07:37	07:30	07:23	07:16
	17:19		20:08	21:03	21:49	22:06	21:36	20:34	19:20	17:14	17:08	17:01
31	08:24		07:17		05:23		05:55	06:46		07:32	07:25	07:18
	17:21		20:10		21:50		21:34	20:31		17:12	2	08:02 (2)
Potential sun hours	256	276	367	418	489	503	506	456	381	330	263	240
Total, worst case		199	88							290		
Sun reduction		0.21	0.24							0.24		
Oper. time red.		1.00	1.00							1.00		
Wind dir. red.		0.67	0.67							0.67		
Total reduction		0.14	0.16							0.16		
Total, real		28	14							46		

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

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3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: CP - H94

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
229 231 210 320 200 640 608 691 568 658 724 1,086 671 733 661 530 8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:32	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:13	06:06	05:21	05:19	05:58	06:49	07:40	07:35	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:05	06:01	05:19	05:21	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:25	20:19	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:07	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	21:59	22:01	21:18	20:10	18:59	16:56	16:24
10	08:47	08:06	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:46	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:46	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:02	21:58	21:10	20:01	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:23
15	08:43	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:49	18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	16:23
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:57	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:49	20:43	21:34	22:05	21:52	20:58	19:46	18:37	16:41	16:24
20	08:38	07:47	06:43	06:31	05:36	05:14	05:38	06:27	07:19	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:34	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:41	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:32	07:25	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:45	06:36	07:28	08:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:42	22:07	21:44	20:45	19:32	18:24	16:33	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:37	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:55	21:44	22:07	21:42	20:42	19:30	18:22	16:32	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:48	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:41	20:40	19:27	18:20	16:31	16:29
28	08:28	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:21	08:50
	17:15	18:14	19:04	20:59	21:46	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:12	05:25	05:17	05:51	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:36	19:22	18:16	16:30	16:30
30	08:25		07:20	06:10	05:24	05:18	05:53	06:44	07:36	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

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+353719161416
Kathryn Feeney / kfeeney@jodireland.com
Calculated:
16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** CQ - H95**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

January		February		March		April		May		June		July		August		September		October		November		December	
1	08:50	08:22		07:27		08:01 (2)	07:15	06:09	05:22	05:18	05:56	06:48		07:38		08:04 (1)	07:34	08:26		08:04 (1)	07:34	08:26	
	16:34	17:23		18:16	14	08:15 (2)	20:12	21:04	21:52	22:06	21:33	20:29		19:18	12	08:16 (1)	17:10	16:28		08:16 (1)	17:10	16:28	
2	08:50	08:21		07:25		08:04 (2)	07:13	06:07	05:21	05:19	05:58	06:49		07:40		08:06 (1)	07:36	08:28		08:06 (1)	07:36	08:28	
	16:35	17:25		18:18	9	08:13 (2)	20:13	21:06	21:53	22:06	21:31	20:27		19:15	10	08:16 (1)	17:08	16:28		08:16 (1)	17:08	16:28	
3	08:50	08:19		07:23			07:10	06:05	05:20	05:20	05:59	06:51		07:42		08:07 (1)	07:38	08:29		08:07 (1)	07:38	08:29	
	16:36	17:27		18:20			20:15	21:08	21:54	22:05	21:29	20:24		19:13	8	08:15 (1)	17:06	16:27		08:15 (1)	17:06	16:27	
4	08:50	08:17		07:21			07:08	06:03	05:19	05:21	06:01	06:53		07:44		08:09 (1)	07:39	08:31		08:09 (1)	07:39	08:31	
	16:37	17:29		18:22			20:17	21:09	21:55	22:05	21:27	20:22		19:11	6	08:15 (1)	17:04	16:26		08:15 (1)	17:04	16:26	
5	08:50	08:16		07:18			07:06	06:01	05:19	05:22	06:03	06:54		07:45		08:11 (1)	07:41	08:32		08:11 (1)	07:41	08:32	
	16:38	17:30		18:23			20:19	21:11	21:56	22:04	21:26	20:20		19:08	3	08:14 (1)	17:03	16:26		08:14 (1)	17:03	16:26	
6	08:49	08:14		07:16			07:03	05:59	05:18	05:22	06:04	06:56		07:47			07:43	08:33			07:43	08:33	
	16:40	17:32		18:25			20:21	21:13	21:57	22:04	21:24	20:17		19:06			17:01	16:25			17:01	16:25	
7	08:49	08:12		07:14			07:01	05:57	05:17	05:23	06:06	06:58		07:49			07:45	08:35			07:45	08:35	
	16:41	17:34		18:27			20:22	21:15	21:58	22:03	21:22	20:15		19:04			16:59	16:25			16:59	16:25	
8	08:48	08:10		07:11		07:35 (1)	06:59	05:55	05:17	05:24	06:08	06:59		07:50			07:47	08:36			07:47	08:36	
	16:42	17:36		18:29	2	07:37 (1)	20:24	21:16	21:59	22:02	21:20	20:13		19:01			16:57	16:24			16:57	16:24	
9	08:48	08:09		07:09		07:33 (1)	06:56	05:53	05:16	05:25	06:09	07:01		07:52			07:49	08:37			07:49	08:37	
	16:44	17:38		18:31	4	07:37 (1)	20:26	21:18	22:00	22:02	21:18	20:10		18:59			16:56	16:24			16:56	16:24	
10	08:47	08:07		07:07		07:30 (1)	06:54	05:52	05:16	05:26	06:11	07:03		07:54			07:50	08:38			07:50	08:38	
	16:45	17:40		18:33	7	07:37 (1)	20:28	21:20	22:01	22:01	21:16	20:08		18:57			16:54	16:24			16:54	16:24	
11	08:47	08:05		07:05		07:28 (1)	06:52	05:50	05:15	05:27	06:12	07:05		07:56		08:41 (2)	07:52	08:39			07:52	08:39	
	16:46	17:42		18:34	9	07:37 (1)	20:29	21:21	22:01	22:00	21:14	20:06		18:55	3	08:44 (2)	16:52	16:24			16:52	16:24	
12	08:46	08:03		07:02		07:26 (1)	06:49	05:48	05:15	05:28	06:14	07:06		07:57		08:37 (2)	07:54	08:40			07:54	08:40	
	16:48	17:44		18:36	11	07:37 (1)	20:31	21:23	22:02	21:59	21:12	20:03		18:52	11	08:48 (2)	16:51	16:24			16:51	16:24	
13	08:45	08:01		07:00		07:23 (1)	06:47	05:47	05:15	05:30	06:16	07:08		07:59		08:33 (2)	07:56	08:41			07:56	08:41	
	16:49	17:46		18:38	12	07:35 (1)	20:33	21:25	22:03	21:58	21:10	20:01		18:50	16	08:49 (2)	16:49	16:24			16:49	16:24	
14	08:45	07:59		06:58		07:21 (1)	06:45	05:45	05:14	05:31	06:17	07:10		08:01		08:32 (2)	07:58	08:42			07:58	08:42	
	16:51	17:48		18:40	14	07:35 (1)	20:35	21:26	22:03	21:57	21:08	19:58		18:48	19	08:51 (2)	16:48	16:24			16:48	16:24	
15	08:44	07:57		06:55		07:20 (1)	06:43	05:43	05:14	05:32	06:19	07:11		08:03		08:31 (2)	08:00	08:43			08:00	08:43	
	16:53	17:50		18:42	12	07:32 (1)	20:36	21:28	22:04	21:56	21:06	19:56		18:46	20	08:51 (2)	16:46	16:24			16:46	16:24	
16	08:43	07:55		06:53		07:22 (1)	06:40	05:42	05:14	05:33	06:21	07:13		08:05		08:31 (2)	08:01	08:44			08:01	08:44	
	16:54	17:52		18:43	8	07:30 (1)	20:38	21:29	22:04	21:55	21:04	19:54		18:43	21	08:52 (2)	16:45	16:24			16:45	16:24	
17	08:42	07:53		06:50			06:38	05:40	05:14	05:35	06:22	07:15		08:06		08:33 (2)	08:03	08:45			08:03	08:45	
	16:56	17:53		18:45			20:40	21:31	22:05	21:54	21:02	19:51		18:41	19	08:52 (2)	16:43	16:24			16:43	16:24	
18	08:41	07:51		06:48			06:36	05:39	05:14	05:36	06:24	07:16		08:08		08:35 (2)	08:05	08:46			08:05	08:46	
	16:58	17:55	3	08:19 (2)	18:47		20:42	21:32	22:05	21:53	21:00	19:49		18:39	18	08:53 (2)	16:42	16:24			16:42	16:24	
19	08:40	07:49		06:46			06:34	05:37	05:14	05:37	06:26	07:18		08:10		08:37 (2)	08:07	08:46			08:07	08:46	
	16:59	17:57	6	08:20 (2)	18:49		20:43	21:34	22:06	21:52	20:58	19:46		18:37	16	08:53 (2)	16:41	16:24			16:41	16:24	
20	08:39	07:47		06:43			06:32	05:36	05:14	05:38	06:28	07:20		08:12		08:39 (2)	08:08	08:47			08:08	08:47	
	17:01	17:59	9	08:20 (2)	18:50		20:45	21:35	22:06	21:51	20:56	19:44		18:35	13	08:52 (2)	16:39	16:25			16:39	16:25	
21	08:38	07:45		06:41			06:29	05:34	05:14	05:40	06:29	07:21		08:14		08:40 (2)	08:10	08:48			08:10	08:48	
	17:03	18:01	12	08:21 (2)	18:52		20:47	21:37	22:06	21:49	20:54	19:42		18:32	11	08:51 (2)	16:38	16:25			16:38	16:25	
22	08:36	07:43		06:39			06:27	05:33	05:14	05:41	06:31	07:23		08:15		08:42 (2)	08:12	08:48			08:12	08:48	
	17:04	18:03	14	08:21 (2)	18:54		20:49	21:38	22:06	21:48	20:51	19:39		18:30	8	08:50 (2)	16:37	16:26			16:37	16:26	
23	08:35	07:40		06:36			06:25	05:32	05:15	05:43	06:33	07:25		08:17		08:44 (2)	08:14	08:49			08:14	08:49	
	17:06	18:05	16	08:21 (2)	18:56		20:50	21:40	22:07	21:47	20:49	19:37		18:28	5	08:49 (2)	16:36	16:26			16:36	16:26	
24	08:34	07:38		06:34			06:23	05:30	05:15	05:44	06:34	07:26		08:19		08:46 (2)	08:15	08:49			08:15	08:49	
	17:08	18:07	18	08:21 (2)	18:58		20:52	21:41	22:07	21:45	20:47	19:34		18:26	2	08:48 (2)	16:35	16:27			16:35	16:27	
25	08:33	07:36		06:32			06:21	05:29	05:15	05:46	06:36	07:28		07:21			08:17	08:49			08:17	08:49	
	17:10	18:09	20	08:20 (2)	18:59		20:54	21:43	22:07	21:44	20:45	19:32		17:24			16:34	16:27			16:34	16:27	
26	08:31	07:34		06:29			06:19	05:28	05:16	05:47	06:38	07:30		07:23			08:19	08:50			08:19	08:50	
	17:12	18:10	22	08:20 (2)	19:01		20:56	21:44	22:07	21:42	20:43	19:30		17:22			16:33	16:28			16:33	16:28	
27	08:30	07:32		06:27			06:17	05:27	05:16	05:49	06:39	07:31				08:05 (1)	07:25	08:50			07:25	08:50	
	17:13	18:12	20	08:19 (2)	19:03		20:57	21:45	22:07	21:41	20:40	19:27	5	08:10 (1)	17:20		16:32	16:29			16:32	16:29	
28	08:28	07:30		06:24			06:15	05:26	05:17	05:50	06:41	07:33				08:02 (1)	07:26	08:50			07:26	08:50	
	17:15	18:14	18	08:18 (2)	19:05		20:59</																

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** CR - H96**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

January			February			March			April			May			June		
1	08:50	16:34	08:22	17:23	18:16	07:27	18:16	07:15	07:41 (8)	06:08	06:35 (10)	05:22					
2	08:50	16:35	08:21	17:25	18:18	07:23	18:23	20:12	07:51 (8)	21:04	06:45 (10)	21:52	10				
3	08:50	16:36	08:19	17:27	18:20	07:23	18:23	20:13	07:40 (8)	21:06	06:35 (10)	21:53	12				
4	08:50	16:37	08:17	17:28	18:21	07:21	18:21	20:13	07:52 (8)	21:06	06:47 (10)	21:53	12				
5	08:50	16:38	08:16	17:30	18:23	07:18	18:23	20:15	07:39 (8)	21:08	06:35 (10)	21:52	12				
6	08:49	16:39	08:14	17:32	18:25	07:16	18:25	20:15	07:51 (8)	21:08	06:47 (10)	21:54	12				
7	08:49	16:40	08:12	17:34	18:27	07:14	18:27	20:17	07:39 (8)	21:03	06:34 (10)	21:51	12				
8	08:48	16:41	08:10	17:36	18:29	07:11	18:29	20:20	07:48 (8)	21:13	06:45 (10)	21:57	11				
9	08:48	16:42	08:08	17:38	18:31	07:09	18:31	20:22	07:43 (8)	21:15	06:35 (10)	21:57	10				
10	08:47	16:43	08:07	17:40	18:32	07:07	18:32	20:24	07:45 (8)	21:16	06:45 (10)	21:58	8				
11	08:47	16:44	08:05	17:42	18:34	07:04	18:34	20:26		21:18	06:36 (10)	21:57	5				
12	08:46	16:45	08:03	17:44	18:36	07:02	18:36	20:27		21:20	06:44 (10)	21:59					
13	08:45	16:46	08:01	17:46	18:38	07:00	18:38	20:29		21:21	06:37 (10)	21:56					
14	08:44	16:47	07:59	17:48	18:40	06:57	18:40	20:31		21:22	06:42 (10)	22:00					
15	08:44	16:48	07:57	17:50	18:41	06:55	18:41	20:33		21:23	05:16						
16	08:43	16:49	07:55	17:52	18:43	06:53	18:43	20:33	07:13 (9)	21:23	05:15						
17	08:42	16:50	07:53	17:54	18:44	06:50	18:44	20:33	07:11 (9)	21:25	05:15						
18	08:41	16:51	07:51	17:55	18:45	06:48	18:45	20:33	07:20 (9)	21:25	05:14						
19	08:40	16:52	07:49	17:56	18:46	06:46	18:46	20:35	07:09 (9)	21:26	05:14						
20	08:39	16:53	07:47	17:57	18:47	06:44	18:47	20:36	07:09 (9)	21:28	05:14						
21	08:38	16:54	07:45	17:58	18:48	06:41	18:48	20:38	07:09 (9)	21:29	05:14						
22	08:36	16:55	07:43	17:59	18:49	06:39	18:49	20:38	07:10 (9)	21:31	05:14						
23	08:35	16:56	07:40	18:00	18:50	06:36	18:50	20:40	07:19 (9)	21:31	05:14						
24	08:34	16:57	07:38	18:01	18:51	06:34	18:51	20:42	07:11 (9)	21:32	05:14						
25	08:33	16:58	07:36	18:02	18:52	06:31	18:52	20:44	07:17 (9)	21:32	05:14						
26	08:31	16:59	07:34	18:03	18:53	06:29	18:53	20:46		21:34	05:14						
27	08:30	17:00	07:32	18:04	18:54	06:27	18:54	20:48		21:35	05:14						
28	08:28	17:01	07:29	18:05	18:55	06:25	18:55	20:50		21:36	05:14						
29	08:27	17:02	07:27	18:06	18:56	06:23	18:56	20:52		21:37	05:15						
30	08:25	17:03	07:25	18:07	18:57	06:21	18:57	20:54		21:38	05:15						
31	08:24	17:04	07:23	18:08	18:58	06:19	18:58	20:56		21:39	05:15						
	17:12		18:10			19:01		20:56		21:40	05:15						
	17:13		18:12			19:03		20:57		21:41	05:15						
	17:15		18:14			19:05		20:59		21:42	05:16						
	17:17					20:06		21:01		21:43	05:16						
	17:19					20:08		21:03		21:44	05:16						
	17:21					20:10		21:05		21:45	05:16						
Potential sun hours	255	276	367			418		489		503							
Total, worst case						8		133		93							
Sun reduction						0.24		0.35		0.37							
Oper. time red.						1.00		1.00		1.00							
Wind dir. red.						0.68		0.67		0.66							
Total reduction						0.17		0.24		0.24							
Total, real						1		32		23							

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** CR - H96**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	July	August	September	October	November	December
1	05:18 22:06	05:56 21:33	06:48 20:29	07:38 19:18	07:34 17:10	08:26 16:28
2	05:19 22:06	05:58 21:31	06:49 20:27	07:40 19:15	07:36 17:08	08:28 16:27
3	05:20 22:05	05:59 21:29	06:51 20:24	07:42 19:13	07:37 17:06	08:29 16:27
4	05:21 22:05	06:01 21:27	06:47 (10) 20:22	07:43 19:11	07:39 17:04	08:31 16:26
5	05:21 22:04	06:03 21:26	06:46 (10) 20:20	07:40 (8) 19:08	07:41 17:03	08:32 16:26
6	05:22 22:04	06:04 21:24	06:44 (10) 20:17	07:36 (8) 19:06	07:47 17:01	08:33 16:25
7	05:23 22:03	06:06 21:22	06:44 (10) 20:15	07:35 (8) 19:04	07:49 16:59	08:35 16:25
8	05:24 22:02	06:07 21:20	06:43 (10) 20:13	07:33 (8) 19:01	07:50 16:57	08:36 16:24
9	05:25 22:02	06:09 21:18	06:44 (10) 20:10	07:33 (8) 18:59	07:52 16:56	08:37 16:24
10	05:26 22:01	06:11 21:16	06:43 (10) 20:08	07:33 (8) 18:57	07:54 16:54	08:38 16:24
11	05:27 22:00	06:12 21:14	06:44 (10) 20:05	07:33 (8) 18:55	07:56 16:52	08:39 16:24
12	05:28 21:59	06:14 21:12	06:44 (10) 20:03	07:34 (8) 18:52	07:57 16:51	08:40 16:23
13	05:29 21:58	06:16 21:10	06:46 (10) 20:01	07:42 (8) 18:50	07:59 16:49	08:41 16:23
14	05:31 21:57	06:17 21:08	06:52 (10) 19:58	07:09 18:48	07:58 16:48	08:42 16:23
15	05:32 21:56	06:19 21:06	07:11 19:56	08:03 18:45	08:00 16:46	08:43 16:23
16	05:33 21:55	06:21 21:04	07:13 19:54	08:05 18:43	08:01 16:45	08:44 16:24
17	05:34 21:54	06:22 21:02	07:14 19:51	08:06 18:41	08:03 16:43	08:45 16:24
18	05:36 21:53	06:24 21:00	07:16 19:49	08:08 18:39	08:05 16:42	08:46 16:24
19	05:37 21:52	06:26 20:58	07:18 19:46	08:10 18:37	08:07 16:40	08:46 16:24
20	05:38 21:51	06:27 20:56	07:20 19:44	08:12 18:34	08:08 16:39	08:47 16:25
21	05:40 21:49	06:29 20:54	07:21 19:42	08:14 18:32	08:10 16:38	08:48 16:25
22	05:41 21:48	06:31 20:51	07:23 19:39	08:15 18:30	08:12 16:37	08:48 16:25
23	05:43 21:47	06:32 20:49	07:25 19:37	08:17 18:28	08:14 16:36	08:49 16:26
24	05:44 21:45	06:34 20:47	07:26 19:34	08:19 18:26	08:15 16:35	08:49 16:27
25	05:45 21:44	06:36 20:45	07:13 (9) 19:32	07:21 17:24	08:17 16:33	08:49 16:27
26	05:47 21:42	06:38 20:43	07:12 (9) 19:30	07:23 17:22	08:18 16:32	08:50 16:28
27	05:48 21:41	06:39 20:40	07:11 (9) 19:27	07:25 17:20	08:20 16:31	08:50 16:29
28	05:50 21:39	06:41 20:38	07:11 (9) 19:25	07:26 17:18	08:22 16:31	08:50 16:29
29	05:51 21:38	06:43 20:36	07:10 (9) 19:23	07:28 17:16	08:23 16:30	08:50 16:30
30	05:53 21:36	06:44 20:33	07:11 (9) 19:20	07:30 17:14	08:25 16:29	08:50 16:31
31	05:55 21:34	06:46 20:31	07:13 (9) 19:18	07:32 17:12	08:50 16:32	08:50 16:32
Potential sun hours	506	456	381	330	263	240
Total, worst case		161	74			
Sun reduction		0.30	0.28			
Oper. time red.		1.00	1.00			
Wind dir. red.		0.66	0.68			
Total reduction		0.20	0.19			
Total, real		32	14			

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** CS - H97**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

January			February			March			April			May			June		
1	08:50	16:34	08:22	17:23	18:16	07:27	18:16	07:15	07:45 (8)	06:08	06:37 (10)	05:22					
2	08:50	16:35	08:21	17:25	18:18	07:23	18:23	20:12	07:58 (8)	21:04	06:47 (10)	21:52	13	07:58 (8)	21:06	06:37 (10)	05:21
3	08:50	16:36	08:19	17:27	18:20	07:23	18:23	20:13	07:58 (8)	21:06	06:49 (10)	21:53	13	07:58 (8)	21:06	06:37 (10)	05:21
4	08:50	16:37	08:17	17:28	18:21	07:21	18:21	20:13	07:58 (8)	21:06	06:49 (10)	21:53	11	07:56 (8)	21:08	06:36 (10)	05:20
5	08:50	16:38	08:16	17:30	18:23	07:18	18:23	20:15	07:56 (8)	21:08	06:49 (10)	21:54	9	07:55 (8)	21:09	06:36 (10)	05:19
6	08:49	16:39	08:14	17:32	18:25	07:16	18:25	20:17	07:55 (8)	21:09	06:49 (10)	21:55	5	07:48 (8)	21:11	06:35 (10)	05:18
7	08:49	16:41	08:12	17:34	18:27	07:14	18:27	20:19	07:53 (8)	21:11	06:48 (10)	21:56	13	07:53 (8)	21:11	06:35 (10)	05:18
8	08:48	16:42	08:10	17:36	18:29	07:11	18:29	20:20	07:53 (8)	21:11	06:48 (10)	21:57	11	07:53 (8)	21:11	06:35 (10)	05:18
9	08:48	16:43	08:08	17:38	18:31	07:09	18:31	20:22	07:53 (8)	21:11	06:48 (10)	21:57	9	07:53 (8)	21:11	06:35 (10)	05:18
10	08:47	16:44	08:07	17:40	18:32	07:07	18:32	20:22	07:53 (8)	21:11	06:48 (10)	21:57	7	07:53 (8)	21:11	06:35 (10)	05:18
11	08:47	16:45	08:05	17:42	18:34	07:04	18:34	20:22	07:53 (8)	21:11	06:48 (10)	21:57	7	07:53 (8)	21:11	06:35 (10)	05:18
12	08:46	16:46	08:03	17:44	18:36	07:02	18:36	20:22	07:53 (8)	21:11	06:48 (10)	21:57	10	07:53 (8)	21:11	06:35 (10)	05:18
13	08:45	16:47	08:01	17:46	18:38	07:00	18:38	20:22	07:53 (8)	21:11	06:48 (10)	21:57	11	07:53 (8)	21:11	06:35 (10)	05:18
14	08:44	16:48	07:59	17:48	18:40	06:57	18:40	20:22	07:53 (8)	21:11	06:48 (10)	21:57	11	07:53 (8)	21:11	06:35 (10)	05:18
15	08:44	16:49	07:57	17:50	18:41	06:55	18:41	20:22	07:53 (8)	21:11	06:48 (10)	21:57	11	07:53 (8)	21:11	06:35 (10)	05:18
16	08:43	16:50	07:55	17:52	18:43	06:53	18:43	20:22	07:53 (8)	21:11	06:48 (10)	21:57	9	07:53 (8)	21:11	06:35 (10)	05:18
17	08:42	16:51	07:53	17:54	18:44	06:50	18:44	20:22	07:53 (8)	21:11	06:48 (10)	21:57	5	07:53 (8)	21:11	06:35 (10)	05:18
18	08:41	16:52	07:51	17:56	18:46	06:48	18:46	20:22	07:53 (8)	21:11	06:48 (10)	21:57	7	07:53 (8)	21:11	06:35 (10)	05:18
19	08:40	16:53	07:49	17:58	18:48	06:46	18:48	20:22	07:53 (8)	21:11	06:48 (10)	21:57		07:53 (8)	21:11	06:35 (10)	05:18
20	08:39	16:54	07:47	18:00	18:50	06:43	18:50	20:22	07:53 (8)	21:11	06:48 (10)	21:57		07:53 (8)	21:11	06:35 (10)	05:18
21	08:38	16:55	07:45	18:02	18:52	06:41	18:52	20:22	07:53 (8)	21:11	06:48 (10)	21:57		07:53 (8)	21:11	06:35 (10)	05:18
22	08:36	16:56	07:43	18:04	18:54	06:39	18:54	20:22	07:53 (8)	21:11	06:48 (10)	21:57		07:53 (8)	21:11	06:35 (10)	05:18
23	08:35	16:57	07:40	18:06	18:56	06:36	18:56	20:22	07:53 (8)	21:11	06:48 (10)	21:57		07:53 (8)	21:11	06:35 (10)	05:18
24	08:34	16:58	07:38	18:08	18:58	06:34	18:58	20:22	07:53 (8)	21:11	06:48 (10)	21:57		07:53 (8)	21:11	06:35 (10)	05:18
25	08:33	16:59	07:36	18:10	19:00	06:31	19:00	20:22	07:53 (8)	21:11	06:48 (10)	21:57		07:53 (8)	21:11	06:35 (10)	05:18
26	08:31	17:00	07:34	18:12	19:02	06:29	19:02	20:22	07:53 (8)	21:11	06:48 (10)	21:57		07:53 (8)	21:11	06:35 (10)	05:18
27	08:30	17:01	07:32	18:14	19:04	06:27	19:04	20:22	07:53 (8)	21:11	06:48 (10)	21:57		07:53 (8)	21:11	06:35 (10)	05:18
28	08:28	17:02	07:29	18:16	19:06	06:24	19:06	20:22	07:53 (8)	21:11	06:48 (10)	21:57		07:53 (8)	21:11	06:35 (10)	05:18
29	08:27	17:03	07:27	18:18	19:08	06:22	19:08	20:22	07:53 (8)	21:11	06:48 (10)	21:57		07:53 (8)	21:11	06:35 (10)	05:18
30	08:25	17:04	07:25	18:20	19:10	06:20	19:10	20:22	07:53 (8)	21:11	06:48 (10)	21:57		07:53 (8)	21:11	06:35 (10)	05:18
31	08:24	17:05	07:23	18:22	19:12	06:18	19:12	20:22	07:53 (8)	21:11	06:48 (10)	21:57		07:53 (8)	21:11	06:35 (10)	05:18
Potential sun hours	255	276	367	418	489	503											
Total, worst case			90	128	101												
Sun reduction			0.24	0.35	0.37												
Oper. time red.			1.00	1.00	1.00												
Wind dir. red.			0.67	0.67	0.66												
Total reduction			0.16	0.24	0.24												
Total, real			15	30	24												

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: CS - H97

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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	July	August	September	October	November	December
1	05:18 22:06	05:56 21:33	06:48 20:29	07:14 (9) 07:21 (9)	07:38 19:18	08:05 (6) 08:15 (6)
2	05:19 22:06	05:58 21:31	06:49 20:27	07:40 19:15	08:06 (6) 08:13 (6)	07:36 17:08
3	05:20 22:05	05:59 21:29	06:50 (10) 06:53 (10)	06:51 20:24	07:42 19:13	07:37 17:06
4	05:21 22:05	06:01 21:27	06:48 (10) 06:56 (10)	06:53 20:22	07:43 19:11	07:39 17:04
5	05:21 22:04	06:03 21:26	06:47 (10) 06:57 (10)	06:54 20:20	07:45 19:08	07:41 17:03
6	05:22 22:04	06:04 21:24	06:46 (10) 06:57 (10)	06:56 20:17	07:47 19:06	07:43 17:01
7	05:23 22:03	06:06 21:22	06:46 (10) 06:58 (10)	06:58 20:15	07:49 19:04	07:45 16:59
8	05:24 22:02	06:07 21:20	06:45 (10) 06:58 (10)	06:59 20:13	07:50 19:01	07:47 16:57
9	05:25 22:02	06:09 21:18	06:45 (10) 06:58 (10)	07:01 20:10	07:52 18:59	07:49 16:56
10	05:26 22:01	06:11 21:16	06:45 (10) 06:57 (10)	07:03 20:08	07:54 18:57	07:50 16:54
11	05:27 22:00	06:12 21:14	06:45 (10) 06:57 (10)	07:04 20:05	07:56 18:54	07:52 16:52
12	05:28 21:59	06:14 21:12	06:46 (10) 06:56 (10)	07:06 20:03	07:57 18:52	07:54 16:51
13	05:29 21:58	06:16 21:10	06:47 (10) 06:55 (10)	07:08 20:01	07:59 18:50	07:56 16:49
14	05:31 21:57	06:17 21:08	07:09 19:58	07:41 (8) 07:45 (8)	08:01 18:48	07:58 16:48
15	05:32 21:56	06:19 21:06	07:11 19:56	08:03 18:45	08:00 16:46	08:43 16:23
16	05:33 21:55	06:21 21:04	07:13 19:54	08:05 18:43	08:01 16:45	08:44 16:24
17	05:34 21:54	06:22 21:02	07:14 19:51	08:06 18:41	08:03 16:43	08:45 16:24
18	05:36 21:53	06:24 21:00	07:16 19:49	08:08 18:39	08:05 16:42	08:46 16:24
19	05:37 21:52	06:26 20:58	07:18 19:46	08:10 18:37	08:07 16:40	08:46 16:24
20	05:38 21:51	06:27 20:56	07:20 19:44	08:12 18:34	08:08 16:39	08:47 16:25
21	05:40 21:49	06:29 20:54	07:21 19:42	08:14 18:32	08:10 16:38	08:48 16:25
22	05:41 21:48	06:31 20:51	07:23 19:39	08:15 18:30	08:12 16:37	08:48 16:25
23	05:43 21:47	06:32 20:49	07:25 19:37	08:17 18:28	08:14 16:36	08:49 16:26
24	05:44 21:45	06:34 20:47	07:26 19:34	08:19 18:26	08:15 16:35	08:49 16:27
25	05:45 21:44	06:36 20:45	07:28 19:32	07:21 17:24	08:17 16:33	08:49 16:27
26	05:47 21:42	06:38 20:43	07:30 19:30	08:10 (6) 08:12 (6)	07:23 17:22	08:50 16:28
27	05:48 21:41	06:39 20:40	07:31 19:27	08:07 (6) 08:15 (6)	07:25 17:20	08:50 16:29
28	05:50 21:39	06:41 20:38	07:33 19:25	08:06 (6) 08:16 (6)	07:26 17:18	08:50 16:29
29	05:51 21:38	06:43 20:36	07:35 19:22	08:05 (6) 08:15 (6)	07:28 17:16	08:50 16:30
30	05:53 21:36	06:44 20:33	07:37 19:20	08:05 (6) 08:15 (6)	07:30 17:14	08:50 16:31
31	05:55 21:34	06:46 20:31	07:39 19:18	07:32 17:12	08:50 16:32	08:50 16:32
Potential sun hours	506	456	381	330	263	240
Total, worst case		172	135	17		
Sun reduction		0.30	0.28	0.24		
Oper. time red.		1.00	1.00	1.00		
Wind dir. red.		0.66	0.68	0.67		
Total reduction		0.20	0.19	0.16		
Total, real		34	26	3		

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

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Finisklin Business Park

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+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: CT - H98

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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January			February			March			April			May			June			July			August			September			October			November			December		
1	08:50	08:22	07:27						07:15				19:29 (3)	06:08	05:22	05:18	05:56							06:48			07:38	07:34	08:26							
	16:34	17:23	18:16						20:12				19:45 (3)	21:04	21:51	22:06	21:33							20:29			19:18	17:10	16:28							
2	08:50	08:20	07:25						07:12				19:31 (3)	06:06	05:21	05:19	05:58							06:49			07:40	07:35	08:28							
	16:35	17:25	18:18						20:13				19:44 (3)	21:06	21:53	22:05	21:31							20:26			19:15	17:08	16:27							
3	08:50	08:19	07:23						07:10				19:34 (3)	06:04	05:20	05:20	05:59							06:51			07:42	07:37	08:29							
	16:36	17:26	18:20						20:15				19:40 (3)	21:08	21:54	22:05	21:29							20:24			19:13	17:06	16:27							
4	08:50	08:17	07:20						07:08					06:03	05:19	05:21	06:01							06:53			07:43	07:39	08:30							
	16:37	17:28	18:21						20:17					21:09	21:55	22:04	21:27							20:22			19:11	17:04	16:26							
5	08:49	08:15	07:18						07:05					06:01	05:18	05:21	06:02							06:54			07:45	07:41	08:32							
	16:38	17:30	18:23						20:19					21:11	21:56	22:04	21:25							20:19			19:08	17:02	16:26							
6	08:49	08:14	07:16						07:03					05:59	05:18	05:22	06:04							06:56			07:47	07:43	08:33							
	16:39	17:32	18:25						20:20					21:13	21:57	22:03	21:24							20:17			19:06	17:01	16:25							
7	08:49	08:12	07:14						07:01					05:57	05:17	05:23	06:06							06:58			07:49	07:45	08:34							
	16:41	17:34	18:27						20:22					21:14	21:58	22:03	21:22							20:15			19:04	16:59	16:25							
8	08:48	08:10	07:11						06:58					05:55	05:17	05:24	06:07							06:59			07:50	07:47	08:36							
	16:42	17:36	18:29						20:24					21:16	21:59	22:02	21:20							20:12			19:01	16:57	16:24							
9	08:48	08:08	07:09						06:56					05:53	05:16	05:25	06:09							07:01			19:28 (3)	07:52	07:48	08:37						
	16:43	17:38	18:31						20:26					21:18	22:00	22:01	21:18							20:10	5	19:33 (3)	18:59	16:55	16:24							
10	08:47	08:06	07:07						06:54					05:52	05:16	05:26	06:11							07:03			19:25 (3)	07:54	07:50	08:38						
	16:45	17:40	18:32						20:27					21:19	22:00	22:01	21:16							20:08	12	19:37 (3)	18:57	16:54	16:24							
11	08:47	08:05	07:04						06:52					05:50	05:15	05:27	06:12							07:04			19:22 (3)	07:56	07:52	08:39						
	16:46	17:42	18:34						20:29					21:21	22:01	22:00	21:14							20:05	16	19:38 (3)	18:54	16:52	16:24							
12	08:46	08:03	07:02						06:49					05:48	05:15	05:28	06:14							07:06			19:21 (3)	07:57	07:54	08:40						
	16:48	17:44	18:36						20:31					21:23	22:02	21:59	21:12							20:03	15	19:36 (3)	18:52	16:51	16:23							
13	08:45	08:01	07:00						06:47					05:46	05:15	05:29	06:16							07:08			19:19 (3)	07:59	07:56	08:41						
	16:49	17:46	18:38						20:33					21:24	22:02	21:58	21:10							20:01	14	19:33 (3)	18:50	16:49	16:23							
14	08:44	07:59	06:57						06:45					05:45	05:14	05:31	06:17							07:09			19:18 (3)	08:01	07:58	08:42						
	16:51	17:48	18:40						20:34					21:26	22:03	21:57	21:08							19:58	13	19:31 (3)	18:48	16:47	16:23							
15	08:43	07:57	06:55						06:42					05:43	05:14	05:32	06:19							07:11			19:18 (3)	08:03	07:59	08:43						
	16:52	17:49	18:41						20:36					21:28	22:04	21:56	21:06							19:56	11	19:29 (3)	18:45	16:46	16:23							
16	08:43	07:55	06:53						06:40					20:10 (1)	05:42	05:14	05:33	06:21						07:13			19:16 (3)	08:04	08:01	08:44						
	16:54	17:51	18:43						20:38				1	20:11 (1)	21:29	22:04	21:55	21:04						19:53	10	19:26 (3)	18:43	16:45	16:24							
17	08:42	07:53	06:50						06:38					20:09 (1)	05:40	05:14	05:34	06:22						20:23 (1)	07:14		19:16 (3)	08:06	08:03	08:45						
	16:56	17:53	18:45						20:40				4	20:13 (1)	21:31	22:05	21:54	21:02						20:26 (1)	19:51	8	19:24 (3)	18:41	16:43	16:24						
18	08:41	07:51	06:48						06:36					20:09 (1)	05:39	05:14	05:36	06:24						20:19 (1)	07:16		19:17 (3)	08:08	08:05	08:45						
	16:57	17:55	18:47						20:41				5	20:14 (1)	21:32	22:05	21:53	21:00						20:30 (1)	19:49	5	19:22 (3)	18:39	16:42	16:24						
19	08:40	07:49	06:46						06:34					20:08 (1)	05:37	05:14	05:37	06:26						20:16 (1)	07:18		19:16 (3)	08:10	08:06	08:46						
	16:59	17:57	18:49						20:43				7	20:15 (1)	21:34	22:05	21:52	20:58						20:29 (1)	19:46	3	19:19 (3)	18:37	16:40	16:24						
20	08:38	07:47	06:43						06:31					20:08 (1)	05:36	05:14	05:38	06:27						20:15 (1)	07:19		18:12	08:08	08:47							
	17:01	17:59	18:50						20:45				9	20:17 (1)	21:35	22:06	21:50	20:56						20:27 (1)	19:44		18:34	16:39	16:25							
21	08:37	07:45	06:41						06:29					20:08 (1)	05:34	05:14	05:40	06:29						20:14 (1)	07:21		18:13	08:10	08:47							
	17:03	18:01	18:52						20:47				11	20:19 (1)	21:37	22:06	21:49	20:53						20:25 (1)	19:41		18:32	16:38	16:25							
22	08:36	07:42	06:38						06:27					20:09 (1)	05:33	05:14	05:41	06:31						20:13 (1)	07:23		18:15	08:12	08:48							
	17:04	18:03	18:54						20:48				11	20:20 (1)	21:38	22:06	21:48	20:51						20:23 (1)	19:39		18:30	16:37	16:25							
23	08:35	07:40	06:36						06:25					20:10 (1)	05:32	05:15	05:42	06:32						20:13 (1)	07:24		18:17	08:13	08:48							
	17:06	18:05	18:56						20:50				12	2																						

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
Kathryn Feeney / kfeeney@jodireland.com
Calculated:
16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** CV - H100**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50 16:34	08:22 17:23	07:27 18:16	07:15 20:12	06:08 21:04	05:22 21:51	21:05 (3) 22:06	21:16 (3) 21:32	20:29 19:18	20:38 17:10	20:47 16:28	20:56 16:28
2	08:50 16:35	08:20 17:25	07:25 18:18	07:13 20:13	06:06 21:06	05:21 21:53	21:05 (3) 22:05	21:16 (3) 21:31	20:29 19:15	20:38 17:08	20:47 16:27	20:56 16:27
3	08:50 16:36	08:19 17:26	07:23 18:20	07:10 20:15	06:05 21:08	05:20 21:54	21:06 (3) 22:05	21:15 (3) 21:29	20:28 19:13	20:37 17:06	20:46 16:27	20:55 16:27
4	08:50 16:37	08:17 17:28	07:20 18:21	07:08 20:17	06:03 21:09	05:19 21:55	21:06 (3) 22:04	21:14 (3) 21:27	20:27 19:11	20:36 17:04	20:45 16:26	20:54 16:26
5	08:49 16:38	08:15 17:30	07:18 18:23	07:05 20:19	06:01 21:11	05:18 21:56	21:06 (3) 22:04	21:14 (3) 21:25	20:26 19:08	20:35 17:02	20:44 16:26	20:53 16:26
6	08:49 16:39	08:14 17:32	07:16 18:25	07:03 20:20	05:59 21:13	05:18 21:57	21:08 (3) 22:03	21:13 (3) 21:24	20:25 19:06	20:34 17:01	20:43 16:25	20:52 16:25
7	08:49 16:41	08:12 17:34	07:14 18:27	07:01 20:22	05:57 21:14	05:17 21:58	21:08 (3) 22:03	21:13 (3) 21:22	20:24 19:04	20:33 16:59	20:42 16:25	20:51 16:25
8	08:48 16:42	08:10 17:36	07:11 18:29	06:59 20:24	05:55 21:16	05:17 21:59	21:09 (3) 22:02	21:14 (3) 21:20	20:23 19:01	20:32 16:57	20:41 16:24	20:50 16:24
9	08:48 16:43	08:08 17:38	07:09 18:31	06:56 20:26	05:53 21:18	05:16 21:59	21:10 (3) 22:02	21:13 (3) 21:18	20:22 18:59	20:31 16:56	20:40 16:24	20:49 16:24
10	08:47 16:45	08:06 17:40	07:07 18:32	06:54 20:27	05:52 21:19	05:16 22:00	21:10 (3) 22:01	21:12 (3) 21:16	20:21 18:57	20:30 16:54	20:39 16:24	20:48 16:24
11	08:46 16:46	08:05 17:42	07:04 18:34	06:52 20:29	05:50 21:21	05:15 22:01	21:11 (3) 22:00	21:12 (3) 21:14	20:20 18:54	20:29 16:52	20:38 16:24	20:47 16:24
12	08:46 16:48	08:03 17:44	07:02 18:36	06:49 20:31	05:48 21:23	05:15 22:02	21:12 (3) 21:59	21:13 (3) 21:12	20:19 18:52	20:28 16:51	20:37 16:24	20:46 16:24
13	08:45 16:49	08:01 17:46	07:00 18:38	06:47 20:33	05:46 21:24	05:15 22:02	21:12 (3) 21:58	21:13 (3) 21:10	20:18 18:50	20:27 16:49	20:36 16:23	20:45 16:23
14	08:44 16:51	07:59 17:48	06:57 18:40	06:45 20:34	05:45 21:26	05:14 22:03	21:13 (3) 21:57	21:12 (3) 21:08	20:17 19:58	20:26 16:48	20:35 16:23	20:44 16:23
15	08:43 16:53	07:57 17:49	06:55 18:41	06:43 20:36	05:43 21:28	05:14 22:04	21:14 (3) 21:56	21:12 (3) 21:06	20:16 19:56	20:25 16:46	20:34 16:23	20:43 16:23
16	08:43 16:54	07:55 17:51	06:53 18:43	06:40 20:38	05:42 21:29	05:14 22:04	21:15 (3) 21:55	21:12 (3) 21:04	20:15 19:53	20:24 16:45	20:33 16:24	20:42 16:24
17	08:42 16:56	07:53 17:53	06:50 18:45	06:38 20:40	05:40 21:31	05:14 22:05	21:16 (3) 21:54	21:12 (3) 21:02	20:14 19:51	20:23 16:43	20:32 16:24	20:41 16:24
18	08:41 16:57	07:51 17:55	06:48 18:47	06:36 20:41	05:39 21:32	05:14 22:05	21:16 (3) 21:53	21:11 (3) 21:00	20:13 19:49	20:22 16:42	20:31 16:24	20:40 16:24
19	08:40 16:59	07:49 17:57	06:46 18:49	06:34 20:43	05:37 21:34	05:14 22:05	21:17 (3) 21:52	21:12 (3) 21:08	20:12 19:46	20:21 16:40	20:30 16:24	20:39 16:24
20	08:38 17:01	07:47 17:59	06:43 18:50	06:31 20:45	05:36 21:35	05:14 22:06	21:19 (3) 21:50	21:12 (3) 21:06	20:10 19:44	20:19 16:39	20:28 16:25	20:37 16:25
21	08:37 17:03	07:45 18:01	06:41 18:52	06:29 20:47	05:34 21:37	05:14 22:06	21:20 (3) 21:49	21:13 (3) 21:03	20:09 19:41	20:18 16:38	20:27 16:25	20:36 16:25
22	08:36 17:04	07:42 18:03	06:38 18:54	06:27 20:48	05:33 21:38	05:14 22:06	21:21 (3) 21:48	21:14 (3) 21:03	20:08 19:39	20:17 16:37	20:26 16:25	20:35 16:25
23	08:35 17:06	07:40 18:05	06:36 18:56	06:25 20:50	05:32 21:40	05:15 22:06	21:22 (3) 21:46	21:15 (3) 21:04	20:07 19:37	20:16 16:36	20:25 16:26	20:34 16:26
24	08:34 17:08	07:38 18:07	06:34 18:57	06:23 20:52	05:30 21:41	05:15 22:06	21:23 (3) 21:45	21:16 (3) 21:04	20:06 19:34	20:15 16:35	20:24 16:27	20:33 16:27
25	08:32 17:10	07:36 18:08	06:31 18:59	06:21 20:54	05:29 21:42	05:15 22:07	21:24 (3) 21:44	21:17 (3) 21:03	20:04 19:32	20:14 16:33	20:23 16:27	20:32 16:27
26	08:31 17:12	07:34 18:10	06:29 19:01	06:19 20:55	05:28 21:44	05:16 22:07	21:25 (3) 21:42	21:18 (3) 21:04	20:03 19:30	20:13 16:32	20:22 16:28	20:31 16:28
27	08:30 17:13	07:32 18:12	06:27 19:03	06:17 20:57	05:27 21:45	05:16 22:06	21:26 (3) 21:41	21:19 (3) 21:05	20:02 19:27	20:12 16:31	20:21 16:29	20:30 16:29
28	08:28 17:15	07:29 18:14	06:24 19:04	06:14 20:59	05:26 21:46	05:17 22:06	21:27 (3) 21:39	21:20 (3) 21:05	20:01 19:25	20:11 16:31	20:20 16:30	20:29 16:30
29	08:27 17:17	07:22 18:06	06:12 19:01	06:12 20:51	05:25 21:48	05:17 22:06	21:28 (3) 21:37	21:21 (3) 21:05	20:00 19:22	20:10 16:30	20:19 16:30	20:28 16:30
30	08:25 17:19	07:20 18:08	06:10 19:08	06:10 21:02	05:24 21:49	05:18 22:06	21:29 (3) 21:36	21:22 (3) 21:06	20:00 19:20	20:10 16:30	20:19 16:29	20:28 16:31
31	08:24 17:21	07:17 18:10	06:08 19:10	06:08 21:10	05:23 21:50	05:19 22:06	21:30 (3) 21:34	21:23 (3) 21:06	20:00 19:20	20:10 16:30	20:19 16:30	20:28 16:31
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
Total, worst case					94	255	256					
Sun reduction					0.37	0.30	0.26					
Oper. time red.					1.00	1.00	1.00					
Wind dir. red.					0.66	0.66	0.66					
Total reduction					0.24	0.20	0.17					
Total, real					23	50	45					

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** CW - H101**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:32	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:13	06:06	05:21	05:19	05:58	06:49	07:40	07:35	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:05	06:01	05:19	05:21	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:25	20:19	19:08	17:02	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:07	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	21:59	22:01	21:18	20:10	18:59	16:56	16:24
10	08:47	08:06	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:46	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:46	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:02	21:58	21:10	20:01	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:23
15	08:43	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:49	18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	16:23
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:57	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:49	20:43	21:34	22:05	21:52	20:58	19:46	18:37	16:41	16:24
20	08:38	07:47	06:43	06:31	05:36	05:14	05:38	06:27	07:19	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:34	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:41	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:32	07:25	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:45	06:36	07:28	08:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:42	22:07	21:44	20:45	19:32	18:24	16:33	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:37	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:55	21:44	22:07	21:42	20:42	19:30	18:22	16:32	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:48	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:41	20:40	19:27	18:20	16:31	16:29
28	08:28	07:29	06:24	06:14	05:26	05:17	05:50	06:41	07:33	08:26	08:21	08:50
	17:15	18:14	19:04	20:59	21:46	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:12	05:25	05:17	05:51	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:36	19:22	18:16	16:30	16:30
30	08:25		07:20	06:10	05:24	05:18	05:53	06:44	07:36	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** DB - H106**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:09	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:33	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:35	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:26	19:15	17:08	16:28
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:06	06:01	05:19	05:22	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:25	20:20	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:40	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:07	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	22:00	22:01	21:18	20:10	18:59	16:56	16:24
10	08:47	08:06	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:47	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
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13	08:45	08:01	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:02	21:58	21:10	20:01	18:50	16:49	16:24
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:24
15	08:43	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:50	18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
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18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:58	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:49	20:43	21:34	22:05	21:52	20:58	19:46	18:37	16:41	16:24
20	08:38	07:47	06:43	06:32	05:36	05:14	05:38	06:27	07:19	08:12	08:08	08:47
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	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:32	07:25	08:17	08:13	08:48
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24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:46	06:36	07:28	08:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:42	22:07	21:44	20:45	19:32	18:24	16:34	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:55	21:44	22:07	21:42	20:42	19:30	18:22	16:33	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:48	06:39	07:31	08:24	08:20	08:50
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Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
Total, worst case												
Sun reduction												
Oper. time red.												
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6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** DC - H107**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

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N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

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	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:32	20:29	19:18	17:10	16:28
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	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:26	19:15	17:08	16:27
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13	08:45	08:01	07:00	06:47	05:46	05:15	05:30	06:16	07:08	07:59	07:56	08:41
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	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:23
15	08:43	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:49	18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	16:23
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
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26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:37	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:55	21:44	22:07	21:42	20:42	19:30	18:22	16:32	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:48	06:39	07:31	08:24	08:20	08:50
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29	08:27		07:22	06:12	05:25	05:17	05:51	06:43	07:35	08:28	08:23	08:50
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: DD - H108

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
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2	08:50 16:35	08:21 17:25	07:25 18:18	07:13 20:13	06:07 21:06	05:21 21:53	05:19 22:05	05:58 21:31	06:27 (3) 20:27	06:49 19:15	07:40 17:08	07:36 16:28
3	08:50 16:36	08:19 17:27	07:23 18:20	07:10 20:15	06:05 21:08	05:20 21:54	05:20 22:05	05:59 21:29	06:29 (3) 20:24	06:51 19:13	07:42 17:06	07:37 16:27
4	08:50 16:37	08:17 17:29	07:21 18:22	07:08 20:17	06:03 21:09	05:19 21:55	05:21 22:05	06:01 21:27	06:30 (3) 20:22	06:53 19:11	07:43 17:04	07:39 16:26
5	08:50 16:38	08:16 17:30	07:18 18:23	07:06 20:19	06:01 21:11	05:19 21:56	05:22 22:04	06:03 21:26	06:32 (3) 20:20	06:54 19:08	07:45 17:03	07:41 16:26
6	08:49 16:40	08:14 17:32	07:16 18:25	07:03 20:20	05:59 21:13	05:18 21:57	05:22 22:04	06:04 21:24	06:33 (3) 20:17	06:56 19:06	07:47 17:01	07:43 16:25
7	08:49 16:41	08:12 17:34	07:14 18:27	07:01 20:22	05:57 21:15	05:17 21:58	05:23 22:03	06:06 21:22	06:34 (3) 20:15	06:58 19:04	07:49 16:59	07:45 16:25
8	08:48 16:42	08:10 17:36	07:11 18:29	06:59 20:24	05:55 21:16	05:17 21:59	05:24 22:02	06:08 21:20	06:59 20:13	07:50 19:01	07:47 16:57	08:36 16:25
9	08:48 16:44	08:08 17:38	07:09 18:31	06:56 20:26	05:54 21:18	05:16 22:00	05:25 22:02	06:09 21:18	07:01 20:10	07:52 18:59	07:49 16:56	08:37 16:24
10	08:47 16:45	08:07 17:40	07:07 18:33	06:54 20:28	05:52 21:20	05:16 22:00	05:26 22:01	06:11 21:16	07:03 20:08	07:54 18:57	07:50 16:54	08:38 16:24
11	08:47 16:47	08:05 17:42	07:05 18:34	06:52 20:29	05:50 21:21	05:15 22:01	05:27 22:00	06:13 21:14	07:05 20:05	07:56 18:55	07:52 16:52	08:39 16:24
12	08:46 16:48	08:03 17:44	07:02 18:36	06:49 20:31	05:48 21:23	05:15 22:02	05:29 21:59	06:14 21:12	07:06 20:03	07:57 18:52	07:54 16:51	08:40 16:24
13	08:45 16:50	08:01 17:46	07:00 18:38	06:47 20:33	05:47 21:24	05:15 22:03	05:30 21:58	06:16 21:10	07:08 20:01	07:59 18:50	07:56 16:49	08:41 16:24
14	08:44 16:51	07:59 17:48	06:58 18:40	06:45 20:35	05:45 21:26	05:15 22:03	05:31 21:57	06:18 21:08	07:10 19:58	08:01 18:48	07:58 16:48	08:42 16:24
15	08:44 16:53	07:57 17:50	06:55 18:42	06:43 20:36	05:43 21:28	05:14 22:04	05:32 21:56	06:19 21:06	07:11 19:56	08:03 18:46	07:59 16:46	08:43 16:24
16	08:43 16:54	07:55 17:52	06:53 18:43	06:40 20:38	05:42 21:29	05:14 22:04	05:33 21:55	06:21 21:04	07:13 19:54	08:05 18:43	08:01 16:45	08:44 16:24
17	08:42 16:56	07:53 17:53	06:50 18:45	06:38 20:40	05:40 21:31	05:14 22:05	05:35 21:54	06:23 21:02	07:15 19:51	08:06 18:41	08:03 16:43	08:45 16:24
18	08:41 16:58	07:51 17:55	06:48 18:47	06:36 20:42	05:39 21:32	05:14 22:05	05:36 21:53	06:24 21:00	07:16 19:49	08:08 18:39	08:05 16:42	08:46 16:24
19	08:40 16:59	07:49 17:57	06:46 18:49	06:34 20:43	05:37 21:34	05:14 22:06	05:37 21:52	06:26 20:58	07:18 19:46	08:10 18:37	08:07 16:41	08:46 16:24
20	08:39 17:01	07:47 17:59	06:43 18:50	06:32 20:45	05:36 21:35	05:14 22:06	05:39 21:50	06:28 20:56	07:20 19:44	08:12 18:35	08:08 16:39	08:47 16:25
21	08:37 17:03	07:45 18:01	06:41 18:52	06:29 20:47	05:34 21:37	05:14 22:06	05:40 21:49	06:29 20:54	07:21 19:42	08:14 18:32	08:10 16:38	08:48 16:25
22	08:36 17:05	07:43 18:03	06:39 18:54	06:27 20:49	05:33 21:38	05:15 22:06	05:41 21:48	06:31 20:51	07:23 19:39	08:15 18:30	08:12 16:37	08:48 16:26
23	08:35 17:06	07:40 18:05	06:36 18:56	06:25 20:50	05:32 21:40	05:15 22:07	05:43 21:47	06:33 20:49	07:25 19:37	08:17 18:28	08:13 16:36	08:49 16:26
24	08:34 17:08	07:38 18:07	06:34 18:58	06:23 20:52	05:30 21:41	05:15 22:07	05:44 21:45	06:34 20:47	07:26 19:34	08:19 18:26	08:15 16:35	08:49 16:27
25	08:33 17:10	07:36 18:09	06:32 18:59	06:21 20:54	05:29 21:43	05:15 22:07	05:46 21:44	06:36 20:45	07:28 19:32	08:21 18:24	08:17 16:34	08:49 16:27
26	08:31 17:12	07:34 18:10	06:29 19:01	06:19 20:56	05:28 21:44	05:16 22:07	05:47 21:42	06:38 20:43	07:30 19:31	08:23 18:25	08:18 16:33	08:50 16:28
27	08:30 17:14	07:32 18:12	06:27 19:03	06:17 20:57	05:27 21:45	05:16 22:07	05:49 21:41	06:39 20:40	07:31 19:27	08:25 18:20	08:20 16:32	08:50 16:29
28	08:28 17:15	07:30 18:14	06:24 19:05	06:15 20:59	05:26 21:47	05:17 22:06	05:50 21:39	06:41 20:38	07:33 19:25	08:26 18:18	08:22 16:31	08:50 16:30
29	08:27 17:17	07:22 18:06	06:13 19:01	06:13 20:59	05:25 21:48	05:17 22:06	05:52 21:38	06:43 20:36	07:35 19:23	08:28 18:16	08:23 16:30	08:50 16:31
30	08:25 17:19	07:20 18:08	06:11 19:03	06:11 21:03	05:24 21:49	05:18 22:06	05:53 21:36	06:44 20:33	07:37 19:20	08:30 18:14	08:25 16:29	08:50 16:31
31	08:24 17:21	07:17 18:10	07:17 19:10	07:17 20:10	05:23 21:50	05:15 21:54	05:55 21:34	06:46 20:31	07:32 19:12	08:31 18:12	08:26 16:32	08:50 16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
Total, worst case					113							
Sun reduction					0.37				32			
Oper. time red.					1.00				0.30			
Wind dir. red.					0.65				1.00			
Total reduction					0.24				0.65			
Total, real					27				0.19			

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
Kathryn Feeney / kfeeney@jodireland.com
Calculated:
16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** DE - H109**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	[January	[February	[March	[April	[May	[June	[July	[August	[September	[October	[November	[December	
1	08:50 16:34	08:22 17:23	07:27 18:16	07:15 20:12	06:08 21:04	05:22 21:51	05:18 22:06	05:56 21:32	20:57 (3) 21:01 (3)	06:48 20:29	07:38 19:18	07:34 17:10	08:26 16:28
2	08:50 16:35	08:20 17:25	07:25 18:18	07:12 20:13	06:06 21:06	05:21 21:53	05:19 22:05	05:58 21:31	20:58 (3) 21:00 (3)	06:49 20:26	07:40 19:15	07:35 17:08	08:28 16:27
3	08:50 16:36	08:19 17:26	07:23 18:20	07:10 20:15	06:05 21:08	05:20 21:54	05:20 22:05	05:59 21:29		06:51 20:24	07:42 19:13	07:37 17:06	08:29 16:27
4	08:50 16:37	08:17 17:28	07:20 18:21	07:08 20:17	06:03 21:09	05:19 21:55	05:21 22:04	06:01 21:27		06:53 20:22	07:43 19:11	07:39 17:04	08:30 16:26
5	08:49 16:38	08:15 17:30	07:18 18:23	07:05 20:19	06:01 21:11	05:18 21:56	05:21 22:04	06:03 21:25		06:54 20:19	07:45 19:08	07:41 17:02	08:32 16:26
6	08:49 16:39	08:14 17:32	07:16 18:25	07:03 20:20	05:59 21:13	05:18 21:57	05:22 22:03	06:04 21:24		06:56 20:17	07:47 19:06	07:43 17:01	08:33 16:25
7	08:49 16:41	08:12 17:34	07:14 18:27	07:01 20:22	05:57 21:14	05:17 21:58	05:23 22:03	06:06 21:22		06:58 20:15	07:49 19:04	07:45 16:59	08:34 16:25
8	08:48 16:42	08:10 17:36	07:11 18:29	06:58 20:24	05:55 21:16	05:17 21:59	05:24 22:02	06:07 21:20		06:59 20:12	07:50 19:01	07:47 16:57	08:36 16:24
9	08:48 16:43	08:08 17:38	07:09 18:31	06:56 20:26	05:53 21:18	05:16 21:59	05:25 22:01	06:09 21:18		07:01 20:10	07:52 18:59	07:48 16:56	08:37 16:24
10	08:47 16:45	08:06 17:40	07:07 18:32	06:54 20:27	05:52 21:19	20:48 (3) 20:49 (3)	05:16 22:00	06:11 21:16		07:03 20:08	07:54 18:57	07:50 16:54	08:38 16:24
11	08:46 16:46	08:05 17:42	07:04 18:34	06:52 20:29	05:50 21:21	20:47 (3) 20:51 (3)	05:15 22:01	06:12 22:00		07:04 20:05	07:56 18:54	07:52 16:52	08:39 16:24
12	08:46 16:48	08:03 17:44	07:02 18:36	06:49 20:31	05:48 21:23	20:47 (3) 20:52 (3)	05:15 22:02	06:14 21:12		07:06 20:03	07:57 18:52	07:54 16:51	08:40 16:23
13	08:45 16:49	08:01 17:46	07:00 18:38	06:47 20:33	05:46 21:24	20:47 (3) 20:54 (3)	05:15 22:02	06:16 21:10		07:08 20:01	07:59 18:50	07:56 16:49	08:41 16:23
14	08:44 16:51	07:59 17:48	06:57 18:40	06:45 20:34	05:45 21:26	20:47 (3) 20:55 (3)	05:14 22:03	06:17 21:08		07:09 19:58	08:01 18:48	07:58 16:48	08:42 16:23
15	08:43 16:53	07:57 17:49	06:55 18:41	06:43 20:36	05:43 21:28	20:48 (3) 20:57 (3)	05:14 22:04	06:19 21:56		07:11 19:56	08:03 18:45	07:59 16:46	08:43 16:23
16	08:43 16:54	07:55 17:51	06:53 18:43	06:40 20:38	05:42 21:29	20:48 (3) 20:58 (3)	05:14 22:04	06:21 21:55		07:13 19:53	08:04 18:43	08:01 16:45	08:44 16:24
17	08:42 16:56	07:53 17:53	06:50 18:45	06:38 20:40	05:40 21:31	20:48 (3) 20:59 (3)	05:14 22:05	06:22 21:54		07:14 19:51	08:06 18:41	08:03 16:43	08:45 16:24
18	08:41 16:57	07:51 17:55	06:48 18:47	06:36 20:41	05:39 21:32	20:49 (3) 21:01 (3)	05:14 22:05	06:24 21:53		07:16 19:49	08:08 18:39	08:05 16:42	08:45 16:24
19	08:40 16:59	07:49 17:57	06:46 18:49	06:34 20:43	05:37 21:34	20:49 (3) 21:02 (3)	05:14 22:05	06:26 21:52	21:08 (3) 21:11 (3)	07:18 19:46	08:10 18:37	08:06 16:40	08:46 16:24
20	08:38 17:01	07:47 17:59	06:43 18:50	06:31 20:45	05:36 21:35	20:50 (3) 21:03 (3)	05:14 22:06	06:27 21:50	21:05 (3) 21:08 (3)	07:19 19:44	08:12 18:34	08:08 16:39	08:47 16:25
21	08:37 17:03	07:45 18:01	06:41 18:52	06:29 20:47	05:34 21:37	20:51 (3) 21:05 (3)	05:14 22:06	06:29 21:49	21:03 (3) 21:15 (3)	07:21 19:41	08:13 18:32	08:10 16:38	08:47 16:25
22	08:36 17:04	07:42 18:03	06:38 18:54	06:27 20:48	05:33 21:38	20:53 (3) 21:06 (3)	05:14 22:06	06:31 21:48	21:02 (3) 21:15 (3)	07:23 19:39	08:15 18:30	08:12 16:37	08:48 16:25
23	08:35 17:06	07:40 18:05	06:36 18:56	06:25 20:50	05:32 21:40	20:54 (3) 21:05 (3)	05:15 22:06	06:32 21:46	21:01 (3) 21:15 (3)	07:25 19:37	08:17 18:28	08:13 16:36	08:48 16:26
24	08:34 17:08	07:38 18:07	06:34 18:57	06:23 20:52	05:30 21:41	20:55 (3) 21:02 (3)	05:15 22:06	06:34 21:45	21:00 (3) 21:13 (3)	07:26 19:34	08:19 18:26	08:15 16:34	08:49 16:27
25	08:32 17:10	07:36 18:08	06:31 18:59	06:21 20:54	05:29 21:42	21:31 (1) 21:32 (1)	05:15 22:07	06:36 21:44	21:32 (1) 21:59 (3)	07:28 19:32	08:21 17:24	08:17 16:33	08:49 16:27
26	08:31 17:12	07:34 18:10	06:29 19:01	06:19 20:55	05:28 21:44		05:16 22:07	06:37 21:42	20:58 (3) 21:11 (3)	07:30 19:30	08:23 17:22	08:18 16:32	08:50 16:28
27	08:30 17:13	07:32 18:12	06:27 19:03	06:17 20:57	05:27 21:45		05:16 22:06	06:39 21:41	20:58 (3) 21:09 (3)	07:31 19:27	08:24 17:20	08:20 16:31	08:50 16:29
28	08:28 17:15	07:29 18:14	06:24 19:04	06:14 20:59	05:26 21:46		05:17 22:06	06:41 21:39	20:59 (3) 21:08 (3)	07:33 19:25	08:26 17:18	08:21 16:31	08:50 16:30
29	08:27 17:17		07:22 20:06	06:12 21:01	05:25 21:48		05:17 22:06	06:43 21:37	20:58 (3) 21:06 (3)	07:35 19:22	08:28 17:16	08:23 16:30	08:50 16:30
30	08:25 17:19		07:20 20:08	06:10 21:02	05:24 21:49		05:18 22:06	06:44 21:36	20:58 (3) 21:05 (3)	07:36 19:20	08:30 17:14	08:25 16:29	08:50 16:31
31	08:24 17:21		07:17 20:10		05:23 21:50			06:46 21:34	20:58 (3) 21:03 (3)	07:32 17:12			08:50 16:32
Potential sun hours	256	276	367	418	488	503	506	456		381	330	263	240
Total, worst case					138		1	128		6			
Sun reduction					0.37		0.30	0.26		0.30			
Oper. time red.					1.00		1.00	1.00		1.00			
Wind dir. red.					0.67		0.65	0.67		0.67			
Total reduction					0.25		0.19	0.18		0.20			
Total, real					34		0	23		1			

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	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: DF - H110

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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

January			February			March			April			May			June		
1	08:50	16:34	08:22	17:23	18:16	07:27	18:16	18:16	07:55 (6)	20:12	07:15	06:08	21:04	15	07:00 (10)	21:52	21:52
2	08:50	16:35	08:21	17:25	18:18	07:25	18:23	18:18	07:53 (6)	20:13	07:13	06:06	21:06	16	07:01 (10)	21:53	21:53
3	08:50	16:38	08:19	17:30	18:23	07:23	18:23	18:23	07:52 (6)	20:10	07:10	06:05	21:05	16	06:45 (10)	21:50	21:50
4	08:50	16:39	08:17	17:32	18:25	07:21	18:25	18:25	07:51 (6)	20:08	07:08	06:03	21:03	16	07:01 (10)	21:54	21:54
5	08:50	16:41	08:16	17:34	18:27	07:18	18:31	18:27	07:51 (6)	20:06	07:06	06:01	21:01	17	07:01 (10)	21:55	21:55
6	08:49	16:43	08:14	17:36	18:30	07:16	18:34	18:30	07:51 (6)	20:03	07:03	06:01	21:01	16	07:00 (10)	21:56	21:56
7	08:49	16:44	08:12	17:38	18:33	07:14	18:37	18:33	07:51 (6)	20:01	07:01	06:01	21:01	15	07:00 (10)	21:57	21:57
8	08:48	16:45	08:10	17:40	18:36	07:11	18:40	18:36	07:53 (6)	20:00	07:00	06:01	21:01	13	06:59 (10)	21:58	21:58
9	08:48	16:46	08:08	17:42	18:38	07:09	18:42	18:38	07:59 (6)	20:00	07:00	06:01	21:01	12	06:58 (10)	21:59	21:59
10	08:47	16:47	08:07	17:43	18:39	07:07	18:43	18:39	06:56	20:00	06:56	06:01	21:01	9	06:56 (10)	22:00	22:00
11	08:47	16:48	08:05	17:44	18:40	07:04	18:44	18:40	06:54	20:00	06:54	06:01	21:01	5	06:55 (10)	22:01	22:01
12	08:46	16:49	08:03	17:46	18:42	07:02	18:46	18:42	06:52	20:00	06:52	06:01	21:01	12	07:28 (9)	05:50	05:50
13	08:45	16:50	08:01	17:48	18:44	07:00	18:48	18:44	06:50	20:00	06:50	06:01	21:01	10	07:40 (9)	05:51	05:51
14	08:44	16:51	07:59	17:50	18:46	06:57	18:50	18:46	06:49	20:00	06:49	06:01	21:01	8	07:39 (9)	05:52	05:52
15	08:44	16:52	07:57	17:52	18:48	06:55	18:52	18:48	06:47	20:00	06:47	06:01	21:01	14	07:41 (9)	05:53	05:53
16	08:43	16:53	07:55	17:54	18:50	06:53	18:54	18:50	06:45	20:00	06:45	06:01	21:01	9	07:41 (9)	05:54	05:54
17	08:42	16:54	07:53	17:56	18:52	06:50	18:56	18:52	06:43	20:00	06:43	06:01	21:01	5	07:41 (9)	05:55	05:55
18	08:41	16:55	07:51	17:58	18:54	06:48	18:58	18:54	06:41	20:00	06:41	06:01	21:01	12	07:41 (9)	05:56	05:56
19	08:40	16:56	07:49	17:59	18:56	06:46	18:59	18:56	06:39	20:00	06:39	06:01	21:01	14	07:41 (9)	05:57	05:57
20	08:39	16:57	07:47	18:01	19:00	06:43	19:03	19:00	06:37	20:00	06:37	06:01	21:01	13	07:41 (9)	05:58	05:58
21	08:38	16:58	07:45	18:03	19:02	06:41	19:05	19:02	06:35	20:00	06:35	06:01	21:01	9	07:41 (9)	05:59	05:59
22	08:36	16:59	07:43	18:05	19:04	06:39	19:07	19:04	06:33	20:00	06:33	06:01	21:01	8	07:41 (9)	06:00	06:00
23	08:35	17:00	07:40	18:07	19:06	06:36	19:09	19:06	06:31	20:00	06:31	06:01	21:01	15	07:41 (9)	06:01	06:01
24	08:34	17:01	07:38	18:09	19:08	06:34	19:11	19:08	06:29	20:00	06:29	06:01	21:01	15	07:41 (9)	06:02	06:02
25	08:33	17:02	07:36	18:11	19:10	06:31	19:13	19:10	06:27	20:00	06:27	06:01	21:01	16	07:41 (9)	06:03	06:03
26	08:31	17:03	07:34	18:13	19:12	06:29	19:15	19:12	06:25	20:00	06:25	06:01	21:01	15	07:41 (9)	06:04	06:04
27	08:30	17:04	07:32	18:15	19:14	06:27	19:17	19:14	06:23	20:00	06:23	06:01	21:01	14	07:41 (9)	06:05	06:05
28	08:28	17:05	07:29	18:17	19:16	06:24	19:19	19:16	06:21	20:00	06:21	06:01	21:01	12	07:41 (9)	06:06	06:06
29	08:27	17:06	07:27	18:19	19:18	06:22	19:21	19:18	06:19	20:00	06:19	06:01	21:01	10	07:41 (9)	06:07	06:07
30	08:25	17:07	07:25	18:21	19:20	06:20	19:23	19:20	06:17	20:00	06:17	06:01	21:01	8	07:41 (9)	06:08	06:08
31	08:24	17:08	07:23	18:23	19:22	06:18	19:25	19:22	06:15	20:00	06:15	06:01	21:01	12	07:41 (9)	06:09	06:09
Potential sun hours	255	276	367	418	489	503											
Total, worst case				198	137	134											
Sun reduction				0.24	0.35	0.37											
Oper. time red.				1.00	1.00	1.00											
Wind dir. red.				0.68	0.67	0.66											
Total reduction				0.17	0.24	0.24											
Total, real				33	32	33											

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** DF - H110**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

July		August		September		October		November		December	
1	05:18	05:56		06:48		07:27 (9)	07:38		07:34	08:26	
	22:06	21:33		20:29	12	07:39 (9)	19:18		17:10	16:28	
2	05:19	05:58		06:49		07:26 (9)	07:40		07:36	08:28	
	22:06	21:31		20:27	14	07:40 (9)	19:15		17:08	16:27	
3	05:20	05:59	06:58 (10)	06:51		07:25 (9)	07:42		07:37	08:29	
	22:05	21:29	7	07:05 (10)	20:24	14	07:39 (9)	19:13	17:06	16:27	
4	05:21	06:01	06:57 (10)	06:53		07:26 (9)	07:43		07:39	08:31	
	22:05	21:27	10	07:07 (10)	20:22	13	07:39 (9)	19:11	17:04	16:26	
5	05:21	06:03	06:55 (10)	06:54		07:26 (9)	07:45		08:32 (6)	07:41	08:32
	22:04	21:26	13	07:08 (10)	20:20	12	07:38 (9)	19:08	2	08:34 (6)	17:02
6	05:22	06:04	06:55 (10)	06:56		07:27 (9)	07:47		08:29 (6)	07:43	08:33
	22:04	21:24	14	07:09 (10)	20:17	9	07:36 (9)	19:06	8	08:37 (6)	17:01
7	05:23	06:06	06:55 (10)	06:58		07:29 (9)	07:49		08:27 (6)	07:45	08:35
	22:03	21:22	15	07:10 (10)	20:15	4	07:33 (9)	19:04	10	08:37 (6)	16:59
8	05:24	06:07	06:54 (10)	06:59			07:50		08:26 (6)	07:47	08:36
	22:02	21:20	16	07:10 (10)	20:13		19:01	12	08:38 (6)	16:57	16:24
9	05:25	06:09	06:54 (10)	07:01			07:52		08:26 (6)	07:49	08:37
	22:02	21:18	16	07:10 (10)	20:10		18:59	12	08:38 (6)	16:56	16:24
10	05:26	06:11	06:53 (10)	07:03			07:54		08:26 (6)	07:50	08:38
	22:01	21:16	17	07:10 (10)	20:08		18:57	12	08:38 (6)	16:54	16:24
11	05:27	06:12	06:54 (10)	07:04			07:56		08:26 (6)	07:52	08:39
	22:00	21:14	16	07:10 (10)	20:05		18:54	11	08:37 (6)	16:52	16:24
12	05:28	06:14	06:53 (10)	07:06			07:57		08:27 (6)	07:54	08:40
	21:59	21:12	16	07:09 (10)	20:03		18:52	8	08:35 (6)	16:51	16:23
13	05:29	06:16	06:54 (10)	07:08			07:59		07:56	08:41	
	21:58	21:10	14	07:08 (10)	20:01		18:50		16:49	16:23	
14	05:31	06:17	06:55 (10)	07:09			08:01		07:58	08:42	
	21:57	21:08	12	07:07 (10)	19:58		18:48		16:48	16:23	
15	05:32	06:19	06:56 (10)	07:11		08:03 (8)	08:03		07:59	08:43	
	21:56	21:06	9	07:05 (10)	19:56	8	08:11 (8)		16:46	16:23	
16	05:33	06:21	07:00 (10)	07:13		08:00 (8)	08:05		08:01	08:44	
	21:55	21:04	2	07:02 (10)	19:54	12	08:12 (8)		16:45	16:24	
17	05:34	06:22		07:14		07:59 (8)	08:06		08:03	08:45	
	21:54	21:02		19:51	14	08:13 (8)	18:41		16:43	16:24	
18	05:36	06:24		07:16		07:59 (8)	08:08		08:05	08:46	
	21:53	21:00		19:49	15	08:14 (8)	18:39		16:42	16:24	
19	05:37	06:26		07:18		07:57 (8)	08:10		08:07	08:46	
	21:52	20:58		19:46	16	08:13 (8)	18:37		16:40	16:24	
20	05:38	06:27		07:20		07:57 (8)	08:12		08:08	08:47	
	21:51	20:56		19:44	16	08:13 (8)	18:34		16:39	16:25	
21	05:40	06:29		07:21		07:58 (8)	08:14		08:10	08:48	
	21:49	20:54		19:42	15	08:13 (8)	18:32		16:38	16:25	
22	05:41	06:31		07:23		07:57 (8)	08:15		08:12	08:48	
	21:48	20:51		19:39	14	08:11 (8)	18:30		16:37	16:25	
23	05:43	06:32		07:25		07:59 (8)	08:17		08:13	08:49	
	21:47	20:49		19:37	11	08:10 (8)	18:28		16:36	16:26	
24	05:44	06:34		07:26		08:01 (8)	08:19		08:15	08:49	
	21:45	20:47		19:34	6	08:07 (8)	18:26		16:34	16:27	
25	05:45	06:36		07:28			07:21		08:17	08:49	
	21:44	20:45		19:32			17:24		16:33	16:27	
26	05:47	06:37		07:30			07:23		08:18	08:50	
	21:42	20:43		19:30			17:22		16:32	16:28	
27	05:48	06:39		07:31			07:25		08:20	08:50	
	21:41	20:40		19:27			17:20		16:31	16:29	
28	05:50	06:41		07:33			07:26		08:22	08:50	
	21:39	20:38		19:25			17:18		16:31	16:29	
29	05:51	06:43		07:35			07:28		08:23	08:50	
	21:38	20:36		19:22			17:16		16:30	16:30	
30	05:53	06:44	07:30 (9)	07:37			07:30		08:25	08:50	
	21:36	20:33	8	07:38 (9)	19:20		17:14		16:29	16:31	
31	05:55	06:46	07:27 (9)				07:32			08:50	
	21:34	20:31	11	07:38 (9)			17:12			16:32	
Potential sun hours	506	456		381			330		263	240	
Total, worst case			196		205			75			
Sun reduction			0.30		0.28			0.24			
Oper. time red.			1.00		1.00			1.00			
Wind dir. red.			0.66		0.68			0.68			
Total reduction			0.20		0.19			0.16			
Total, real			38		39			12			

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case
Assumptions for shadow calculations

Shadow receptor: DG - H111

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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:09	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:52	22:06	21:33	20:29	19:18	17:10	16:28
2	08:50	08:21	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:36	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:06	21:31	20:27	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:38	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:21	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:31
	16:37	17:28	18:22	20:17	21:09	21:55	22:05	21:27	20:22	19:11	17:04	16:26
5	08:50	08:16	07:18	07:06	06:01	05:19	05:21	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:26	20:20	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:40	17:32	18:25	20:20	21:13	21:57	22:04	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:35
	16:41	17:34	18:27	20:22	21:15	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:07	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:13	19:01	16:57	16:24
9	08:48	08:09	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:49	08:37
	16:44	17:38	18:31	20:26	21:18	22:00	22:02	21:18	20:10	18:59	16:56	16:24
10	08:47	08:07	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:33	20:28	21:20	22:01	22:01	21:16	20:08	18:57	16:54	16:24
11	08:47	08:05	07:05	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:55	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59	07:56	08:39 (1)
	16:49	17:46	18:38	20:33	21:25	22:03	21:58	21:10	20:01	18:50	16:49	16:23
14	08:45	09:15 (1)	07:59	06:58	06:45	05:45	05:31	06:17	07:09	08:01	07:58	08:37 (1)
	16:51	1 09:16 (1)	17:48	18:40	20:35	21:26	22:03	21:57	21:08	19:58	18:48	16:48
15	08:44	09:14 (1)	07:57	06:55	06:43	05:43	05:32	06:19	07:11	08:03	08:00	10 08:47 (1)
	16:53	3 09:17 (1)	17:50	18:42	20:36	21:28	22:04	21:56	21:06	19:56	18:46	14 08:49 (1)
16	08:43	09:12 (1)	07:55	06:53	06:40	05:42	05:33	06:21	07:13	08:05	08:01	08:35 (1)
	16:54	4 09:16 (1)	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:54	18:43	15 08:50 (1)
17	08:42	09:11 (1)	07:53	06:50	06:38	05:40	05:34	06:22	07:15	08:06	08:03	08:34 (1)
	16:56	6 09:17 (1)	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	17 08:51 (1)
18	08:41	09:10 (1)	07:51	06:48	06:36	05:39	05:36	06:24	07:16	08:08	08:05	08:36 (1)
	16:58	8 09:18 (1)	17:55	18:47	20:42	21:32	22:05	21:53	21:00	19:49	18:39	16 08:52 (1)
19	08:40	09:09 (1)	07:49	06:46	06:34	05:37	05:34	06:26	07:18	08:10	08:07	08:38 (1)
	16:59	9 09:18 (1)	17:57	18:49	20:43	21:34	22:06	21:52	20:58	19:46	18:37	15 08:53 (1)
20	08:39	09:08 (1)	07:47	06:43	06:32	05:36	05:34	06:27	07:20	08:12	08:08	08:40 (1)
	17:01	11 09:19 (1)	17:59	18:50	20:45	21:35	22:06	21:51	20:56	19:44	18:35	14 08:54 (1)
21	08:38	09:06 (1)	07:45	06:41	06:29	05:34	05:34	06:29	07:21	08:14	08:10	08:42 (1)
	17:03	12 09:18 (1)	18:01	18:52	20:47	21:37	22:06	21:49	20:54	19:42	18:32	12 08:54 (1)
22	08:36	09:05 (1)	07:43	06:39	06:27	05:33	05:34	06:31	07:23	08:15	08:12	08:44 (1)
	17:04	14 09:19 (1)	18:03	18:54	20:49	21:38	22:06	21:48	20:51	19:39	18:30	11 08:55 (1)
23	08:35	09:04 (1)	07:40	06:36	06:25	05:32	05:35	06:33	07:25	08:17	08:14	08:46 (1)
	17:06	15 09:19 (1)	18:05	18:56	20:50	21:40	22:07	21:47	20:49	19:37	18:28	9 08:55 (1)
24	08:34	09:02 (1)	07:38	06:34	06:23	05:30	05:35	06:34	07:26	08:19	08:15	08:47 (1)
	17:08	16 09:18 (1)	18:07	18:58	20:52	21:41	22:07	21:45	20:47	19:34	18:26	8 08:55 (1)
25	08:33	09:01 (1)	07:36	06:32	06:21	05:29	05:35	06:36	07:28	08:21	08:17	08:49 (1)
	17:10	17 09:18 (1)	18:09	18:59	20:54	21:43	22:07	21:44	20:45	19:32	17:24	6 08:55 (1)
26	08:31	09:02 (1)	07:34	06:29	06:19	05:28	05:36	06:38	07:30	08:23	08:19	08:51 (1)
	17:12	15 09:17 (1)	18:10	19:01	20:56	21:44	22:07	21:42	20:43	19:30	17:22	5 08:56 (1)
27	08:30	09:04 (1)	07:32	06:27	06:17	05:27	05:36	06:39	07:31	08:25	08:20	08:53 (1)
	17:13	13 09:17 (1)	18:12	19:03	20:57	21:45	22:07	21:41	20:40	19:27	17:20	3 08:56 (1)
28	08:28	09:05 (1)	07:30	06:24	06:15	05:26	05:37	06:41	07:33	08:26	08:22	08:54 (1)
	17:15	10 09:15 (1)	18:14	19:05	20:59	21:47	22:07	21:39	20:38	19:25	17:18	1 08:55 (1)
29	08:27	09:08 (1)		07:22	06:13	05:25	05:37	06:43	07:35	08:28	08:23	08:50
	17:17	4 09:12 (1)		20:06	21:01	21:48	22:06	21:38	20:36	19:23	17:16	16:30
30	08:25			07:20	06:11	05:24	05:38	06:44	07:37	08:30	08:25	08:50
	17:19			20:08	21:03	21:49	22:06	21:36	20:34	19:20	17:14	16:31
31	08:24			07:17		05:23		05:55	06:46		07:32	08:51
	17:21			20:10		21:50		21:34	20:31		17:12	16:32
Potential sun hours	255	276	367	418	489	503	506	456	381	330	263	240
Total, worst case		158									161	
Sun reduction		0.16									0.19	
Oper. time red.		1.00									1.00	
Wind dir. red.		0.65									0.65	
Total reduction		0.10									0.12	
Total, real		16									20	

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
Kathryn.Feeney@jodireland.com
Calculated:
16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** DH - H112

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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50 16:34	08:22 17:23	07:27 18:16	07:51 (2) 18:16	07:15 18:16	06:09 18:16	05:22 18:16	05:18 18:16	05:56 18:16	06:48 18:16	07:38 18:16	07:34 18:28
2	08:50 16:35	08:21 17:25	07:25 18:18	07:49 (2) 18:18	07:13 18:18	06:07 18:18	05:21 18:18	05:19 18:18	05:58 18:18	06:49 18:18	07:40 18:18	07:36 18:28
3	08:50 16:36	08:19 17:27	07:23 18:20	07:47 (2) 18:20	07:10 18:20	06:05 18:20	05:20 18:20	05:19 18:20	05:59 18:20	06:51 18:20	07:42 18:20	07:38 18:29
4	08:50 16:37	08:17 17:29	07:21 18:22	07:44 (2) 18:22	07:08 18:22	06:03 18:22	05:19 18:22	05:21 18:22	06:01 18:22	06:53 18:22	07:44 18:22	07:39 18:31
5	08:50 16:38	08:16 17:30	07:18 18:23	07:43 (2) 18:23	07:06 18:23	06:01 18:23	05:19 18:23	05:22 18:23	06:03 18:23	06:54 18:23	07:45 18:23	07:41 18:32
6	08:49 16:40	08:14 17:32	07:16 18:25	07:44 (2) 18:25	07:03 18:25	05:59 18:25	05:18 18:25	05:22 18:25	06:04 18:25	06:56 18:25	07:47 18:25	07:43 18:33
7	08:49 16:41	08:12 17:34	07:14 18:27	07:45 (2) 18:27	07:01 18:27	05:57 18:27	05:17 18:27	05:23 18:27	06:06 18:27	06:58 18:27	07:49 18:27	07:45 18:35
8	08:48 16:42	08:10 17:36	07:11 18:29	07:48 (2) 18:29	06:59 18:29	05:55 18:29	05:18 18:29	05:24 18:29	06:08 18:29	06:59 18:29	07:50 18:29	07:47 18:36
9	08:48 16:44	08:09 17:38	07:09 18:31	07:55 (2) 18:31	06:56 18:31	05:53 18:31	05:16 18:31	05:25 18:31	06:09 18:31	07:01 18:31	07:52 18:31	07:49 18:37
10	08:47 16:45	08:07 17:40	07:07 18:33	07:55 (2) 18:33	06:56 18:33	05:53 18:33	05:16 18:33	05:25 18:33	06:09 18:33	07:01 18:33	07:52 18:33	07:49 18:37
11	08:47 16:46	08:05 17:42	07:05 18:34	07:55 (2) 18:34	06:56 18:34	05:53 18:34	05:16 18:34	05:25 18:34	06:09 18:34	07:01 18:34	07:52 18:34	07:49 18:37
12	08:46 16:48	08:03 17:44	07:02 18:36	07:55 (2) 18:36	06:56 18:36	05:53 18:36	05:16 18:36	05:25 18:36	06:09 18:36	07:01 18:36	07:52 18:36	07:49 18:37
13	08:45 16:50	08:01 17:46	07:00 18:38	07:55 (2) 18:38	06:56 18:38	05:53 18:38	05:16 18:38	05:25 18:38	06:09 18:38	07:01 18:38	07:52 18:38	07:49 18:37
14	08:45 16:51	07:59 17:48	06:58 18:40	07:55 (2) 18:40	06:56 18:40	05:53 18:40	05:16 18:40	05:25 18:40	06:09 18:40	07:01 18:40	07:52 18:40	07:49 18:37
15	08:44 16:53	07:57 17:50	06:55 18:42	07:55 (2) 18:42	06:56 18:42	05:53 18:42	05:16 18:42	05:25 18:42	06:09 18:42	07:01 18:42	07:52 18:42	07:49 18:37
16	08:43 16:54	07:55 17:52	06:53 18:43	07:55 (2) 18:43	06:56 18:43	05:53 18:43	05:16 18:43	05:25 18:43	06:09 18:43	07:01 18:43	07:52 18:43	07:49 18:37
17	08:42 16:56	07:53 17:53	06:50 18:45	07:55 (2) 18:45	06:56 18:45	05:53 18:45	05:16 18:45	05:25 18:45	06:09 18:45	07:01 18:45	07:52 18:45	07:49 18:37
18	08:41 16:58	07:51 17:55	06:48 18:47	07:55 (2) 18:47	06:56 18:47	05:53 18:47	05:16 18:47	05:25 18:47	06:09 18:47	07:01 18:47	07:52 18:47	07:49 18:37
19	08:40 16:59	07:49 17:57	06:46 18:49	07:55 (2) 18:49	06:56 18:49	05:53 18:49	05:16 18:49	05:25 18:49	06:09 18:49	07:01 18:49	07:52 18:49	07:49 18:37
20	08:39 17:01	07:47 17:59	06:43 18:51	07:55 (2) 18:51	06:56 18:51	05:53 18:51	05:16 18:51	05:25 18:51	06:09 18:51	07:01 18:51	07:52 18:51	07:49 18:37
21	08:38 17:03	07:45 18:01	06:41 18:52	07:55 (2) 18:52	06:56 18:52	05:53 18:52	05:16 18:52	05:25 18:52	06:09 18:52	07:01 18:52	07:52 18:52	07:49 18:37
22	08:36 17:04	07:43 18:03	06:39 18:54	07:55 (2) 18:54	06:56 18:54	05:53 18:54	05:16 18:54	05:25 18:54	06:09 18:54	07:01 18:54	07:52 18:54	07:49 18:37
23	08:35 17:06	07:40 18:05	06:36 18:56	07:55 (2) 18:56	06:56 18:56	05:53 18:56	05:16 18:56	05:25 18:56	06:09 18:56	07:01 18:56	07:52 18:56	07:49 18:37
24	08:34 17:08	07:38 18:07	06:34 18:58	07:55 (2) 18:58	06:56 18:58	05:53 18:58	05:16 18:58	05:25 18:58	06:09 18:58	07:01 18:58	07:52 18:58	07:49 18:37
25	08:33 17:10	07:36 18:09	06:32 18:59	07:55 (2) 18:59	06:56 18:59	05:53 18:59	05:16 18:59	05:25 18:59	06:09 18:59	07:01 18:59	07:52 18:59	07:49 18:37
26	08:31 17:12	07:34 18:10	06:29 19:01	07:55 (2) 19:01	06:56 19:01	05:53 19:01	05:16 19:01	05:25 19:01	06:09 19:01	07:01 19:01	07:52 19:01	07:49 18:37
27	08:30 17:13	07:32 18:12	06:27 19:03	07:55 (2) 19:03	06:56 19:03	05:53 19:03	05:16 19:03	05:25 19:03	06:09 19:03	07:01 19:03	07:52 19:03	07:49 18:37
28	08:28 17:15	07:30 18:14	06:24 19:05	07:55 (2) 19:05	06:56 19:05	05:53 19:05	05:16 19:05	05:25 19:05	06:09 19:05	07:01 19:05	07:52 19:05	07:49 18:37
29	08:27 17:17	07:22 18:17	06:13 19:06	07:55 (2) 19:06	06:56 19:06	05:53 19:06	05:16 19:06	05:25 19:06	06:09 19:06	07:01 19:06	07:52 19:06	07:49 18:37
30	08:25 17:19	07:20 18:18	06:11 19:08	07:55 (2) 19:08	06:56 19:08	05:53 19:08	05:16 19:08	05:25 19:08	06:09 19:08	07:01 19:08	07:52 19:08	07:49 18:37
31	08:24 17:21	07:19 18:24	06:10 19:10	07:55 (2) 19:10	06:56 19:10	05:53 19:10	05:16 19:10	05:25 19:10	06:09 19:10	07:01 19:10	07:52 19:10	07:49 18:37
Potential sun hours	256	276	367	418	489	503	506	456	381	330	263	240
Total, worst case												
Sun reduction		22	113							134		
Oper. time red.		0.21	0.24							0.24		
Wind dir. red.		1.00	1.00							1.00		
Total reduction		0.68	0.68							0.68		
Total, real		0.14	0.16							0.16		
		3	19							22		

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** DI - H113**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:32	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:13	06:06	05:21	05:19	05:58	06:49	07:40	07:35	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:05	06:01	05:19	05:21	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:25	20:19	19:08	17:02	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:07	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	21:59	22:01	21:18	20:10	18:59	16:56	16:24
10	08:47	08:06	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:46	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:46	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:02	21:58	21:10	20:01	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:23
15	08:43	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:49	18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	16:23
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:57	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:49	20:43	21:34	22:05	21:52	20:58	19:46	18:37	16:41	16:24
20	08:38	07:47	06:43	06:31	05:36	05:14	05:38	06:27	07:19	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:34	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:41	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:32	07:25	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:45	06:36	07:28	08:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:42	22:07	21:44	20:45	19:32	18:24	16:33	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:37	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:55	21:44	22:07	21:42	20:42	19:30	18:22	16:32	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:48	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:41	20:40	19:27	18:20	16:31	16:29
28	08:28	07:29	06:24	06:14	05:26	05:17	05:50	06:41	07:33	08:26	08:21	08:50
	17:15	18:14	19:04	20:59	21:46	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:12	05:25	05:17	05:51	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:36	19:22	18:16	16:30	16:30
30	08:25		07:20	06:10	05:24	05:18	05:53	06:44	07:36	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** DJ - H114**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:32	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:13	06:06	05:21	05:19	05:58	06:49	07:40	07:35	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:05	06:01	05:19	05:21	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:25	20:19	19:08	17:02	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:07	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	21:59	22:01	21:18	20:10	18:59	16:56	16:24
10	08:47	08:06	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:46	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:46	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:02	21:58	21:10	20:01	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:23
15	08:43	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:49	18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	16:23
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:57	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:49	20:43	21:34	22:05	21:52	20:58	19:46	18:37	16:41	16:24
20	08:38	07:47	06:43	06:31	05:36	05:14	05:38	06:27	07:19	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:34	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:41	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:32	07:25	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:45	06:36	07:28	08:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:42	22:07	21:44	20:45	19:32	18:24	16:33	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:37	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:55	21:44	22:07	21:42	20:42	19:30	18:22	16:32	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:48	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:41	20:40	19:27	18:20	16:31	16:29
28	08:28	07:29	06:24	06:14	05:26	05:17	05:50	06:41	07:33	08:26	08:21	08:50
	17:15	18:14	19:04	20:59	21:46	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:12	05:25	05:17	05:51	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:36	19:22	18:16	16:30	16:30
30	08:25		07:20	06:10	05:24	05:18	05:53	06:44	07:36	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
Kathryn Feeney / kfeeney@jodireland.com
Calculated:
16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** DK - H115

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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50 16:34	08:22 17:23	07:27 18:16	07:15 18:16	06:09 21:04	05:22 21:52	05:18 22:06	05:56 21:33	06:48 20:29	07:38 19:18	07:34 17:10	08:26 16:28
2	08:50 16:35	08:21 17:25	07:25 18:18	07:13 18:18	06:07 21:06	05:21 21:53	05:19 22:06	05:58 21:31	06:49 20:27	07:40 19:15	07:36 17:08	08:28 16:28
3	08:50 16:36	08:19 17:27	07:23 18:20	07:10 18:20	06:05 21:08	05:20 21:54	05:20 22:05	05:59 21:29	06:51 20:24	07:42 19:13	07:38 17:06	08:29 16:27
4	08:50 16:37	08:17 17:29	07:21 18:22	07:08 18:22	06:03 21:09	05:19 21:55	05:21 22:05	06:01 21:27	06:53 20:22	07:44 19:11	07:39 17:04	08:31 16:26
5	08:50 16:38	08:16 17:30	07:18 18:23	07:06 18:23	06:01 21:11	05:19 21:56	05:22 22:04	06:03 21:26	06:54 20:20	07:45 19:08	07:41 17:03	08:32 16:26
6	08:49 16:40	08:14 17:32	07:16 18:25	07:03 18:25	05:59 21:13	05:18 21:57	05:22 22:04	06:04 21:24	06:56 20:17	07:47 19:06	07:43 17:01	08:33 16:25
7	08:49 16:41	08:12 17:34	07:14 18:27	07:01 18:27	05:57 21:15	05:17 21:58	05:23 22:03	06:06 21:22	06:58 20:15	07:49 19:04	07:45 16:59	08:35 16:25
8	08:48 16:42	08:10 17:36	07:11 18:29	06:59 18:29	05:55 21:16	05:17 21:59	05:24 22:02	06:08 21:20	06:59 20:13	07:50 19:01	07:47 16:57	08:36 16:25
9	08:48 16:44	08:09 17:38	07:09 18:31	06:56 18:31	05:53 21:18	05:16 22:00	05:25 22:02	06:09 21:18	07:01 20:10	07:52 18:59	07:49 16:56	08:37 16:24
10	08:47 16:45	08:07 17:40	07:07 18:33	06:54 18:33	05:52 21:20	05:16 22:01	05:26 22:01	06:11 21:16	07:03 20:08	07:54 18:57	07:50 16:54	08:38 16:24
11	08:47 16:46	08:05 17:42	07:05 18:34	06:52 18:34	05:50 21:21	05:15 22:01	05:27 22:00	06:13 21:14	07:05 20:06	07:56 18:55	08:31 (2) 16:52	08:39 16:24
12	08:46 16:48	08:03 17:44	07:02 18:36	06:49 18:36	05:48 21:23	05:15 22:02	05:28 21:59	06:14 21:12	07:06 20:03	07:57 18:52	08:29 (2) 16:51	08:40 16:24
13	08:45 16:50	08:01 17:46	07:00 18:38	06:47 18:38	05:47 21:25	05:15 22:03	05:30 21:58	06:16 21:10	07:08 20:01	07:59 18:50	08:27 (2) 16:49	08:41 16:24
14	08:45 16:51	07:59 17:48	06:58 18:40	06:45 18:40	05:45 21:26	05:14 22:03	05:31 21:57	06:17 21:08	07:10 18:48	08:01 18:48	08:27 (2) 16:48	08:42 16:24
15	08:44 16:53	07:57 17:50	06:55 18:42	06:43 18:42	05:43 21:28	05:14 22:04	05:32 21:56	06:19 21:06	07:11 18:46	08:03 18:46	08:29 (2) 16:46	08:43 16:24
16	08:43 16:54	07:55 17:52	06:53 18:43	06:40 18:43	05:42 21:29	05:14 22:04	05:33 21:55	06:21 21:04	07:13 18:43	08:05 18:43	08:31 (2) 16:45	08:44 16:24
17	08:42 16:56	07:53 17:53	06:50 18:45	06:38 18:45	05:40 21:31	05:14 22:05	05:35 21:54	06:23 21:02	07:15 18:41	08:06 18:41	08:33 (2) 16:43	08:45 16:24
18	08:41 16:58	07:51 17:55	06:48 18:47	06:36 18:47	05:39 21:32	05:14 22:05	05:36 21:53	06:24 21:00	07:16 18:39	08:08 18:39	08:35 (2) 16:42	08:46 16:24
19	08:40 16:59	07:49 17:57	06:46 18:49	06:34 18:49	05:37 21:34	05:14 22:06	05:37 21:52	06:26 20:58	07:18 18:37	08:10 18:37	08:37 (2) 16:41	08:46 16:24
20	08:39 17:01	07:47 17:59	06:43 18:51	06:32 18:51	05:36 21:45	05:14 22:06	05:38 21:51	06:28 20:56	07:20 18:44	08:12 18:35	08:39 (2) 16:39	08:47 16:25
21	08:38 17:03	07:45 18:01	06:41 18:52	06:29 18:52	05:34 21:47	05:14 22:06	05:40 21:49	06:29 20:54	07:21 18:42	08:14 18:32	08:40 (2) 16:38	08:48 16:25
22	08:36 17:04	07:43 18:03	06:39 18:54	06:27 18:54	05:33 21:48	05:14 22:06	05:41 21:48	06:31 20:51	07:23 18:30	08:15 18:30	08:42 (2) 16:37	08:48 16:26
23	08:35 17:06	07:40 18:05	06:36 18:56	06:25 18:56	05:32 21:40	05:15 22:07	05:43 21:47	06:33 20:49	07:25 18:28	08:17 18:28	08:44 (2) 16:36	08:49 16:26
24	08:34 17:08	07:38 18:07	06:34 18:58	06:23 18:58	05:30 21:41	05:15 22:07	05:44 21:45	06:34 20:47	07:26 18:26	08:19 18:26	08:45 (2) 16:35	08:49 16:27
25	08:33 17:10	07:36 18:09	06:32 18:59	06:21 18:59	05:29 21:43	05:15 22:07	05:46 21:44	06:36 20:45	07:28 19:32	08:20 19:32	08:46 (2) 16:34	08:50 16:27
26	08:31 17:12	07:34 18:10	06:29 19:01	06:19 19:01	05:28 21:44	05:16 22:07	05:47 21:42	06:38 20:43	07:30 19:30	08:23 19:30	08:48 (2) 16:33	08:50 16:28
27	08:30 17:13	07:32 18:12	06:27 19:03	06:17 19:03	05:27 21:45	05:16 22:07	05:49 21:41	06:39 20:40	07:31 19:27	08:25 19:27	08:49 (2) 16:32	08:50 16:29
28	08:28 17:15	07:30 18:14	06:24 19:05	06:15 19:05	05:26 21:47	05:17 22:07	05:50 21:39	06:41 20:38	07:33 19:25	08:26 19:25	08:50 (2) 16:31	08:50 16:30
29	08:27 17:17	07:22 18:17	06:13 19:06	06:13 19:06	05:25 21:48	05:17 22:06	05:52 21:38	06:43 20:36	07:35 19:23	08:28 19:23	08:51 (2) 16:30	08:50 16:30
30	08:25 17:19	07:20 18:18	06:11 19:08	06:11 19:08	05:24 21:03	05:18 22:06	05:53 21:36	06:44 20:34	07:37 19:20	08:30 19:20	08:52 (2) 16:29	08:50 16:31
31	08:24 17:21	07:17 18:24	06:08 19:10	06:08 19:10	05:23 21:50	05:19 22:07	05:55 21:34	06:46 20:31	07:32 19:12	08:31 19:12	08:53 (2) 16:32	08:51 16:32
Potential sun hours	256	276	367	418	489	503	506	456	381	330	263	240
Total, worst case		92	37							128		
Sun reduction		0.21	0.24							0.24		
Oper. time red.		1.00	1.00							1.00		
Wind dir. red.		0.68	0.68							0.68		
Total reduction		0.14	0.16							0.16		
Total, real		13	6							21		

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: DL - H116

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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January		February		March		April		May		June	
1	08:50	08:22			07:27	07:59 (6)	07:15		06:08	06:53 (10)	05:22	
	16:34	17:23			18:16	12 08:11 (6)	20:12		21:04	16 07:09 (10)	21:52	
2	08:50	08:21			07:25	07:59 (6)	07:13		06:06	06:54 (10)	05:21	
	16:35	17:25			18:18	12 08:11 (6)	20:13	7	07:48 (9)	21:06	15 07:09 (10)	21:53
3	08:50	08:19			07:23	08:00 (6)	07:10		06:05	06:54 (10)	05:20	
	16:36	17:26			18:20	11 08:11 (6)	20:15	11	07:49 (9)	21:08	14 07:08 (10)	21:54
4	08:50	08:17			07:21	08:00 (6)	07:08		06:03	06:55 (10)	05:19	
	16:37	17:28			18:21	8 08:08 (6)	20:17	13	07:50 (9)	21:09	11 07:06 (10)	21:55
5	08:50	08:16			07:18		07:06		06:01	06:57 (10)	05:18	
	16:38	17:30			18:23		20:19	13	07:50 (9)	21:11	7 07:04 (10)	21:56
6	08:49	08:14			07:16		07:03		05:59		05:18	
	16:39	17:32			18:25		20:20	13	07:49 (9)	21:13		21:57
7	08:49	08:12			07:14		07:01		05:57		05:17	
	16:41	17:34			18:27		20:22	13	07:49 (9)	21:15		21:58
8	08:48	08:10			07:11		06:59		05:55		05:17	
	16:42	17:36			18:29		20:24	11	07:48 (9)	21:16		21:59
9	08:48	08:08			07:09		06:56		05:53		05:16	
	16:43	17:38			18:31		20:26	9	07:46 (9)	21:18		22:00
10	08:47	08:07			07:07		06:54		05:52		05:16	
	16:45	17:40			18:32		20:27	5	07:44 (9)	21:20		22:01
11	08:47	08:05			07:04		06:52		05:50		05:15	
	16:46	17:42			18:34		20:29		21:21		22:01	
12	08:46	08:03			07:02		06:49		05:48		05:15	
	16:48	17:44			18:36		20:31		21:23		22:02	
13	08:45	08:01			07:00		06:47		05:46		05:15	
	16:49	17:46			18:38		20:33		21:24		22:03	
14	08:44	07:59			06:57		06:45		05:45		05:14	
	16:51	17:48			18:40		20:35		21:26		22:03	
15	08:44	07:57			06:55		07:27 (8)	06:43	05:43		05:14	
	16:52	17:49			18:41	7 07:34 (8)	20:36		21:28		22:04	
16	08:43	07:55			06:53		07:25 (8)	06:40	05:42		05:14	
	16:54	17:51			18:43	11 07:36 (8)	20:38		21:29		22:04	
17	08:42	07:53			06:50		07:24 (8)	06:38	05:40		05:14	
	16:56	17:53			18:45	14 07:38 (8)	20:40		21:31		22:05	
18	08:41	07:51			06:48		07:22 (8)	06:36	05:39		05:14	
	16:57	17:55			18:47	15 07:37 (8)	20:42		21:32		22:05	
19	08:40	07:49			06:46		07:22 (8)	06:34	05:37		05:14	
	16:59	17:57			18:49	16 07:38 (8)	20:43		21:34		22:06	
20	08:39	07:47			06:43		07:21 (8)	06:31	05:36		05:14	
	17:01	17:59			18:50	16 07:37 (8)	20:45		21:35		22:06	
21	08:38	07:45			06:41		07:21 (8)	06:29	05:34		05:14	
	17:03	18:01			18:52	15 07:36 (8)	20:47		21:37		22:06	
22	08:36	07:43			06:39		07:22 (8)	06:27	05:33		05:14	
	17:04	18:03			18:54	14 07:36 (8)	20:49		21:38		22:06	
23	08:35	07:40			06:36		07:22 (8)	06:25	06:59 (10)	05:32	05:15	
	17:06	18:05			18:56	12 07:34 (8)	20:50	7	07:06 (10)	21:40	22:07	
24	08:34	07:38			06:34		07:25 (8)	06:23	06:57 (10)	05:30	05:15	
	17:08	18:07			18:57	6 07:31 (8)	20:52	11	07:08 (10)	21:41	22:07	
25	08:33	07:36		08:04 (6)	06:31		06:21		06:55 (10)	05:29	05:15	
	17:10	18:08	3	08:07 (6)	18:59		20:54	14	07:09 (10)	21:43	22:07	
26	08:31	07:34		08:01 (6)	06:29		06:19		06:54 (10)	05:28	05:16	
	17:12	18:10	9	08:10 (6)	19:01		20:56	15	07:09 (10)	21:44	22:07	
27	08:30	07:32		08:00 (6)	06:27		06:17		06:54 (10)	05:27	05:16	
	17:13	18:12	11	08:11 (6)	19:03		20:57	16	07:10 (10)	21:45	22:07	
28	08:28	07:29		08:00 (6)	06:24		06:14		06:53 (10)	05:26	05:17	
	17:15	18:14	12	08:12 (6)	19:05		20:59	17	07:10 (10)	21:47	22:07	
29	08:27				07:22		06:12		06:53 (10)	05:25	05:17	
	17:17				20:06		21:01	17	07:10 (10)	21:48	22:06	
30	08:25				07:20		06:10		06:53 (10)	05:23	05:18	
	17:19				20:08		21:03	16	07:09 (10)	21:49	22:06	
31	08:24				07:17				05:23			
	17:21				20:10				21:50			
Potential sun hours	255	276			367		418		489		503	
Total, worst case			35		169		208		63			
Sun reduction			0.21		0.24		0.35		0.37			
Oper. time red.			1.00		1.00		1.00		1.00			
Wind dir. red.			0.68		0.67		0.67		0.66			
Total reduction			0.14		0.16		0.24		0.24			
Total, real			5		28		49		15			

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
Kathryn Feeney / kfeeney@jodireland.com
Calculated:
16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** DL - H116

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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

July		August		September		October		November		December	
1	05:18	05:56		06:48		07:38		07:34		08:26	
	22:06	21:33		20:29		19:18		17:10		16:28	
2	05:19	05:58		06:49	07:38 (9)	07:40		07:36		08:28	
	22:06	21:31		20:27	5 07:43 (9)	19:15		17:08		16:27	
3	05:20	05:59		06:51	07:35 (9)	07:42		07:37		08:29	
	22:05	21:29		20:24	9 07:44 (9)	19:13		17:06		16:27	
4	05:21	06:01		06:53	07:34 (9)	07:43		07:39		08:31	
	22:05	21:27		20:22	11 07:45 (9)	19:11		17:04		16:26	
5	05:21	06:03		06:54	07:33 (9)	07:45		07:41		08:32	
	22:04	21:26		20:20	13 07:46 (9)	19:08		17:02		16:26	
6	05:22	06:04		06:56	07:32 (9)	07:47		07:43		08:33	
	22:04	21:24		20:17	13 07:45 (9)	19:06		17:01		16:25	
7	05:23	06:06	07:09 (10)	06:58	07:32 (9)	07:49		07:45		08:35	
	22:03	21:22	3 07:12 (10)	20:15	13 07:45 (9)	19:04		16:59		16:25	
8	05:24	06:07	07:05 (10)	06:59	07:31 (9)	07:50		07:47		08:36	
	22:02	21:20	9 07:14 (10)	20:13	13 07:44 (9)	19:01		16:57		16:24	
9	05:25	06:09	07:04 (10)	07:01	07:32 (9)	07:52	08:37 (6)	07:49		08:37	
	22:02	21:18	12 07:16 (10)	20:10	11 07:43 (9)	18:59	5 08:42 (6)	16:56		16:24	
10	05:26	06:11	07:03 (10)	07:03	07:34 (9)	07:54	08:35 (6)	07:50		08:38	
	22:01	21:16	14 07:17 (10)	20:08	8 07:42 (9)	18:57	9 08:44 (6)	16:54		16:24	
11	05:27	06:12	07:02 (10)	07:04		07:56	08:34 (6)	07:52		08:39	
	22:00	21:14	16 07:18 (10)	20:05		18:54	11 08:45 (6)	16:52		16:24	
12	05:28	06:14	07:01 (10)	07:06		07:57	08:32 (6)	07:54		08:40	
	21:59	21:12	16 07:17 (10)	20:03		18:52	12 08:44 (6)	16:51		16:23	
13	05:29	06:16	07:01 (10)	07:08		07:59	08:32 (6)	07:56		08:41	
	21:58	21:10	17 07:18 (10)	20:01		18:50	12 08:44 (6)	16:49		16:23	
14	05:31	06:17	07:00 (10)	07:09		08:01	08:32 (6)	07:58		08:42	
	21:57	21:08	17 07:17 (10)	19:58		18:48	12 08:44 (6)	16:48		16:23	
15	05:32	06:19	07:01 (10)	07:11		08:03	08:33 (6)	07:59		08:43	
	21:56	21:06	16 07:17 (10)	19:56		18:45	10 08:43 (6)	16:46		16:23	
16	05:33	06:21	07:01 (10)	07:13		08:05	08:34 (6)	08:01		08:44	
	21:55	21:04	16 07:17 (10)	19:54		18:43	7 08:41 (6)	16:45		16:24	
17	05:34	06:22	07:01 (10)	07:14		08:06		08:03		08:45	
	21:54	21:02	15 07:16 (10)	19:51		18:41		16:43		16:24	
18	05:36	06:24	07:02 (10)	07:16		08:08		08:05		08:46	
	21:53	21:00	13 07:15 (10)	19:49		18:39		16:42		16:24	
19	05:37	06:26	07:03 (10)	07:18	08:12 (8)	08:10		08:07		08:46	
	21:52	20:58	10 07:13 (10)	19:46	5 08:17 (8)	18:37		16:40		16:24	
20	05:38	06:27	07:05 (10)	07:20	08:09 (8)	08:12		08:08		08:47	
	21:51	20:56	6 07:11 (10)	19:44	11 08:20 (8)	18:34		16:39		16:25	
21	05:40	06:29		07:21	08:08 (8)	08:14		08:10		08:48	
	21:49	20:54		19:42	13 08:21 (8)	18:32		16:38		16:25	
22	05:41	06:31		07:23	08:06 (8)	08:15		08:12		08:48	
	21:48	20:51		19:39	15 08:21 (8)	18:30		16:37		16:25	
23	05:43	06:32		07:25	08:06 (8)	08:17		08:13		08:49	
	21:47	20:49		19:37	15 08:21 (8)	18:28		16:36		16:26	
24	05:44	06:34		07:26	08:05 (8)	08:19		08:15		08:49	
	21:45	20:47		19:34	16 08:21 (8)	18:26		16:34		16:27	
25	05:45	06:36		07:28	08:04 (8)	07:21		08:17		08:49	
	21:44	20:45		19:32	16 08:20 (8)	17:24		16:33		16:27	
26	05:47	06:37		07:30	08:05 (8)	07:23		08:18		08:50	
	21:42	20:43		19:30	15 08:20 (8)	17:22		16:32		16:28	
27	05:48	06:39		07:31	08:06 (8)	07:25		08:20		08:50	
	21:41	20:40		19:27	12 08:18 (8)	17:20		16:31		16:29	
28	05:50	06:41		07:33	08:07 (8)	07:26		08:22		08:50	
	21:39	20:38		19:25	10 08:17 (8)	17:18		16:31		16:29	
29	05:51	06:43		07:35	08:11 (8)	07:28		08:23		08:50	
	21:38	20:36		19:22	1 08:12 (8)	17:16		16:30		16:30	
30	05:53	06:44		07:37		07:30		08:25		08:50	
	21:36	20:33		19:20		17:14		16:29		16:31	
31	05:55	06:46				07:32				08:50	
	21:34	20:31				17:12				16:32	
Potential sun hours	506	456		381		330		263		240	
Total, worst case			180	225		78					
Sun reduction			0.30	0.28		0.24					
Oper. time red.			1.00	1.00		1.00					
Wind dir. red.			0.66	0.68		0.68					
Total reduction			0.20	0.19		0.16					
Total, real			35	43		13					

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: DM - H117

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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January		February		March		April		May		June	
1	08:50	08:22			07:27	08:00 (6)	07:15		07:42 (9)	06:08	06:56 (10)	05:22
	16:34	17:23			18:16	12	08:12 (6)	20:12	8	07:50 (9)	21:04	21:52
2	08:50	08:21			07:25	08:01 (6)	07:13		07:41 (9)	06:06	06:58 (10)	05:21
	16:35	17:25			18:18	11	08:12 (6)	20:13	11	07:52 (9)	21:06	21:53
3	08:50	08:19			07:23	08:02 (6)	07:10		07:39 (9)	06:05	06:59 (10)	05:20
	16:36	17:26			18:20	9	08:11 (6)	20:15	13	07:52 (9)	21:08	21:54
4	08:50	08:17			07:21	08:03 (6)	07:08		07:38 (9)	06:03	07:02 (10)	05:19
	16:37	17:28			18:21	5	08:08 (6)	20:17	14	07:52 (9)	21:09	21:55
5	08:50	08:16			07:18		07:06		07:38 (9)	06:01		05:18
	16:38	17:30			18:23		20:19	14	07:52 (9)	21:11		21:56
6	08:49	08:14			07:16		07:03		07:38 (9)	05:59		05:18
	16:39	17:32			18:25		20:20	13	07:51 (9)	21:13		21:57
7	08:49	08:12			07:14		07:01		07:38 (9)	05:57		05:17
	16:41	17:34			18:27		20:22	12	07:50 (9)	21:15		21:58
8	08:48	08:10			07:11		06:59		07:40 (9)	05:55		05:17
	16:42	17:36			18:29		20:24	9	07:49 (9)	21:16		21:59
9	08:48	08:08			07:09		06:56		07:41 (9)	05:53		05:16
	16:43	17:38			18:31		20:26	4	07:45 (9)	21:18		22:00
10	08:47	08:07			07:07		06:54			05:52		05:16
	16:45	17:40			18:32		20:27			21:20		22:01
11	08:47	08:05			07:04		06:52			05:50		05:15
	16:46	17:42			18:34		20:29			21:21		22:01
12	08:46	08:03			07:02		06:49			05:48		05:15
	16:48	17:44			18:36		20:31			21:23		22:02
13	08:45	08:01			07:00		06:47			05:46		05:15
	16:49	17:46			18:38		20:33			21:24		22:03
14	08:44	07:59			06:57		07:29 (8)			05:45		05:14
	16:51	17:48			18:40	8	07:37 (8)	20:35		21:26		22:03
15	08:44	07:57			06:55		07:26 (8)	06:43		05:43		05:14
	16:52	17:49			18:41	12	07:38 (8)	20:36		21:28		22:04
16	08:43	07:55			06:53		07:25 (8)	06:40		05:42		05:14
	16:54	17:51			18:43	14	07:39 (8)	20:38		21:29		22:04
17	08:42	07:53			06:50		07:25 (8)	06:38		05:40		05:14
	16:56	17:53			18:45	15	07:40 (8)	20:40		21:31		22:05
18	08:41	07:51			06:48		07:23 (8)	06:36		05:39		05:14
	16:57	17:55			18:47	16	07:39 (8)	20:42		21:32		22:05
19	08:40	07:49			06:46		07:24 (8)	06:34		05:37		05:14
	16:59	17:57			18:49	15	07:39 (8)	20:43		21:34		22:06
20	08:39	07:47			06:43		07:23 (8)	06:31		05:36		05:14
	17:01	17:59			18:50	15	07:38 (8)	20:45		21:35		22:06
21	08:38	07:45			06:41		07:24 (8)	06:29		05:34		05:14
	17:03	18:01			18:52	13	07:37 (8)	20:47		21:37		22:06
22	08:36	07:43			06:39		07:25 (8)	06:27		07:01 (10)	05:33	05:14
	17:04	18:03			18:54	11	07:36 (8)	20:49	8	07:09 (10)	21:38	22:06
23	08:35	07:40			06:36		07:26 (8)	06:25		06:59 (10)	05:32	05:15
	17:06	18:05			18:56	7	07:33 (8)	20:50	12	07:11 (10)	21:40	22:07
24	08:34	07:38			06:34		06:23			06:57 (10)	05:30	05:15
	17:08	18:07			18:57		20:52	15	07:12 (10)	21:41		22:07
25	08:33	07:36		08:03 (6)	06:31		06:21			06:56 (10)	05:29	05:15
	17:10	18:08	7	08:10 (6)	18:59		20:54	16	07:12 (10)	21:43		22:07
26	08:31	07:34		08:02 (6)	06:29		06:19			06:56 (10)	05:28	05:16
	17:12	18:10	10	08:12 (6)	19:01		20:56	16	07:12 (10)	21:44		22:07
27	08:30	07:32		08:01 (6)	06:27		06:17			06:55 (10)	05:27	05:16
	17:13	18:12	12	08:13 (6)	19:03		20:57	17	07:12 (10)	21:45		22:07
28	08:28	07:29		08:01 (6)	06:24		06:14			06:55 (10)	05:26	05:17
	17:15	18:14	12	08:13 (6)	19:05		20:59	17	07:12 (10)	21:47		22:07
29	08:27				07:22		06:12			06:55 (10)	05:25	05:17
	17:17				20:06		21:01	17	07:12 (10)	21:48		22:06
30	08:25				07:20		06:10			06:56 (10)	05:23	05:18
	17:19				20:08		21:03	15	07:11 (10)	21:49		22:06
31	08:24				07:17					05:23		
	17:21				20:10					21:50		
Potential sun hours	255	276			367		418			489		503
Total, worst case			41		163		231			37		
Sun reduction			0.21		0.24		0.35			0.37		
Oper. time red.			1.00		1.00		1.00			1.00		
Wind dir. red.			0.68		0.67		0.67			0.66		
Total reduction			0.14		0.16		0.24			0.24		
Total, real			6		27		55			9		

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** DM - H117**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

July		August		September		October		November		December	
1	05:18	05:56		06:48		07:38		07:34		08:26	
	22:06	21:33		20:29		19:18		17:10		16:28	
2	05:19	05:58		06:49		07:40		07:36		08:28	
	22:06	21:31		20:27		19:15		17:08		16:27	
3	05:20	05:59		06:51	07:39 (9)	07:42		07:37		08:29	
	22:05	21:29		20:24	4 07:43 (9)	19:13		17:06		16:27	
4	05:21	06:01		06:53	07:37 (9)	07:43		07:39		08:31	
	22:05	21:27		20:22	9 07:46 (9)	19:11		17:04		16:26	
5	05:21	06:03		06:54	07:35 (9)	07:45		07:41		08:32	
	22:04	21:26		20:20	12 07:47 (9)	19:08		17:02		16:26	
6	05:22	06:04		06:56	07:34 (9)	07:47		07:43		08:33	
	22:04	21:24		20:17	13 07:47 (9)	19:06		17:01		16:25	
7	05:23	06:06		06:58	07:33 (9)	07:49		07:45		08:35	
	22:03	21:22		20:15	14 07:47 (9)	19:04		16:59		16:25	
8	05:24	06:07		06:59	07:33 (9)	07:50		07:47		08:36	
	22:02	21:20		20:13	13 07:46 (9)	19:01		16:57		16:24	
9	05:25	06:09		07:01	07:33 (9)	07:52		07:49		08:37	
	22:02	21:18	5 07:15 (10)	20:10	13 07:46 (9)	18:59		16:56		16:24	
10	05:26	06:11	07:07 (10)	07:03	07:34 (9)	07:54		08:37 (6)		08:38	
	22:01	21:16	10 07:17 (10)	20:08	11 07:45 (9)	18:57	7 08:44 (6)	16:54		16:24	
11	05:27	06:12	07:06 (10)	07:04	07:34 (9)	07:56	08:35 (6)	07:52		08:39	
	22:00	21:14	12 07:18 (10)	20:05	8 07:42 (9)	18:54	10 08:45 (6)	16:52		16:24	
12	05:28	06:14	07:04 (10)	07:06		07:57	08:33 (6)	07:54		08:40	
	21:59	21:12	15 07:19 (10)	20:03		18:52	12 08:45 (6)	16:51		16:23	
13	05:29	06:16	07:04 (10)	07:08		07:59	08:33 (6)	07:56		08:41	
	21:58	21:10	16 07:20 (10)	20:01		18:50	12 08:45 (6)	16:49		16:23	
14	05:31	06:17	07:03 (10)	07:09		08:01	08:33 (6)	07:58		08:42	
	21:57	21:08	16 07:19 (10)	19:58		18:48	12 08:45 (6)	16:48		16:23	
15	05:32	06:19	07:03 (10)	07:11		08:03	08:33 (6)	07:59		08:43	
	21:56	21:06	17 07:20 (10)	19:56		18:45	12 08:45 (6)	16:46		16:23	
16	05:33	06:21	07:03 (10)	07:13		08:05	08:34 (6)	08:01		08:44	
	21:55	21:04	17 07:20 (10)	19:54		18:43	9 08:43 (6)	16:45		16:24	
17	05:34	06:22	07:03 (10)	07:14		08:06	08:36 (6)	08:03		08:45	
	21:54	21:02	16 07:19 (10)	19:51		18:41	5 08:41 (6)	16:43		16:24	
18	05:36	06:24	07:03 (10)	07:16		08:08		08:05		08:46	
	21:53	21:00	16 07:19 (10)	19:49		18:39		16:42		16:24	
19	05:37	06:26	07:03 (10)	07:18		08:10		08:07		08:46	
	21:52	20:58	14 07:17 (10)	19:46		18:37		16:40		16:24	
20	05:38	06:27	07:05 (10)	07:20		08:12		08:08		08:47	
	21:51	20:56	11 07:16 (10)	19:44	4 08:18 (8)	18:34		16:39		16:25	
21	05:40	06:29	07:07 (10)	07:21		08:14		08:10		08:48	
	21:49	20:54	7 07:14 (10)	19:42	10 08:21 (8)	18:32		16:38		16:25	
22	05:41	06:31	07:23	07:23		08:09 (8)	08:15	08:12		08:48	
	21:48	20:51		19:39	13 08:22 (8)	18:30		16:37		16:25	
23	05:43	06:32	07:25	07:25		08:08 (8)	08:17	08:13		08:49	
	21:47	20:49		19:37	14 08:22 (8)	18:28		16:36		16:26	
24	05:44	06:34	07:26	07:26		08:07 (8)	08:19	08:15		08:49	
	21:45	20:47		19:34	16 08:23 (8)	18:26		16:34		16:27	
25	05:45	06:36	07:28	07:28		08:06 (8)	07:21	08:17		08:49	
	21:44	20:45		19:32	16 08:22 (8)	17:24		16:33		16:27	
26	05:47	06:37	07:30	07:30		08:06 (8)	07:23	08:18		08:50	
	21:42	20:43		19:30	16 08:22 (8)	17:22		16:32		16:28	
27	05:48	06:39	07:31	07:31		08:07 (8)	07:25	08:20		08:50	
	21:41	20:40		19:27	14 08:21 (8)	17:20		16:31		16:29	
28	05:50	06:41	07:33	07:33		08:08 (8)	07:26	08:22		08:50	
	21:39	20:38		19:25	12 08:20 (8)	17:18		16:31		16:29	
29	05:51	06:43	07:35	07:35		08:08 (8)	07:28	08:23		08:50	
	21:38	20:36		19:22	9 08:17 (8)	17:16		16:30		16:30	
30	05:53	06:44	07:37	07:37		08:12 (8)	07:30	08:25		08:50	
	21:36	20:33		19:20	1 08:13 (8)	17:14		16:29		16:31	
31	05:55	06:46				07:32				08:50	
	21:34	20:31				17:12				16:32	
Potential sun hours	506	456		381		330		263		240	
Total, worst case			172	222		79					
Sun reduction			0.30	0.28		0.24					
Oper. time red.			1.00	1.00		1.00					
Wind dir. red.			0.66	0.67		0.68					
Total reduction			0.20	0.19		0.16					
Total, real			34	42		13					

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: DN - H118

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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

January		February	March	April	May	June	July	August	September	October	November	December	
1	08:50	08:22	07:27	07:15	06:09	05:22	05:18	05:56	06:48	07:38	07:34	08:26	08:59 (1)
	16:34	17:23	18:16	20:12	21:04	21:52	22:06	21:33	20:29	19:18	17:10	16:28	4 09:03 (1)
2	08:50	08:21	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:36	08:28	09:01 (1)
	16:35	17:25	18:18	20:13	21:06	21:53	22:06	21:31	20:27	19:15	17:08	16:27	3 09:04 (1)
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:38	08:29	09:02 (1)
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27	2 09:04 (1)
4	08:50	08:17	07:21	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:31	
	16:37	17:28	18:22	20:17	21:09	21:55	22:05	21:27	20:22	19:11	17:04	16:26	
5	08:50	08:16	07:18	07:06	06:01	05:19	05:21	06:03	06:54	07:45	07:41	08:32	
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:26	20:20	19:08	17:03	16:26	
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33	
	16:39	17:32	18:25	20:20	21:13	21:57	22:04	21:24	20:17	19:06	17:01	16:25	
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:35	
	16:41	17:34	18:27	20:22	21:15	21:58	22:03	21:22	20:15	19:04	16:59	16:25	
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:07	06:59	07:50	07:47	08:36	
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:13	19:01	16:57	16:24	
9	08:48	09:19 (1)	08:09	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:49	
	16:44	1 09:20 (1)	17:38	18:31	20:26	21:18	22:00	22:02	21:18	20:10	18:59	16:56	16:24
10	08:47	09:18 (1)	08:07	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	16:24
	16:45	3 09:21 (1)	17:40	18:33	20:28	21:20	22:01	22:01	21:16	20:08	18:57	16:54	16:24
11	08:47	09:17 (1)	08:05	07:05	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	16:24
	16:46	4 09:21 (1)	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:55	16:52	16:24
12	08:46	09:16 (1)	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	16:24
	16:48	6 09:22 (1)	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	09:16 (1)	08:01	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59	07:56	16:24
	16:49	7 09:23 (1)	17:46	18:38	20:33	21:25	22:03	21:58	21:10	20:01	18:50	16:49	16:23
14	08:45	09:15 (1)	07:59	06:58	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	16:23
	16:51	8 09:23 (1)	17:48	18:40	20:35	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:23
15	08:44	09:14 (1)	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	08:00	16:23
	16:53	10 09:24 (1)	17:50	18:42	20:36	21:28	22:04	21:56	21:06	19:56	18:46	16:46	16:24
16	08:43	09:12 (1)	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:05	08:01	16:24
	16:54	11 09:23 (1)	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:54	18:43	16:45	16:24
17	08:42	09:11 (1)	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:15	08:06	08:03	16:24
	16:56	12 09:23 (1)	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	5 08:47 (1) 16:24
18	08:41	09:10 (1)	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	16:24
	16:58	14 09:24 (1)	17:55	18:47	20:42	21:32	22:05	21:53	21:00	19:49	18:39	16:42	10 08:45 (1) 16:24
19	08:40	09:09 (1)	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:07	16:24
	16:59	15 09:24 (1)	17:57	18:49	20:43	21:34	22:06	21:52	20:58	19:46	18:37	16:41	12 08:46 (1) 16:24
20	08:39	09:08 (1)	07:47	06:43	06:32	05:36	05:14	05:38	06:27	07:20	08:12	08:08	16:24
	17:01	16 09:24 (1)	17:59	18:50	20:45	21:35	22:06	21:51	20:56	19:44	18:35	16:39	15 08:47 (1) 16:25
21	08:38	09:06 (1)	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:14	08:10	16:25
	17:03	17 09:23 (1)	18:01	18:52	20:47	21:37	22:06	21:49	20:54	19:42	18:32	16:38	17 08:48 (1) 16:25
22	08:36	09:08 (1)	07:43	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	16:25
	17:04	15 09:23 (1)	18:03	18:54	20:49	21:38	22:07	21:48	20:51	19:39	18:30	16:37	16 08:49 (1) 16:26
23	08:35	09:10 (1)	07:40	06:36	06:25	05:32	05:15	05:43	06:33	07:25	08:17	08:14	16:26
	17:06	12 09:22 (1)	18:05	18:56	20:50	21:40	22:07	21:47	20:49	19:37	18:28	16:36	15 08:50 (1) 16:26
24	08:34	09:11 (1)	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	16:27
	17:08	10 09:21 (1)	18:07	18:58	20:52	21:41	22:07	21:45	20:47	19:34	18:26	16:35	14 08:51 (1) 16:27
25	08:33	09:14 (1)	07:36	06:32	06:21	05:29	05:15	05:45	06:36	07:28	08:21	08:17	16:27
	17:10	5 09:19 (1)	18:09	18:59	20:54	21:43	22:07	21:44	20:45	19:32	18:24	16:34	12 08:52 (1) 16:27
26	08:31		07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:19	16:28
	17:12		18:10	19:01	20:56	21:44	22:07	21:42	20:43	19:30	18:22	16:32	11 08:53 (1) 16:28
27	08:30		07:32	06:27	06:17	05:27	05:16	05:48	06:39	07:31	08:25	08:20	16:29
	17:13		18:12	19:03	20:57	21:45	22:07	21:41	20:40	19:27	18:20	16:32	10 08:54 (1) 16:29
28	08:28		07:30	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:22	16:30
	17:15		18:14	19:05	20:59	21:47	22:07	21:39	20:38	19:25	18:18	16:31	8 08:55 (1) 16:30
29	08:27			07:22	06:13	05:25	05:17	05:52	06:43	07:35	08:28	08:23	7 08:56 (1) 16:30
	17:17			20:06	21:01	21:48	22:06	21:38	20:36	19:23	18:16	16:30	6 08:57 (1) 16:30
30	08:25			07:20	06:11	05:24	05:18	05:53	06:44	07:37	08:30	08:25	5 08:58 (1) 16:30
	17:19			20:08	21:03	21:49	22:06	21:36	20:34	19:20	18:14	16:29	4 08:59 (1) 16:31
31	08:24			07:17	06:08	05:23	05:17	05:55	06:46	07:39	08:32	08:27	3 08:59 (1) 16:31
	17:21			20:10	21:50	21:50	21:34	20:31	19:24	18:12	17:06	16:24	2 08:59 (1) 16:32
Potential sun hours	255	276	367	418	489	503	506	456	381	330	263	158	9
Total, worst case												158	9
Sun reduction												0.19	0.14
Oper. time red.												1.00	1.00
Wind dir. red.												0.65	0.65
Total reduction												0.12	0.09
Total, real												19	1

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** DO - H119**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:32	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:13	06:06	05:21	05:19	05:58	06:49	07:40	07:35	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:05	06:01	05:19	05:21	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:25	20:19	19:08	17:02	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:07	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	21:59	22:01	21:18	20:10	18:59	16:56	16:24
10	08:47	08:06	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:46	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:46	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:02	21:58	21:10	20:01	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:23
15	08:43	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:49	18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	16:23
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:57	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:49	20:43	21:34	22:05	21:52	20:58	19:46	18:37	16:41	16:24
20	08:38	07:47	06:43	06:31	05:36	05:14	05:38	06:27	07:19	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:34	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:41	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:32	07:25	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:45	06:36	07:28	08:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:42	22:07	21:44	20:45	19:32	18:24	16:33	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:37	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:55	21:44	22:07	21:42	20:42	19:30	18:22	16:32	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:48	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:41	20:40	19:27	18:20	16:31	16:29
28	08:28	07:29	06:24	06:14	05:26	05:17	05:50	06:41	07:33	08:26	08:21	08:50
	17:15	18:14	19:04	20:59	21:46	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:12	05:25	05:17	05:51	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:36	19:22	18:16	16:30	16:30
30	08:25		07:20	06:10	05:24	05:18	05:53	06:44	07:36	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** DP - H120**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:32	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:13	06:06	05:21	05:19	05:58	06:49	07:40	07:35	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:05	06:01	05:19	05:21	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:25	20:19	19:08	17:02	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:07	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	21:59	22:01	21:18	20:10	18:59	16:56	16:24
10	08:47	08:06	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:46	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:46	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:02	21:58	21:10	20:01	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:23
15	08:43	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:49	18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	16:23
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:57	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:49	20:43	21:34	22:05	21:52	20:58	19:46	18:37	16:41	16:24
20	08:38	07:47	06:43	06:31	05:36	05:14	05:38	06:27	07:19	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:34	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:41	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:32	07:25	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:45	06:36	07:28	08:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:42	22:07	21:44	20:45	19:32	18:24	16:33	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:37	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:55	21:44	22:06	21:42	20:42	19:30	18:22	16:32	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:48	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:41	20:40	19:27	18:20	16:31	16:29
28	08:28	07:29	06:24	06:14	05:26	05:17	05:50	06:41	07:33	08:26	08:21	08:50
	17:15	18:14	19:04	20:59	21:46	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:12	05:25	05:17	05:51	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:36	19:22	18:16	16:30	16:30
30	08:25		07:20	06:10	05:24	05:18	05:53	06:44	07:36	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** DQ - H121**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

January		February		March		April		May		June	
1	08:50	08:22		07:27		08:02 (6)	07:15		07:43 (9)	06:08	07:02 (10)
	16:34	17:23		18:16	11	08:13 (6)	20:12	12	07:55 (9)	21:04	21:52
2	08:50	08:21		07:25		08:03 (6)	07:13		07:42 (9)	06:06	05:21
	16:35	17:25		18:18	9	08:12 (6)	20:13	13	07:55 (9)	21:06	21:53
3	08:50	08:19		07:23		08:06 (6)	07:10		07:41 (9)	06:05	05:20
	16:36	17:26		18:20	4	08:10 (6)	20:15	14	07:55 (9)	21:08	21:54
4	08:50	08:17		07:21			07:08		07:41 (9)	06:03	05:19
	16:37	17:28		18:21			20:17	13	07:54 (9)	21:09	21:55
5	08:50	08:16		07:18			07:06		07:42 (9)	06:01	05:18
	16:38	17:30		18:23			20:19	12	07:54 (9)	21:11	21:56
6	08:49	08:14		07:16			07:03		07:41 (9)	05:59	05:18
	16:39	17:32		18:25			20:20	11	07:52 (9)	21:13	21:57
7	08:49	08:12		07:14			07:01		07:43 (9)	05:57	05:17
	16:41	17:34		18:27			20:22	7	07:50 (9)	21:15	21:58
8	08:48	08:10		07:11			06:59			05:55	05:17
	16:42	17:36		18:29			20:24			21:16	21:59
9	08:48	08:08		07:09			06:56			05:53	05:16
	16:43	17:38		18:31			20:26			21:18	22:00
10	08:47	08:07		07:07			06:54			05:52	05:16
	16:45	17:40		18:32			20:27			21:20	22:01
11	08:47	08:05		07:04			06:52			05:50	05:15
	16:46	17:42		18:34			20:29			21:21	22:01
12	08:46	08:03		07:02		07:36 (8)	06:49			05:48	05:15
	16:48	17:44		18:36	1	07:37 (8)	20:31			21:23	22:02
13	08:45	08:01		07:00		07:31 (8)	06:47			05:46	05:15
	16:49	17:46		18:38	9	07:40 (8)	20:33			21:24	22:03
14	08:44	07:59		06:57		07:29 (8)	06:45			05:45	05:14
	16:51	17:48		18:40	13	07:42 (8)	20:35			21:26	22:03
15	08:44	07:57		06:55		07:27 (8)	06:43			05:43	05:14
	16:52	17:49		18:41	15	07:42 (8)	20:36			21:28	22:04
16	08:43	07:55		06:53		07:27 (8)	06:40			05:42	05:14
	16:54	17:51		18:43	15	07:42 (8)	20:38			21:29	22:04
17	08:42	07:53		06:50		07:27 (8)	06:38			05:40	05:14
	16:56	17:53		18:45	16	07:43 (8)	20:40			21:31	22:05
18	08:41	07:51		06:48		07:26 (8)	06:36			05:39	05:14
	16:57	17:55		18:47	16	07:42 (8)	20:42			21:32	22:05
19	08:40	07:49		06:46		07:27 (8)	06:34			05:37	05:14
	16:59	17:57		18:49	14	07:41 (8)	20:43			21:34	22:06
20	08:39	07:47		06:43		07:27 (8)	06:31		07:04 (10)	05:36	05:14
	17:01	17:59		18:50	12	07:39 (8)	20:45	9	07:13 (10)	21:35	22:06
21	08:38	07:45		06:41		07:29 (8)	06:29		07:02 (10)	05:34	05:14
	17:03	18:01		18:52	9	07:38 (8)	20:47	12	07:14 (10)	21:37	22:06
22	08:36	07:43		06:39			06:27		07:01 (10)	05:33	05:14
	17:04	18:03		18:54			20:49	14	07:15 (10)	21:38	22:06
23	08:35	07:40		06:36			06:25		07:00 (10)	05:32	05:15
	17:06	18:05		18:56			20:50	16	07:16 (10)	21:40	22:07
24	08:34	07:38		06:34		08:06 (6)	06:23		07:00 (10)	05:30	05:15
	17:08	18:07	7	18:57		08:13 (6)	20:52	16	07:16 (10)	21:41	22:07
25	08:33	07:36		06:31		08:03 (6)	06:21		06:59 (10)	05:29	05:15
	17:10	18:08	10	18:59		08:13 (6)	20:54	17	07:16 (10)	21:43	22:07
26	08:31	07:34		06:29		08:03 (6)	06:19		06:59 (10)	05:28	05:16
	17:12	18:10	11	19:01		08:14 (6)	20:56	17	07:16 (10)	21:44	22:07
27	08:30	07:32		06:27		08:03 (6)	06:17		06:59 (10)	05:27	05:16
	17:13	18:12	12	19:03		08:15 (6)	20:57	16	07:15 (10)	21:45	22:07
28	08:28	07:29		06:24		08:03 (6)	06:14		07:00 (10)	05:26	05:17
	17:15	18:14	12	19:05		08:15 (6)	20:59	15	07:15 (10)	21:47	22:07
29	08:27			07:22			06:12		07:00 (10)	05:25	05:17
	17:17			20:06			21:01	14	07:14 (10)	21:48	22:06
30	08:25			07:20			06:10		07:01 (10)	05:23	05:18
	17:19			20:08	3	07:51 (9)	21:03	11	07:12 (10)	21:49	22:06
31	08:24			07:17			07:44 (9)			05:23	
	17:21			20:10	9	07:53 (9)				21:50	
Potential sun hours	255	276		367			418			489	503
Total, worst case			52		156			239		8	
Sun reduction			0.21		0.24			0.35		0.37	
Oper. time red.			1.00		1.00			1.00		1.00	
Wind dir. red.			0.68		0.67			0.67		0.66	
Total reduction			0.14		0.16			0.24		0.24	
Total, real			7		26			56		2	

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** DQ - H121**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	July		August		September		October		November		December	
1	05:18	05:56			06:48		07:38		08:12 (8)	07:34	08:26	
	22:06	21:33			20:29		19:18	6	08:18 (8)	17:10	16:28	
2	05:19	05:58			06:49		07:40			07:36	08:28	
	22:06	21:31			20:27		19:15			17:08	16:27	
3	05:20	05:59			06:51		07:42			07:37	08:29	
	22:05	21:29			20:24		19:13			17:06	16:27	
4	05:21	06:01			06:53		07:43			07:39	08:31	
	22:05	21:27			20:22		19:11			17:04	16:26	
5	05:21	06:03			06:54		07:40 (9)			07:41	08:32	
	22:04	21:26			20:20	7	07:47 (9)			17:02	16:26	
6	05:22	06:04			06:56		07:38 (9)			07:43	08:33	
	22:04	21:24			20:17	10	07:48 (9)			17:01	16:25	
7	05:23	06:06			06:58		07:37 (9)			07:45	08:35	
	22:03	21:22			20:15	12	07:49 (9)			16:59	16:25	
8	05:24	06:07			06:59		07:35 (9)			07:47	08:36	
	22:02	21:20			20:13	14	07:49 (9)			16:57	16:24	
9	05:25	06:09			07:01		07:35 (9)			07:49	08:37	
	22:02	21:18			20:10	14	07:49 (9)			16:56	16:24	
10	05:26	06:11			07:03		07:35 (9)			07:50	08:38	
	22:01	21:16			20:08	14	07:49 (9)			16:54	16:24	
11	05:27	06:12		07:14 (10)	07:04		07:35 (9)		08:39 (6)	07:52	08:39	
	22:00	21:14	3	07:17 (10)	20:05	12	07:47 (9)		08:46 (6)	16:52	16:24	
12	05:28	06:14		07:10 (10)	07:06		07:36 (9)		08:36 (6)	07:54	08:40	
	21:59	21:12	9	07:19 (10)	20:03	10	07:46 (9)		08:46 (6)	16:51	16:23	
13	05:29	06:16		07:09 (10)	07:08		07:39 (9)		08:35 (6)	07:56	08:41	
	21:58	21:10	12	07:21 (10)	20:01	4	07:43 (9)		08:47 (6)	16:49	16:23	
14	05:31	06:17		07:07 (10)	07:09		08:01		08:35 (6)	07:58	08:42	
	21:57	21:08	15	07:22 (10)	19:58		18:48	12	08:47 (6)	16:48	16:23	
15	05:32	06:19		07:07 (10)	07:11		08:03		08:35 (6)	07:59	08:43	
	21:56	21:06	15	07:22 (10)	19:56		18:45	12	08:47 (6)	16:46	16:23	
16	05:33	06:21		07:07 (10)	07:13		08:05		08:35 (6)	08:01	08:44	
	21:55	21:04	16	07:23 (10)	19:54		18:43	11	08:46 (6)	16:45	16:24	
17	05:34	06:22		07:06 (10)	07:14		08:06		08:36 (6)	08:03	08:45	
	21:54	21:02	17	07:23 (10)	19:51		18:41	9	08:45 (6)	16:43	16:24	
18	05:36	06:24		07:06 (10)	07:16		08:08		08:38 (6)	08:05	08:46	
	21:53	21:00	17	07:23 (10)	19:49		18:39	5	08:43 (6)	16:42	16:24	
19	05:37	06:26		07:05 (10)	07:18		08:10		08:07	08:07	08:46	
	21:52	20:58	17	07:22 (10)	19:46		18:37		16:40	16:40	16:24	
20	05:38	06:27		07:06 (10)	07:20		08:12		08:08	08:08	08:47	
	21:51	20:56	15	07:21 (10)	19:44		18:34		16:39	16:39	16:25	
21	05:40	06:29		07:07 (10)	07:21		08:14		08:10	08:10	08:48	
	21:49	20:54	14	07:21 (10)	19:42		18:32		16:38	16:38	16:25	
22	05:41	06:31		07:07 (10)	07:23		08:14 (8)		08:15	08:12	08:48	
	21:48	20:51	12	07:19 (10)	19:39	8	08:22 (8)		18:30	16:37	16:25	
23	05:43	06:32		07:10 (10)	07:25		08:12 (8)		08:17	08:13	08:49	
	21:47	20:49	7	07:17 (10)	19:37	11	08:23 (8)		18:28	16:36	16:26	
24	05:44	06:34			07:26		08:11 (8)		08:19	08:15	08:49	
	21:45	20:47			19:34	14	08:25 (8)		18:26	16:34	16:27	
25	05:45	06:36			07:28		08:09 (8)		07:21	08:17	08:49	
	21:44	20:45			19:32	15	08:24 (8)		17:24	16:33	16:27	
26	05:47	06:37			07:30		08:09 (8)		07:23	08:18	08:50	
	21:42	20:43			19:30	15	08:24 (8)		17:22	16:32	16:28	
27	05:48	06:39			07:31		08:09 (8)		07:25	08:20	08:50	
	21:41	20:40			19:27	15	08:24 (8)		17:20	16:31	16:29	
28	05:50	06:41			07:33		08:09 (8)		07:26	08:22	08:50	
	21:39	20:38			19:25	15	08:24 (8)		17:18	16:31	16:29	
29	05:51	06:43			07:35		08:09 (8)		07:28	08:23	08:50	
	21:38	20:36			19:22	13	08:22 (8)		17:16	16:30	16:30	
30	05:53	06:44			07:37		08:10 (8)		07:30	08:25	08:50	
	21:36	20:33			19:20	11	08:21 (8)		17:14	16:29	16:31	
31	05:55	06:46							07:32		08:50	
	21:34	20:31							17:12		16:32	
Potential sun hours	506	456			381		330		263		240	
Total, worst case			169		214		84					
Sun reduction			0.30		0.28		0.24					
Oper. time red.			1.00		1.00		1.00					
Wind dir. red.			0.66		0.67		0.68					
Total reduction			0.20		0.19		0.16					
Total, real			33		41		14					

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** DR - H122**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June
1	08:50	08:22	07:27	08:00 (6)	07:15	07:43 (9)
	16:34	17:23	18:16	12 08:12 (6)	20:12	12 07:55 (9)
2	08:50	08:21	07:25	08:01 (6)	07:13	07:43 (9)
	16:35	17:25	18:18	10 08:11 (6)	20:13	13 07:56 (9)
3	08:50	08:19	07:23	08:03 (6)	07:10	07:42 (9)
	16:36	17:26	18:20	6 08:09 (6)	20:15	13 07:55 (9)
4	08:50	08:17	07:21	07:08	07:42 (9)	06:03
	16:37	17:28	18:21	20:17	12 07:54 (9)	21:09
5	08:50	08:16	07:18	07:06	07:43 (9)	06:01
	16:38	17:30	18:23	20:19	11 07:54 (9)	21:11
6	08:49	08:14	07:16	07:03	07:43 (9)	05:59
	16:39	17:32	18:25	20:20	8 07:51 (9)	21:13
7	08:49	08:12	07:14	07:01	05:57	05:17
	16:41	17:34	18:27	20:22	21:15	21:58
8	08:48	08:10	07:11	06:59	05:55	05:17
	16:42	17:36	18:29	20:24	21:16	21:59
9	08:48	08:08	07:09	06:56	05:53	05:16
	16:43	17:38	18:31	20:26	21:18	22:00
10	08:47	08:07	07:07	06:54	05:52	05:16
	16:45	17:40	18:32	20:27	21:20	22:01
11	08:47	08:05	07:04	06:52	05:50	05:15
	16:46	17:42	18:34	20:29	21:21	22:01
12	08:46	08:03	07:02	06:49	05:48	05:15
	16:48	17:44	18:36	20:31	21:23	22:02
13	08:45	08:01	07:00	07:30 (8)	06:47	05:46
	16:49	17:46	18:38	9 07:39 (8)	20:33	21:24
14	08:44	07:59	06:57	07:28 (8)	06:45	05:45
	16:51	17:48	18:40	12 07:40 (8)	20:35	21:26
15	08:44	07:57	06:55	07:27 (8)	06:43	05:43
	16:52	17:49	18:41	13 07:40 (8)	20:36	21:28
16	08:43	07:55	06:53	07:26 (8)	06:40	05:42
	16:54	17:51	18:43	15 07:41 (8)	20:38	21:29
17	08:42	07:53	06:50	07:26 (8)	06:38	05:40
	16:56	17:53	18:45	15 07:41 (8)	20:40	21:31
18	08:41	07:51	06:48	07:25 (8)	06:36	05:39
	16:57	17:55	18:47	15 07:40 (8)	20:42	6 07:15 (10)
19	08:40	07:49	06:46	07:26 (8)	06:34	07:05 (10)
	16:59	17:57	18:49	14 07:40 (8)	20:43	11 07:16 (10)
20	08:39	07:47	06:43	07:26 (8)	06:31	07:04 (10)
	17:01	17:59	18:50	12 07:38 (8)	20:45	13 07:17 (10)
21	08:38	07:45	06:41	07:28 (8)	06:29	07:03 (10)
	17:03	18:01	18:52	8 07:36 (8)	20:47	15 07:18 (10)
22	08:36	07:43	06:39	06:27	07:02 (10)	05:33
	17:04	18:03	18:54	20:49	16 07:18 (10)	21:38
23	08:35	07:40	06:36	06:25	07:02 (10)	05:32
	17:06	18:05	18:56	20:50	16 07:18 (10)	21:40
24	08:34	07:38	08:06 (6)	06:23	07:02 (10)	05:30
	17:08	18:07	3 08:09 (6)	20:52	16 07:18 (10)	21:41
25	08:33	07:36	08:02 (6)	06:21	07:02 (10)	05:29
	17:10	18:08	8 08:10 (6)	20:54	16 07:18 (10)	21:43
26	08:31	07:34	08:01 (6)	06:19	07:02 (10)	05:28
	17:12	18:10	11 08:12 (6)	20:56	15 07:17 (10)	21:44
27	08:30	07:32	08:01 (6)	06:17	07:03 (10)	05:27
	17:13	18:12	11 08:12 (6)	20:57	13 07:16 (10)	21:45
28	08:28	07:29	08:01 (6)	06:14	07:04 (10)	05:26
	17:15	18:14	12 08:13 (6)	20:59	10 07:14 (10)	21:47
29	08:27		07:22	06:12	07:06 (10)	05:25
	17:17		20:06	21:01	6 07:12 (10)	21:48
30	08:25		07:20	07:47 (9)	06:10	05:23
	17:19		20:08	7 07:54 (9)	21:03	21:49
31	08:24		07:17	07:44 (9)		05:23
	17:21		20:10	10 07:54 (9)		21:50
Potential sun hours	255	276	367	418	489	503
Total, worst case		45	158	222		
Sun reduction		0.21	0.24	0.35		
Oper. time red.		1.00	1.00	1.00		
Wind dir. red.		0.68	0.67	0.67		
Total reduction		0.14	0.16	0.24		
Total, real		6	26	52		

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: DR - H122

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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	July		August		September		October		November		December	
1	05:18	05:56			06:48		07:38		08:12 (8)	07:34	08:26	
	22:06	21:33			20:29		19:18	5	08:17 (8)	17:10	16:28	
2	05:19	05:58			06:49		07:40			07:36	08:28	
	22:06	21:31			20:27		19:15			17:08	16:27	
3	05:20	05:59			06:51		07:42			07:37	08:29	
	22:05	21:29			20:24		19:13			17:06	16:27	
4	05:21	06:01			06:53		07:43			07:39	08:31	
	22:05	21:27			20:22		19:11			17:04	16:26	
5	05:21	06:03			06:54		07:45			07:41	08:32	
	22:04	21:26			20:20		19:08			17:02	16:26	
6	05:22	06:04			06:56	07:39 (9)	07:47			07:43	08:33	
	22:04	21:24			20:17	8 07:47 (9)	19:06			17:01	16:25	
7	05:23	06:06			06:58	07:38 (9)	07:49			07:45	08:35	
	22:03	21:22			20:15	11 07:49 (9)	19:04			16:59	16:25	
8	05:24	06:07			06:59	07:36 (9)	07:50			07:47	08:36	
	22:02	21:20			20:13	12 07:48 (9)	19:01			16:57	16:24	
9	05:25	06:09			07:01	07:36 (9)	07:52			07:49	08:37	
	22:02	21:18			20:10	13 07:49 (9)	18:59			16:56	16:24	
10	05:26	06:11			07:03	07:36 (9)	07:54		08:39 (6)	07:50	08:38	
	22:01	21:16			20:08	13 07:49 (9)	18:57	3	08:42 (6)	16:54	16:24	
11	05:27	06:12			07:04	07:35 (9)	07:56		08:36 (6)	07:52	08:39	
	22:00	21:14			20:05	13 07:48 (9)	18:54	8	08:44 (6)	16:52	16:24	
12	05:28	06:14			07:06	07:36 (9)	07:57		08:34 (6)	07:54	08:40	
	21:59	21:12			20:03	11 07:47 (9)	18:52	10	08:44 (6)	16:51	16:23	
13	05:29	06:16			07:08	07:38 (9)	07:59		08:33 (6)	07:56	08:41	
	21:58	21:10			20:01	7 07:45 (9)	18:50	12	08:45 (6)	16:49	16:23	
14	05:31	06:17		07:13 (10)	07:09		08:01		08:33 (6)	07:58	08:42	
	21:57	21:08	7	07:20 (10)	19:58		18:48	12	08:45 (6)	16:48	16:23	
15	05:32	06:19		07:11 (10)	07:11		08:03		08:33 (6)	08:00	08:43	
	21:56	21:06	11	07:22 (10)	19:56		18:45	11	08:44 (6)	16:46	16:23	
16	05:33	06:21		07:10 (10)	07:13		08:05		08:34 (6)	08:01	08:44	
	21:55	21:04	14	07:24 (10)	19:54		18:43	10	08:44 (6)	16:45	16:24	
17	05:34	06:22		07:09 (10)	07:14		08:06		08:35 (6)	08:03	08:45	
	21:54	21:02	15	07:24 (10)	19:51		18:41	7	08:42 (6)	16:43	16:24	
18	05:36	06:24		07:09 (10)	07:16		08:08		08:05	08:05	08:46	
	21:53	21:00	15	07:24 (10)	19:49		18:39		16:42	16:24		
19	05:37	06:26		07:08 (10)	07:18		08:10		08:07	08:07	08:46	
	21:52	20:58	16	07:24 (10)	19:46		18:37		16:40	16:24		
20	05:38	06:27		07:08 (10)	07:20		08:12		08:08	08:08	08:47	
	21:51	20:56	16	07:24 (10)	19:44		18:34		16:39	16:25		
21	05:40	06:29		07:08 (10)	07:21		08:14		08:10	08:10	08:48	
	21:49	20:54	16	07:24 (10)	19:42		18:32		16:38	16:25		
22	05:41	06:31		07:08 (10)	07:23		08:14 (8)		08:15	08:12	08:48	
	21:48	20:51	14	07:22 (10)	19:39	5	08:19 (8)		18:30	16:37	16:25	
23	05:43	06:32		07:09 (10)	07:25		08:11 (8)		08:17	08:14	08:49	
	21:47	20:49	13	07:22 (10)	19:37	11	08:22 (8)		18:28	16:36	16:26	
24	05:44	06:34		07:09 (10)	07:26		08:10 (8)		08:19	08:15	08:49	
	21:45	20:47	11	07:20 (10)	19:34	13	08:23 (8)		18:26	16:34	16:27	
25	05:45	06:36		07:12 (10)	07:28		08:08 (8)		07:21	08:17	08:49	
	21:44	20:45	5	07:17 (10)	19:32	15	08:23 (8)		17:24	16:33	16:27	
26	05:47	06:37			07:30		08:08 (8)		07:23	08:18	08:50	
	21:42	20:43			19:30	15	08:23 (8)		17:22	16:32	16:28	
27	05:48	06:39			07:31		08:08 (8)		07:25	08:20	08:50	
	21:41	20:40			19:27	15	08:23 (8)		17:20	16:31	16:29	
28	05:50	06:41			07:33		08:08 (8)		07:26	08:22	08:50	
	21:39	20:38			19:25	14	08:22 (8)		17:18	16:31	16:29	
29	05:51	06:43			07:35		08:08 (8)		07:28	08:23	08:50	
	21:38	20:36			19:22	13	08:21 (8)		17:16	16:30	16:30	
30	05:53	06:44			07:37		08:09 (8)		07:30	08:25	08:50	
	21:36	20:33			19:20	10	08:19 (8)		17:14	16:29	16:31	
31	05:55	06:46							07:32		08:50	
	21:34	20:31							17:12		16:32	
Potential sun hours	506	456			381		330		263		240	
Total, worst case			153		199		78					
Sun reduction			0.30		0.28		0.24					
Oper. time red.			1.00		1.00		1.00					
Wind dir. red.			0.66		0.67		0.68					
Total reduction			0.20		0.19		0.16					
Total, real			30		38		13					

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** DS - H123**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:09	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:33	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:35	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:26	19:15	17:08	16:28
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:06	06:01	05:19	05:22	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:25	20:19	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:40	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:07	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	21:59	22:01	21:18	20:10	18:59	16:56	16:24
10	08:47	08:06	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:46	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:02	21:58	21:10	20:01	18:50	16:49	16:24
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:24
15	08:43	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:50	18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:58	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:49	20:43	21:34	22:05	21:52	20:58	19:46	18:37	16:41	16:24
20	08:38	07:47	06:43	06:31	05:36	05:14	05:38	06:27	07:19	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:34	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:42	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:32	07:25	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:46	06:36	07:28	08:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:42	22:07	21:44	20:45	19:32	18:24	16:34	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:55	21:44	22:07	21:42	20:42	19:30	18:22	16:33	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:48	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:41	20:40	19:27	18:20	16:32	16:29
28	08:28	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:21	08:50
	17:15	18:14	19:05	20:59	21:46	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:13	05:25	05:17	05:52	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:36	19:22	18:16	16:30	16:30
30	08:25		07:20	06:10	05:24	05:18	05:53	06:44	07:36	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** DT - H124**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:32	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:13	06:06	05:21	05:19	05:58	06:49	07:40	07:35	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:05	06:01	05:19	05:21	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:25	20:19	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:07	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	21:59	22:01	21:18	20:10	18:59	16:56	16:24
10	08:47	08:06	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:46	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:46	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:02	21:58	21:10	20:01	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:23
15	08:43	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:49	18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	16:23
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:57	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:49	20:43	21:34	22:05	21:52	20:58	19:46	18:37	16:41	16:24
20	08:38	07:47	06:43	06:31	05:36	05:14	05:38	06:27	07:19	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:34	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:41	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:32	07:25	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:45	06:36	07:28	08:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:42	22:07	21:44	20:45	19:32	18:24	16:33	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:37	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:55	21:44	22:06	21:42	20:42	19:30	18:22	16:32	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:48	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:41	20:40	19:27	18:20	16:31	16:29
28	08:28	07:29	06:24	06:14	05:26	05:17	05:50	06:41	07:33	08:26	08:21	08:50
	17:15	18:14	19:04	20:59	21:46	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:12	05:25	05:17	05:51	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:36	19:22	18:16	16:30	16:30
30	08:25		07:20	06:10	05:24	05:18	05:53	06:44	07:36	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: DU - H125

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
229 231 210 320 200 640 608 691 568 658 724 1,086 671 733 661 530 8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50 16:34	09:23 (1) 17:23	08:22 18:16	07:27 20:12	06:09 21:04	05:22 21:52	05:18 22:06	05:56 21:33	06:48 20:29	07:38 19:18	07:34 17:10	08:26 16:28
2	08:50 16:35	09:23 (1) 17:25	08:21 18:18	07:25 20:13	06:07 21:06	05:21 21:53	05:19 22:06	05:58 21:31	06:49 20:27	07:40 19:15	07:36 17:08	08:28 16:27
3	08:50 16:36	09:22 (1) 17:27	08:19 18:20	07:23 20:15	06:05 21:08	05:20 21:54	05:20 22:05	05:59 21:29	06:51 20:24	07:42 19:13	07:38 17:06	08:29 16:27
4	08:50 16:37	09:22 (1) 17:28	08:17 18:22	07:21 20:17	06:03 21:09	05:19 21:55	05:21 22:05	06:01 21:27	06:53 20:22	07:43 19:11	07:39 17:04	08:31 16:26
5	08:50 16:38	09:21 (1) 17:30	08:16 18:23	07:18 20:19	06:01 21:11	05:19 21:56	05:21 22:04	06:03 21:26	06:54 20:20	07:45 19:08	07:41 17:03	08:32 16:26
6	08:49 16:39	09:21 (1) 17:32	08:14 18:25	07:16 20:20	05:59 21:13	05:18 21:57	05:22 22:04	06:04 21:24	06:56 20:17	07:47 19:06	07:43 17:01	08:33 16:25
7	08:49 16:41	09:20 (1) 17:34	08:12 18:27	07:14 20:22	05:57 21:15	05:17 21:58	05:23 22:03	06:06 21:22	06:58 20:15	07:49 19:04	07:45 16:59	08:35 16:25
8	08:48 16:42	09:20 (1) 17:36	08:10 18:29	07:11 20:24	05:55 21:16	05:17 21:59	05:24 22:02	06:07 21:20	06:59 20:13	07:50 19:01	07:47 16:57	08:36 16:24
9	08:48 16:44	09:19 (1) 17:38	08:09 18:31	07:09 20:26	05:53 21:18	05:16 22:00	05:25 22:02	06:09 21:18	07:01 20:10	07:52 18:59	07:49 16:56	08:37 16:24
10	08:47 16:45	09:18 (1) 17:40	08:07 18:33	07:07 20:28	05:52 21:20	05:16 22:01	05:26 22:01	06:11 21:16	07:03 20:08	07:54 18:57	07:50 16:54	08:38 16:24
11	08:47 16:46	09:18 (1) 17:42	08:05 18:34	07:05 20:29	05:50 21:21	05:15 22:01	05:27 22:00	06:12 21:14	07:04 20:05	07:56 18:55	07:52 16:52	08:39 16:24
12	08:46 16:48	09:18 (1) 17:44	08:03 18:36	07:02 20:31	05:48 21:23	05:15 22:02	05:28 21:59	06:14 21:12	07:06 20:03	07:57 18:52	07:54 16:51	08:40 16:24
13	08:45 16:49	09:20 (1) 17:46	08:01 18:38	07:00 20:33	05:47 21:25	05:15 22:03	05:30 21:58	06:16 21:10	07:08 20:01	07:59 18:50	07:56 16:49	08:41 16:23
14	08:45 16:51	09:22 (1) 17:48	07:59 18:40	06:58 20:35	05:45 21:26	05:14 22:03	05:31 21:57	06:17 21:08	07:09 19:58	08:01 18:48	07:58 16:48	08:42 16:23
15	08:44 16:53	09:23 (1) 17:50	07:57 18:42	06:55 20:36	05:43 21:28	05:14 22:04	05:32 21:56	06:19 21:06	07:11 19:56	08:03 18:46	08:00 16:46	08:43 16:24
16	08:43 16:54	09:25 (1) 17:51	07:55 18:43	06:53 20:38	05:42 21:29	05:14 22:04	05:33 21:55	06:21 21:04	07:13 19:54	08:05 18:43	08:01 16:45	08:44 16:24
17	08:42 16:56	09:30 (1) 17:53	07:53 18:45	06:50 20:40	05:38 21:31	05:14 22:05	05:34 21:54	06:22 21:02	07:15 19:51	08:06 18:41	08:03 16:43	08:45 16:24
18	08:41 16:57	09:31 (1) 17:55	07:51 18:47	06:48 20:42	05:39 21:32	05:14 22:05	05:36 21:53	06:24 21:00	07:16 19:49	08:08 18:39	08:05 16:42	08:46 16:24
19	08:40 16:59	09:32 (1) 17:57	07:49 18:49	06:46 20:43	05:37 21:34	05:14 22:06	05:37 21:52	06:26 20:58	07:18 19:46	08:10 18:37	08:07 16:41	08:46 16:24
20	08:39 17:01	09:33 (1) 17:59	07:47 18:50	06:43 20:45	05:36 21:35	05:14 22:06	05:38 21:51	06:27 20:56	07:20 19:44	08:12 18:35	08:08 16:39	08:47 16:25
21	08:38 17:03	09:34 (1) 18:01	07:45 18:52	06:41 20:47	05:34 21:37	05:14 22:06	05:40 21:49	06:29 20:54	07:21 19:42	08:14 18:32	08:10 16:38	08:48 16:25
22	08:36 17:04	09:35 (1) 18:03	07:43 18:54	06:39 20:49	05:33 21:38	05:14 22:07	05:41 21:48	06:31 20:51	07:23 19:39	08:15 18:30	08:12 16:37	08:48 16:26
23	08:35 17:06	09:36 (1) 18:05	07:40 18:56	06:36 20:50	05:32 21:40	05:15 22:07	05:43 21:47	06:33 20:49	07:25 19:37	08:17 18:28	08:14 16:36	08:49 16:26
24	08:34 17:08	09:37 (1) 18:07	07:38 18:58	06:34 20:52	05:30 21:41	05:15 22:07	05:44 21:45	06:34 20:47	07:26 19:34	08:19 18:26	08:15 16:35	08:49 16:27
25	08:33 17:10	09:38 (1) 18:09	07:36 18:59	06:32 20:54	05:29 21:43	05:15 22:07	05:45 21:44	06:36 20:45	07:28 19:32	08:21 18:24	08:17 16:33	08:50 16:27
26	08:31 17:12	09:39 (1) 18:10	07:34 19:01	06:29 20:56	05:28 21:44	05:16 22:07	05:47 21:42	06:38 20:43	07:30 19:30	08:23 18:23	08:19 16:32	08:51 16:28
27	08:30 17:13	09:40 (1) 18:12	07:32 19:03	06:27 20:57	05:27 21:45	05:16 22:07	05:48 21:41	06:39 20:40	07:31 19:27	08:25 18:20	08:20 16:32	08:52 16:29
28	08:28 17:15	09:41 (1) 18:14	07:30 19:05	06:24 20:59	05:26 21:47	05:17 22:07	05:50 21:39	06:41 20:38	07:33 19:25	08:26 18:18	08:22 16:31	08:53 16:30
29	08:27 17:17	09:42 (1) 18:17	07:22 19:06	06:13 21:01	05:25 21:48	05:17 22:06	05:52 21:38	06:43 20:36	07:35 19:23	08:28 18:16	08:23 16:30	08:54 16:30
30	08:25 17:19	09:43 (1) 18:19	07:20 19:08	06:11 21:03	05:24 21:49	05:18 22:06	05:53 21:36	06:44 20:34	07:37 19:20	08:30 18:14	08:25 16:29	08:55 16:31
31	08:24 17:21	09:44 (1) 18:20	07:17 19:10	06:10 21:04	05:23 21:50	05:19 22:07	05:55 21:34	06:46 20:31	07:39 19:17	08:32 18:12	08:26 16:30	08:56 16:32
Potential sun hours	255	201	276	367	418	489	503	506	456	381	330	263
Total, worst case		201										284
Sun reduction		0.16										0.14
Oper. time red.		1.00										1.00
Wind dir. red.		0.65										0.65
Total reduction		0.10										0.09
Total, real		21										25

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	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** DV - H126**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:33	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:35	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:26	19:15	17:08	16:28
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:06	06:01	05:19	05:22	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:25	20:19	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:40	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:07	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	21:59	22:01	21:18	20:10	18:59	16:56	16:24
10	08:47	08:06	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:46	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:02	21:58	21:10	20:01	18:50	16:49	16:24
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:23
15	08:43	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:50	18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:58	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:49	20:43	21:34	22:05	21:52	20:58	19:46	18:37	16:41	16:24
20	08:38	07:47	06:43	06:31	05:36	05:14	05:38	06:27	07:19	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:34	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:42	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:32	07:25	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:46	06:36	07:28	08:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:42	22:07	21:44	20:45	19:32	18:24	16:34	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:55	21:44	22:07	21:42	20:42	19:30	18:22	16:33	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:48	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:41	20:40	19:27	18:20	16:32	16:29
28	08:28	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:21	08:50
	17:15	18:14	19:05	20:59	21:46	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:13	05:25	05:17	05:52	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:36	19:22	18:16	16:30	16:30
30	08:25		07:20	06:10	05:24	05:18	05:53	06:44	07:36	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	264	240
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)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: DW - H127

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
229 231 210 320 200 640 608 691 568 658 724 1,086 671 733 661 530 8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:32	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:35	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:26	19:15	17:08	16:28
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:06	06:01	05:19	05:22	06:03	06:54	07:45	07:41	08:32
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	16:40	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
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	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
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	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
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	16:49	17:46	18:38	20:33	21:24	22:02	21:58	21:10	20:01	18:50	16:49	16:24
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:23
15	08:43	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:50	18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
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	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
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	16:58	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:49	20:43	21:34	22:05	21:52	20:58	19:46	18:37	16:41	16:24
20	08:38	07:47	06:43	06:31	05:36	05:14	05:38	06:27	07:19	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:34	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:42	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:32	07:25	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:46	06:36	07:28	07:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:42	22:07	21:44	20:45	19:32	17:24	16:34	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	07:23	08:18	08:50
	17:12	18:10	19:01	20:55	21:44	22:07	21:42	20:42	19:30	17:22	16:33	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:48	06:39	07:31	07:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:41	20:40	19:27	17:20	16:32	16:29
28	08:28	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	07:26	08:21	08:50
	17:15	18:14	19:05	20:59	21:46	22:06	21:39	20:38	19:25	17:18	16:31	16:30
29	08:27		07:22	06:13	05:25	05:17	05:52	06:43	07:35	07:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:36	19:22	17:16	16:30	16:30
30	08:25		07:20	06:10	05:24	05:18	05:53	06:44	07:36	07:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	17:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** DX - H128**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:32	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:13	06:06	05:21	05:19	05:58	06:49	07:40	07:35	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:05	06:01	05:19	05:21	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:25	20:19	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:07	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	21:59	22:01	21:18	20:10	18:59	16:56	16:24
10	08:47	08:06	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:46	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
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	16:49	17:46	18:38	20:33	21:24	22:02	21:58	21:10	20:01	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:23
15	08:43	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:49	18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	16:23
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:57	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:49	20:43	21:34	22:05	21:52	20:58	19:46	18:37	16:41	16:24
20	08:38	07:47	06:43	06:31	05:36	05:14	05:38	06:27	07:19	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:34	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:41	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:32	07:25	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
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	17:08	18:07	18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:45	06:36	07:28	08:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:42	22:07	21:44	20:45	19:32	18:24	16:33	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:37	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:55	21:44	22:06	21:42	20:42	19:30	18:22	16:32	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:48	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:41	20:40	19:27	18:20	16:32	16:29
28	08:28	07:29	06:24	06:14	05:26	05:17	05:50	06:41	07:33	08:26	08:21	08:50
	17:15	18:14	19:04	20:59	21:46	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:12	05:25	05:17	05:51	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:36	19:22	18:16	16:30	16:30
30	08:25		07:20	06:10	05:24	05:18	05:53	06:44	07:36	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case**Shadow receptor:** DY - H129**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:51	08:22	07:27	07:15	06:09	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:52	22:06	21:33	20:29	19:18	17:10	16:28
2	08:50	08:21	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:36	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:06	21:31	20:27	19:16	17:08	16:28
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:38	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:21	07:08	06:03	05:19	05:21	06:01	06:53	07:44	07:39	08:31
	16:37	17:29	18:22	20:17	21:09	21:55	22:05	21:28	20:22	19:11	17:04	16:26
5	08:50	08:16	07:18	07:06	06:01	05:19	05:22	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:26	20:20	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:40	17:32	18:25	20:21	21:13	21:57	22:04	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:35
	16:41	17:34	18:27	20:22	21:15	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:08	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:13	19:01	16:57	16:24
9	08:48	08:09	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:49	08:37
	16:44	17:38	18:31	20:26	21:18	22:00	22:02	21:18	20:10	18:59	16:56	16:24
10	08:47	08:07	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:33	20:28	21:20	22:01	22:01	21:16	20:08	18:57	16:54	16:24
11	08:47	08:05	07:05	06:52	05:50	05:15	05:27	06:13	07:05	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:06	18:55	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:58	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:50	17:46	18:38	20:33	21:25	22:03	21:58	21:10	20:01	18:50	16:49	16:24
14	08:45	07:59	08:24 (2)	06:58	06:45	05:45	05:14	05:31	06:17	07:10	08:01	07:58
	16:51	17:48	2	08:26 (2)	18:40	20:35	21:26	22:03	21:57	21:08	19:58	18:48
15	08:44	07:57	08:22 (2)	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	08:00
	16:53	17:50	5	08:27 (2)	18:42	20:36	21:28	22:04	21:56	21:06	19:56	18:46
16	08:43	07:55	08:20 (2)	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:05	08:01
	16:54	17:52	8	08:28 (2)	18:43	20:38	21:29	22:04	21:55	21:04	19:54	18:43
17	08:42	07:53	08:18 (2)	06:50	06:38	05:40	05:14	05:35	06:22	07:15	08:06	08:03
	16:56	17:53	10	08:28 (2)	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41
18	08:41	07:51	08:16 (2)	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05
	16:58	17:55	12	08:28 (2)	18:47	20:42	21:32	22:05	21:53	21:00	19:49	18:39
19	08:40	07:49	08:14 (2)	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:07
	16:59	17:57	14	08:28 (2)	18:49	20:43	21:34	22:06	21:52	20:58	19:46	18:37
20	08:39	07:47	08:11 (2)	06:43	06:32	05:36	05:14	05:38	06:28	07:20	08:12	08:08
	17:01	17:59	15	08:26 (2)	18:51	20:45	21:36	22:06	21:51	20:56	19:44	18:35
21	08:38	07:45	08:09 (2)	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:14	08:10
	17:03	18:01	17	08:26 (2)	18:52	20:47	21:37	22:06	21:49	20:54	19:42	18:32
22	08:36	07:43	08:10 (2)	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12
	17:04	18:03	15	08:25 (2)	18:54	20:49	21:38	22:07	21:48	20:51	19:39	18:30
23	08:35	07:40	08:12 (2)	06:36	06:25	05:32	05:15	05:43	06:33	07:25	08:17	08:14
	17:06	18:05	11	08:23 (2)	18:56	20:50	21:40	22:07	21:47	20:49	19:37	18:28
24	08:34	07:38	08:15 (2)	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:16
	17:08	18:07	5	08:20 (2)	18:58	20:52	21:41	22:07	21:45	20:47	19:34	18:26
25	08:33	07:36		06:32	06:21	05:29	05:15	05:46	06:36	07:28	07:21	07:48
	17:10	18:09		18:59	20:54	21:43	22:07	21:44	20:45	19:32	17:24	9
26	08:31	07:34		06:29	06:19	05:28	05:16	05:47	06:38	07:30	07:23	7
	17:12	18:10		19:01	20:56	21:44	22:07	21:42	20:43	19:30	17:22	4
27	08:30	07:32		06:27	06:17	05:27	05:16	05:49	06:39	07:31	07:25	2
	17:13	18:12		19:03	20:57	21:45	22:07	21:41	20:40	19:27	17:20	16:32
28	08:28	07:30		06:24	06:15	05:26	05:17	05:50	06:41	07:33	07:26	16:31
	17:15	18:14		19:05	20:59	21:47	22:07	21:39	20:38	19:25	17:18	16:30
29	08:27			07:22	06:13	05:25	05:17	05:52	06:43	07:35	07:28	16:29
	17:17			20:06	21:01	21:48	22:06	21:38	20:36	19:23	17:16	16:28
30	08:25			07:20	06:11	05:24	05:18	05:53	06:44	07:37	07:30	16:27
	17:19			20:08	21:03	21:49	22:06	21:36	20:34	19:20	17:14	16:26
31	08:24			07:17		05:23		05:55	06:46		07:32	16:25
	17:21			20:10		21:50		21:34	20:31		17:12	16:24
Potential sun hours	256	276	367	418	489	503	506	456	381	330	263	240
Total, worst case		114								113		
Sun reduction		0.21								0.24		
Oper. time red.		1.00								1.00		
Wind dir. red.		0.67								0.67		
Total reduction		0.14								0.16		
Total, real		16								18		

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	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
Kathryn Feeney / kfeeney@jodireland.com
Calculated:
16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** DZ - H130**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December	
1	08:50 16:34	08:22 17:23	07:27 18:16	07:15 20:12	06:09 21:04	06:34 (2) 21:04	05:22 21:52	05:19 22:06	05:56 21:33	06:48 20:29	07:38 19:18	07:34 17:10	08:26 16:28
2	08:50 16:35	08:21 17:25	07:25 18:18	07:13 20:13	06:07 21:06	06:32 (2) 21:06	05:21 21:53	05:19 22:06	05:58 21:31	06:49 20:27	07:40 19:16	07:36 17:08	08:28 16:28
3	08:50 16:36	08:19 17:27	07:23 18:20	07:10 20:15	06:05 21:08	06:31 (2) 21:08	05:20 21:54	05:20 22:05	05:59 21:29	06:51 20:24	07:42 19:13	07:38 17:06	08:29 16:27
4	08:50 16:37	08:17 17:29	07:21 18:22	07:08 20:17	06:03 21:09	06:32 (2) 21:09	05:19 21:55	05:21 22:05	06:01 21:27	06:53 20:22	07:44 19:11	07:39 17:04	08:31 16:26
5	08:50 16:38	08:16 17:30	07:18 18:23	07:06 20:19	06:01 21:11	06:33 (2) 21:11	05:19 21:56	05:22 22:04	06:03 21:26	06:54 20:20	07:45 19:08	07:41 17:03	08:32 16:26
6	08:49 16:40	08:14 17:32	07:16 18:25	07:03 20:21	05:59 21:13	06:36 (2) 21:13	05:18 21:57	05:22 22:04	06:04 21:24	06:56 20:17	07:47 19:06	07:43 17:01	08:33 16:25
7	08:49 16:41	08:12 17:34	07:14 18:27	07:01 20:22	05:57 21:15	06:42 (2) 21:15	05:17 21:58	05:23 22:03	06:06 21:22	06:58 20:15	07:49 19:04	07:45 16:59	08:35 16:25
8	08:48 16:42	08:10 17:36	07:11 18:29	06:59 20:24	05:55 21:16	06:42 (2) 21:16	05:17 21:59	05:24 22:02	06:08 21:20	06:59 20:13	07:50 19:02	07:47 16:57	08:36 16:25
9	08:48 16:44	08:09 17:38	07:09 18:31	06:56 20:26	05:54 21:18	06:41 (2) 21:18	05:16 22:00	05:25 22:02	06:09 21:18	06:55 (2) 20:10	07:52 18:59	07:49 16:56	08:37 16:24
10	08:47 16:45	08:07 17:40	07:07 18:33	06:54 20:28	05:52 21:20	06:39 (2) 21:20	05:16 22:01	05:26 22:01	06:11 21:16	06:59 (2) 20:08	07:54 18:57	07:50 16:54	08:38 16:24
11	08:47 16:47	08:05 17:42	07:05 18:34	06:52 20:29	05:50 21:21	06:41 (2) 21:21	05:15 22:01	05:27 22:00	06:13 21:14	06:56 (2) 20:06	07:56 18:55	07:52 16:52	08:39 16:24
12	08:46 16:48	08:03 17:44	07:02 18:36	06:50 20:31	05:48 21:23	06:42 (2) 21:23	05:15 22:02	05:29 21:59	06:14 21:12	06:57 (2) 20:03	07:57 18:52	07:54 16:51	08:40 16:24
13	08:45 16:50	08:01 17:46	07:00 18:38	06:47 20:33	05:47 21:25	06:44 (2) 21:25	05:15 22:03	05:30 21:58	06:16 21:10	06:58 (2) 20:01	07:59 18:50	07:56 16:49	08:41 16:24
14	08:44 16:51	07:59 17:48	06:58 18:40	06:45 20:35	05:45 21:26	06:46 (2) 21:26	05:15 22:03	05:31 21:57	06:18 21:08	06:57 (2) 20:10	08:01 18:48	07:58 16:48	08:42 16:24
15	08:44 16:53	07:57 17:50	06:55 18:42	06:43 20:36	05:43 21:28	06:47 (2) 21:28	05:14 22:04	05:32 21:56	06:19 21:06	06:57 (2) 20:13	08:03 18:46	08:00 16:46	08:43 16:24
16	08:43 16:54	07:55 17:52	06:53 18:43	06:40 20:38	05:42 21:29	06:50 (2) 21:29	05:14 22:04	05:33 21:55	06:21 21:04	06:49 (2) 20:14	08:05 18:43	08:01 16:45	08:44 16:24
17	08:42 16:56	07:53 17:53	06:50 18:45	06:38 20:40	05:40 21:31	06:56 (2) 21:31	05:14 22:05	05:35 21:54	06:23 21:02	06:50 (2) 20:15	08:06 18:41	08:03 16:43	08:45 16:24
18	08:41 16:58	07:51 17:55	06:48 18:47	06:36 20:42	05:39 21:32	06:52 (2) 21:32	05:14 22:05	05:36 21:53	06:24 21:00	06:52 (2) 20:16	08:08 18:39	08:05 16:42	08:46 16:24
19	08:40 16:59	07:49 17:57	06:46 18:49	06:34 20:43	05:37 21:34	06:53 (2) 21:34	05:14 22:06	05:37 21:52	06:26 20:58	06:53 (2) 20:17	08:09 18:37	08:07 16:41	08:46 16:24
20	08:39 17:01	07:47 17:59	06:43 18:51	06:32 20:45	05:36 21:35	06:54 (2) 21:35	05:14 22:06	05:39 21:51	06:28 20:56	06:54 (2) 20:18	08:10 18:35	08:08 16:39	08:47 16:25
21	08:38 17:03	07:45 18:01	06:41 18:52	06:29 20:47	05:34 21:37	06:55 (2) 21:37	05:14 22:06	05:40 21:49	06:29 20:54	06:55 (2) 20:19	08:11 18:32	08:10 16:38	08:48 16:25
22	08:36 17:05	07:43 18:03	06:39 18:54	06:27 20:49	05:33 21:38	06:56 (2) 21:38	05:15 22:06	05:41 21:48	06:31 20:51	06:56 (2) 20:20	08:12 18:30	08:12 16:37	08:48 16:26
23	08:35 17:06	07:40 18:05	06:36 18:56	06:25 20:50	05:32 21:40	06:57 (2) 21:40	05:15 22:07	05:43 21:47	06:33 20:49	06:57 (2) 20:21	08:13 18:28	08:14 16:36	08:49 16:26
24	08:34 17:08	07:38 18:07	06:34 18:58	06:23 20:52	05:30 21:41	06:58 (2) 21:41	05:15 22:07	05:44 21:45	06:34 20:47	06:58 (2) 20:22	08:14 18:26	08:15 16:35	08:49 16:27
25	08:33 17:10	07:36 18:09	06:32 18:59	06:21 20:54	05:29 21:43	06:59 (2) 21:43	05:15 22:07	05:46 21:44	06:36 20:45	06:59 (2) 20:23	08:15 18:24	08:17 16:34	08:49 16:27
26	08:31 17:12	07:34 18:10	06:29 19:01	06:19 20:56	05:28 21:44	06:43 (2) 21:44	05:16 22:07	05:47 21:42	06:38 20:43	06:59 (2) 20:24	08:16 18:23	08:18 16:33	08:50 16:28
27	08:30 17:14	07:32 18:12	06:27 19:03	06:17 20:57	05:27 21:45	06:41 (2) 21:45	05:16 22:07	05:49 21:41	06:39 20:40	06:59 (2) 20:25	08:17 18:24	08:20 16:32	08:50 16:29
28	08:28 17:15	07:30 18:14	06:24 19:05	06:15 20:59	05:26 21:47	06:39 (2) 21:47	05:17 22:07	05:50 21:39	06:41 20:38	06:59 (2) 20:26	08:18 18:25	08:22 16:31	08:50 16:30
29	08:27 17:17	07:22 18:06	06:13 19:01	06:13 20:59	05:25 21:48	06:37 (2) 21:48	05:17 22:06	05:52 21:38	06:43 20:36	06:59 (2) 20:27	08:19 18:26	08:23 16:30	08:50 16:31
30	08:25 17:19	07:20 18:08	06:11 19:03	06:11 21:03	05:24 21:49	06:35 (2) 21:49	05:18 22:06	05:53 21:36	06:44 20:34	06:59 (2) 20:28	08:20 18:27	08:25 16:29	08:50 16:31
31	08:24 17:21	07:17 18:10	06:10 19:04	06:10 21:04	05:23 21:50	06:48 (2) 21:50	05:19 22:06	05:55 21:34	06:46 20:31	06:59 (2) 20:29	08:21 18:28	08:26 16:30	08:50 16:32
Potential sun hours	256	276	367	418	488		503	506	456	381	330	263	240
Total, worst case				54	77				132				
Sun reduction				0.35	0.37				0.30				
Oper. time red.				1.00	1.00				1.00				
Wind dir. red.				0.66	0.66				0.66				
Total reduction				0.23	0.24				0.20				
Total, real				13	19				26				

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: EA - H131

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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:32	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:35	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:26	19:15	17:08	16:28
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:06	06:01	05:19	05:22	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:25	20:19	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:40	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:07	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	21:59	22:01	21:18	20:10	18:59	16:56	16:24
10	08:47	08:06	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:46	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:02	21:58	21:10	20:01	18:50	16:49	16:24
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:23
15	08:43	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:50	18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:58	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:49	20:43	21:34	22:05	21:52	20:58	19:46	18:37	16:41	16:24
20	08:38	07:47	06:43	06:31	05:36	05:14	05:38	06:27	07:19	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:34	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:42	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:32	07:25	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:46	06:36	07:28	08:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:42	22:07	21:44	20:45	19:32	18:24	16:34	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:55	21:44	22:07	21:42	20:42	19:30	18:22	16:33	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:48	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:41	20:40	19:27	18:20	16:32	16:29
28	08:28	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:21	08:50
	17:15	18:14	19:05	20:59	21:46	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:13	05:25	05:17	05:52	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:36	19:22	18:16	16:30	16:30
30	08:25		07:20	06:10	05:24	05:18	05:53	06:44	07:36	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case**Shadow receptor:** EB - H132**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:51 16:34	08:22 17:23	07:27 18:16	07:15 20:12	06:09 21:04	05:22 21:52	05:18 22:06	05:56 21:33	06:48 20:29	07:38 19:18	07:34 17:10	08:26 16:28
2	08:50 16:35	08:21 17:25	07:25 18:18	07:13 20:13	06:07 21:06	05:21 21:53	05:19 22:06	05:58 21:31	06:49 20:27	07:40 19:15	07:36 17:08	08:28 16:28
3	08:50 16:36	08:19 17:27	07:23 18:20	07:10 20:15	06:05 21:08	05:20 21:54	05:20 22:05	05:59 21:29	06:51 20:24	07:42 19:13	07:38 17:06	08:29 16:27
4	08:50 16:37	08:17 17:29	07:21 18:22	07:08 20:17	06:03 21:09	05:19 21:55	05:21 22:05	06:01 21:28	06:53 20:22	07:44 19:11	07:39 17:04	08:31 16:26
5	08:50 16:38	08:16 17:30	07:18 18:23	07:06 20:19	06:01 21:11	05:19 21:56	05:22 22:04	06:03 21:26	06:54 20:20	07:45 19:08	07:41 17:03	08:32 16:26
6	08:49 16:40	08:14 17:32	07:16 18:25	07:03 20:21	05:59 21:13	05:18 21:57	05:22 22:04	06:04 21:24	06:56 20:17	07:47 19:06	07:43 17:01	08:33 16:25
7	08:49 16:41	08:12 17:34	07:14 18:27	07:01 20:22	05:57 21:15	05:17 21:58	05:23 22:03	06:06 21:22	06:58 20:15	07:49 19:04	07:45 16:59	08:35 16:25
8	08:48 16:42	08:10 17:36	07:11 18:29	06:59 20:24	05:55 21:16	05:17 21:59	05:24 22:02	06:08 21:20	06:59 20:13	07:50 19:01	07:47 16:57	08:36 16:24
9	08:48 16:44	08:09 17:38	07:09 18:31	06:56 20:26	05:53 21:18	05:16 22:00	05:25 22:02	06:09 21:18	07:01 20:10	07:52 18:59	07:49 16:56	08:37 16:24
10	08:47 16:45	08:07 17:40	07:07 18:33	06:54 20:28	05:52 21:20	05:16 22:01	05:26 22:01	06:11 21:16	07:03 20:08	07:54 18:57	07:50 16:54	08:38 16:24
11	08:47 16:46	08:05 17:42	07:05 18:34	06:52 20:29	05:50 21:21	05:15 22:01	05:27 22:00	06:12 21:14	07:05 20:06	07:56 18:55	07:52 16:52	08:39 16:24
12	08:46 16:48	08:03 17:44	07:02 18:36	06:49 20:31	05:48 21:23	05:15 22:02	05:28 21:59	06:14 21:12	07:06 20:03	07:58 18:52	07:54 16:51	08:40 16:24
13	08:45 16:50	08:01 17:46	07:00 18:38	06:47 20:33	05:47 21:25	05:15 22:03	05:30 21:58	06:16 21:10	07:08 20:01	07:59 18:50	07:56 16:49	08:41 16:24
14	08:45 16:51	07:59 17:48	06:58 18:40	06:45 20:35	05:45 21:26	05:14 22:03	05:31 21:57	06:17 21:08	07:10 19:58	08:01 18:48	07:58 16:48	08:42 16:24
15	08:44 16:53	07:57 17:50	06:55 18:42	06:43 20:36	05:43 21:28	05:14 22:04	05:32 21:56	06:19 21:06	07:11 19:56	08:03 18:46	08:00 16:46	08:43 16:24
16	08:43 16:54	07:55 17:52	06:53 18:43	06:40 20:38	05:42 21:29	05:14 22:04	05:33 21:55	06:21 21:04	07:13 19:54	08:05 18:43	08:01 16:45	08:44 16:24
17	08:42 16:56	07:53 17:53	06:50 18:45	06:38 20:40	05:40 21:31	05:14 22:05	05:35 21:54	06:22 21:02	07:15 19:51	08:06 18:41	08:03 16:43	08:45 16:24
18	08:41 16:58	07:51 17:55	06:48 18:47	06:36 20:42	05:39 21:32	05:14 22:05	05:36 21:53	06:24 21:00	07:16 19:49	08:08 18:39	08:05 16:42	08:46 16:24
19	08:40 16:59	07:49 17:57	06:46 18:49	06:34 20:43	05:37 21:34	05:14 22:06	05:37 21:52	06:26 20:58	07:18 19:46	08:10 18:37	08:07 16:41	08:46 16:24
20	08:39 17:01	07:47 17:59	06:43 18:51	06:32 20:45	05:36 21:36	05:14 22:06	05:38 21:51	06:28 20:56	07:20 19:44	08:12 18:35	08:08 16:39	08:47 16:25
21	08:38 17:03	07:45 18:01	06:41 18:52	06:29 20:47	05:34 21:37	05:14 22:06	05:40 21:49	06:29 20:54	07:21 19:42	08:14 18:32	08:09 16:38	08:48 16:25
22	08:36 17:04	07:43 18:03	06:39 18:54	06:27 20:49	05:33 21:38	05:14 22:07	05:41 21:48	06:31 20:51	07:23 19:39	08:15 18:30	08:08 16:37	08:48 16:26
23	08:35 17:06	07:40 18:05	06:36 18:56	06:25 20:50	05:32 21:40	05:15 22:07	05:43 21:47	06:33 20:49	07:25 19:37	08:17 18:28	08:09 16:36	08:49 16:26
24	08:34 17:08	07:38 18:07	06:34 18:58	06:23 20:52	05:30 21:41	05:15 22:07	05:44 21:45	06:34 20:47	07:26 19:34	08:19 18:26	08:15 16:35	08:49 16:27
25	08:33 17:10	07:36 18:09	06:32 18:59	06:21 20:54	05:29 21:43	05:15 22:07	05:46 21:44	06:36 20:45	07:28 19:32	07:21 18:24	08:17 16:34	08:50 16:27
26	08:31 17:12	07:34 18:10	06:29 19:01	06:19 20:56	05:28 21:44	05:16 22:07	05:47 21:42	06:38 20:43	07:30 19:30	07:23 18:22	08:19 16:33	08:50 16:28
27	08:30 17:13	07:32 18:12	06:27 19:03	06:17 20:57	05:27 21:45	05:16 22:07	05:49 21:41	06:39 20:40	07:31 19:27	07:25 18:20	08:20 16:32	08:50 16:29
28	08:28 17:15	07:30 18:14	06:24 19:05	06:15 20:59	05:26 21:47	05:17 22:07	05:50 21:39	06:41 20:38	07:33 19:25	07:26 18:18	08:22 16:31	08:50 16:30
29	08:27 17:17		07:22 20:06	06:13 21:01	05:25 21:48	05:17 22:06	05:52 21:38	06:43 20:36	07:35 19:23	07:28 18:16	08:23 16:30	08:50 16:30
30	08:25 17:19		07:20 20:08	06:11 21:03	05:24 21:49	05:18 22:06	05:53 21:36	06:44 20:34	07:37 19:20	07:30 18:14	08:25 16:29	08:51 16:31
31	08:24 17:21		07:17 20:10		05:23 21:50		05:55 21:34	06:46 20:31		07:32 17:12		08:51 16:32
Potential sun hours	256	276	367	418	489	503	506	456	381	330	263	240
Total, worst case		106								112		
Sun reduction		0.21								0.24		
Oper. time red.		1.00								1.00		
Wind dir. red.		0.67								0.67		
Total reduction		0.14								0.16		
Total, real		15								18		

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
Kathryn Feeney / kfeeney@jodireland.com
Calculated:
16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** EC - H133

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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50 16:34	08:22 17:23	07:27 18:16	07:15 20:12	06:09 21:04	05:22 21:52	05:51 (2) 21:53	05:56 (2) 21:53	06:03 (2) 21:33	07:38 19:18	07:34 17:10	08:26 16:28
2	08:50 16:35	08:21 17:25	07:25 18:18	07:13 20:13	06:07 21:06	05:21 21:53	05:50 (2) 21:53	05:56 (2) 22:05	06:03 (2) 21:31	07:40 19:16	07:36 17:08	08:28 16:28
3	08:50 16:36	08:19 17:27	07:23 18:20	07:10 20:15	06:05 21:08	05:20 21:54	05:50 (2) 22:05	05:52 (2) 22:05	06:04 (2) 21:29	07:42 19:13	07:37 17:06	08:29 16:27
4	08:50 16:37	08:17 17:29	07:21 18:22	07:08 20:17	06:03 21:09	05:19 21:55	05:49 (2) 22:05	05:52 (2) 22:05	06:01 21:27	07:43 19:11	07:39 17:04	08:31 16:26
5	08:50 16:38	08:16 17:30	07:18 18:23	07:06 20:19	06:01 21:11	05:19 21:56	05:49 (2) 22:04	05:53 (2) 22:04	06:03 (2) 21:26	07:45 19:08	07:41 17:03	08:32 16:26
6	08:49 16:40	08:14 17:32	07:16 18:25	07:03 20:20	05:59 21:13	05:18 21:57	05:48 (2) 22:04	05:54 (2) 22:04	06:04 (2) 21:24	07:46 19:06	07:43 17:01	08:33 16:25
7	08:49 16:41	08:12 17:34	07:14 18:27	07:01 20:22	05:57 21:15	05:17 21:58	05:48 (2) 22:03	05:55 (2) 22:03	06:06 21:22	07:49 19:04	07:45 16:59	08:34 16:25
8	08:48 16:42	08:10 17:36	07:11 18:29	06:59 20:24	05:55 21:16	05:17 21:59	05:47 (2) 22:02	05:56 (2) 22:02	06:08 21:20	07:50 19:01	07:47 16:57	08:36 16:25
9	08:48 16:44	08:08 17:38	07:09 18:31	06:56 20:26	05:54 21:18	05:16 22:00	05:47 (2) 22:02	05:57 (2) 22:02	06:09 21:18	07:52 18:59	07:49 16:56	08:37 16:24
10	08:47 16:45	08:07 17:40	07:07 18:33	06:54 20:28	05:52 21:20	05:16 22:00	05:46 (2) 22:01	05:58 (2) 22:01	06:11 21:16	07:54 18:57	07:50 16:54	08:38 16:24
11	08:47 16:47	08:05 17:42	07:05 18:34	06:52 20:29	05:50 21:21	05:15 22:01	05:46 (2) 22:00	05:59 (2) 22:00	06:13 21:14	07:56 18:55	07:52 16:52	08:39 16:24
12	08:46 16:48	08:03 17:44	07:02 18:36	06:49 20:31	05:48 21:23	05:15 22:02	05:46 (2) 21:59	06:00 (2) 21:12	06:14 21:08	07:57 18:52	07:54 16:51	08:40 16:24
13	08:45 16:50	08:01 17:46	07:00 18:38	06:47 20:33	05:47 21:24	05:15 22:03	05:46 (2) 21:58	06:01 (2) 21:10	06:16 21:01	07:59 18:50	07:56 16:49	08:41 16:24
14	08:44 16:51	07:59 17:48	06:58 18:40	06:45 20:35	05:45 21:26	05:15 22:03	05:45 (2) 21:57	06:02 (2) 21:08	06:18 21:08	08:01 19:58	07:58 18:48	08:42 16:24
15	08:44 16:53	07:57 17:50	06:55 18:42	06:43 20:36	05:43 21:28	05:14 22:04	05:45 (2) 21:56	06:03 (2) 21:06	06:19 21:06	08:03 19:56	08:00 18:46	08:43 16:24
16	08:43 16:54	07:55 17:52	06:53 18:43	06:40 20:38	05:42 21:29	05:14 22:04	05:45 (2) 21:55	06:21 21:04	07:13 19:54	08:05 18:43	08:01 16:45	08:44 16:24
17	08:42 16:56	07:53 17:53	06:50 18:45	06:38 20:40	05:40 21:31	05:14 22:05	05:45 (2) 21:54	06:23 21:02	07:15 19:51	08:06 18:41	08:03 16:43	08:45 16:24
18	08:41 16:58	07:51 17:55	06:48 18:47	06:36 20:42	05:39 21:32	05:14 22:05	05:45 (2) 21:53	06:24 21:00	07:16 19:49	08:08 18:39	08:05 16:42	08:46 16:24
19	08:40 16:59	07:49 17:57	06:46 18:49	06:34 20:43	05:37 21:34	05:14 22:06	05:45 (2) 21:52	06:26 20:58	07:18 19:46	08:10 18:37	08:07 16:41	08:46 16:24
20	08:39 17:01	07:47 17:59	06:43 18:51	06:32 20:45	05:36 21:35	05:14 22:06	05:46 (2) 21:51	06:28 20:56	07:20 19:44	08:12 18:35	08:08 16:39	08:47 16:25
21	08:38 17:03	07:45 18:01	06:41 18:52	06:29 20:47	05:34 21:37	05:14 22:06	05:46 (2) 21:49	06:29 20:54	07:21 19:42	08:14 18:32	08:10 16:38	08:48 16:25
22	08:36 17:05	07:43 18:03	06:39 18:54	06:27 20:49	05:33 21:38	05:15 22:06	05:46 (2) 21:48	06:31 20:51	07:23 19:39	08:15 18:30	08:12 16:37	08:48 16:26
23	08:35 17:06	07:40 18:05	06:36 18:56	06:25 20:50	05:32 21:40	05:15 22:07	05:46 (2) 21:47	06:33 20:49	07:25 19:37	08:17 18:28	08:13 16:36	08:49 16:26
24	08:34 17:08	07:38 18:07	06:34 18:58	06:23 20:52	05:30 21:41	05:15 22:07	05:47 (2) 21:45	06:34 20:47	07:26 19:34	08:19 18:26	08:15 16:35	08:49 16:27
25	08:33 17:10	07:36 18:09	06:32 18:59	06:21 20:54	05:29 21:43	05:15 22:07	05:47 (2) 21:44	06:36 20:45	07:28 19:32	08:21 18:24	08:17 16:34	08:49 16:27
26	08:31 17:12	07:34 18:10	06:29 19:01	06:19 20:56	05:28 21:44	05:16 22:07	05:47 (2) 21:42	06:38 20:43	07:30 19:30	08:23 18:22	08:18 16:33	08:50 16:28
27	08:30 17:14	07:32 18:12	06:27 19:03	06:17 20:57	05:27 21:45	05:16 22:07	05:48 (2) 21:41	06:39 20:40	07:31 19:27	08:25 18:20	08:20 16:32	08:50 16:29
28	08:28 17:15	07:30 18:14	06:24 19:05	06:15 20:59	05:26 21:47	05:17 22:07	05:48 (2) 21:39	06:41 20:38	07:33 19:25	08:26 18:18	08:22 16:31	08:50 16:30
29	08:27 17:17		07:22 20:06	06:13 21:01	05:25 21:48	05:17 22:06	05:49 (2) 21:38	06:43 20:36	07:35 19:23	08:28 18:16	08:23 16:30	08:50 16:31
30	08:25 17:19		07:20 20:08	06:11 21:03	05:24 21:49	05:18 22:06	05:49 (2) 21:36	06:44 20:34	07:37 19:20	08:30 18:14	08:25 16:29	08:50 16:31
31	08:24 17:21		07:17 20:10		05:23 21:50	05:17 22:06	06:02 (2) 21:34	06:46 20:31		08:32 17:12		08:50 16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
Total, worst case					9	362	117					
Sun reduction					0.37	0.30	0.26					
Oper. time red.					1.00	1.00	1.00					
Wind dir. red.					0.62	0.62	0.62					
Total reduction					0.23	0.19	0.17					
Total, real					2	67	19					

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: ED - H134

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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:32	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:35	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:26	19:15	17:08	16:28
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:06	06:01	05:19	05:22	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:25	20:19	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:40	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:07	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	21:59	22:01	21:18	20:10	18:59	16:56	16:24
10	08:47	08:06	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:46	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:02	21:58	21:10	20:01	18:50	16:49	16:24
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:23
15	08:43	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:50	18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:58	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:49	20:43	21:34	22:05	21:52	20:58	19:46	18:37	16:41	16:24
20	08:38	07:47	06:43	06:31	05:36	05:14	05:38	06:27	07:19	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:34	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:42	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:32	07:25	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:46	06:36	07:28	08:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:42	22:07	21:44	20:45	19:32	18:24	16:34	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:55	21:44	22:07	21:42	20:42	19:30	18:22	16:33	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:48	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:41	20:40	19:27	18:20	16:32	16:29
28	08:28	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:21	08:50
	17:15	18:14	19:05	20:59	21:46	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:13	05:25	05:17	05:52	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:36	19:22	18:16	16:30	16:30
30	08:25		07:20	06:10	05:24	05:18	05:53	06:44	07:36	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	264	240
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

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3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
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Licensed user:

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+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: EE - H135

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
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N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
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1	08:50	08:22	07:27		07:15		06:08	05:22	05:18	05:56	06:48		07:38	07:34	08:26
	16:34	17:23	18:16		20:12		21:04	21:51	22:06	21:32	20:29		19:18	17:10	16:28
2	08:50	08:20	07:25		07:12		06:06	05:21	05:19	05:58	06:49		07:40	07:35	08:28
	16:35	17:25	18:18		20:13		21:06	21:53	22:05	21:31	20:26		19:15	17:08	16:27
3	08:50	08:19	07:23		07:10	19:47 (1)	06:04	05:20	05:20	05:59	06:51	19:48 (1)	07:42	07:37	08:29
	16:36	17:26	18:20		20:15	19:48 (1)	21:08	21:54	22:05	21:29	20:24	8	19:56 (1)	19:13	17:06
4	08:50	08:17	07:20		07:08	19:47 (1)	06:03	05:19	05:21	06:01	06:53		19:46 (1)	07:43	07:39
	16:37	17:28	18:21		20:17	4	19:51 (1)	21:09	21:55	22:04	21:27	20:22	9	19:55 (1)	19:11
5	08:49	08:15	07:18		07:05	19:47 (1)	06:01	05:18	05:21	06:02	06:54		19:44 (1)	07:45	07:41
	16:38	17:30	18:23		20:19	6	19:53 (1)	21:11	21:56	22:04	21:25	20:19	8	19:52 (1)	19:08
6	08:49	08:14	07:16		07:03	19:47 (1)	05:59	05:18	05:22	06:04	06:56		19:43 (1)	07:47	07:43
	16:39	17:32	18:25		20:20	7	19:54 (1)	21:13	21:57	22:03	21:24	20:17	7	19:50 (1)	19:06
7	08:49	08:12	07:14		07:01	19:48 (1)	05:57	05:17	05:23	06:06	06:58		19:42 (1)	07:49	07:45
	16:41	17:34	18:27		20:22	8	19:56 (1)	21:14	21:58	22:03	21:22	20:15	6	19:48 (1)	19:04
8	08:48	08:10	07:11		06:58	19:49 (1)	05:55	05:17	05:24	06:07	06:59		19:41 (1)	07:50	07:47
	16:42	17:36	18:29		20:24	8	19:57 (1)	21:16	21:59	22:02	21:20	20:12	4	19:45 (1)	19:01
9	08:48	08:08	07:09		06:56	19:50 (1)	05:53	05:16	05:25	06:09	07:01		19:41 (1)	07:52	07:48
	16:43	17:38	18:31		20:26	8	19:58 (1)	21:18	22:00	22:01	21:18	20:10	2	19:43 (1)	18:59
10	08:47	08:06	07:07		06:54		05:52	05:16	05:26	06:11	07:03			07:54	07:50
	16:45	17:40	18:32		20:27		21:19	22:00	22:01	21:16	20:08			18:57	16:54
11	08:47	08:05	07:04		06:52		05:50	05:15	05:27	06:12	07:04			07:56	07:52
	16:46	17:42	18:34		20:29		21:21	22:01	22:00	21:14	20:05			18:54	16:52
12	08:46	08:03	07:02		06:49		05:48	05:15	05:28	06:14	07:06			07:57	07:54
	16:48	17:44	18:36		20:31		21:23	22:02	21:59	21:12	20:03			18:52	16:51
13	08:45	08:01	07:00		06:47		05:46	05:15	05:29	06:16	07:08			07:59	07:56
	16:49	17:46	18:38		20:33		21:24	22:02	21:58	21:10	20:01			18:50	16:49
14	08:44	07:59	06:57	18:13 (3)	06:45		05:45	05:14	05:31	06:17	07:09			08:01	07:58
	16:51	17:48	18:40	1	18:14 (3)		21:26	22:03	21:57	21:08	19:58			18:48	16:47
15	08:43	07:57	06:55		18:11 (3)		05:43	05:14	05:32	06:19	07:11			08:03	07:59
	16:52	17:49	18:41	4	18:15 (3)		21:28	22:04	21:56	21:06	19:56			18:45	16:46
16	08:43	07:55	06:53		18:12 (3)		05:42	05:14	05:33	06:21	07:13			08:04	08:01
	16:54	17:51	18:43	5	18:17 (3)		21:29	22:04	21:55	21:04	19:53			18:43	16:45
17	08:42	07:53	06:50		18:11 (3)		05:40	05:14	05:34	06:22	07:14			08:06	08:03
	16:56	17:53	18:45	8	18:19 (3)		21:31	22:05	21:54	21:02	19:51			18:41	16:43
18	08:41	07:51	06:48		18:12 (3)		05:38	05:14	05:36	06:24	07:16			08:08	08:05
	16:57	17:55	18:47	9	18:21 (3)		21:32	22:05	21:53	21:00	19:49			18:39	16:42
19	08:40	07:49	06:46		18:13 (3)		05:37	05:14	05:37	06:26	07:18			08:10	08:06
	16:59	17:57	18:49	10	18:23 (3)		21:34	22:05	21:52	20:58	19:46			18:37	16:40
20	08:38	07:47	06:43		18:13 (3)		05:36	05:14	05:38	06:27	07:19			08:12	08:08
	17:01	17:59	18:50	11	18:24 (3)		21:35	22:06	21:50	20:56	19:44			18:34	16:39
21	08:37	07:44	06:41		18:16 (3)		05:34	05:14	05:40	06:29	07:21			08:13	08:10
	17:03	18:01	18:52	7	18:23 (3)		21:37	22:06	21:49	20:53	19:41			18:32	16:38
22	08:36	07:42	06:38		06:27		05:33	05:14	05:41	06:31	07:23	19:02 (3)	08:15	08:12	08:48
	17:04	18:03	18:54		20:48		21:38	22:06	21:48	20:51	19:39	5	19:07 (3)	18:30	16:37
23	08:35	07:40	06:36		06:25		05:32	05:15	05:42	06:32	07:24		18:58 (3)	08:17	08:13
	17:06	18:05	18:56		20:50		21:40	22:06	21:46	20:49	19:37	11	19:09 (3)	18:28	16:36
24	08:34	07:38	06:34		06:23		05:30	05:15	05:44	06:34	07:26		18:57 (3)	08:19	08:15
	17:08	18:06	18:57		20:52		21:41	22:07	21:45	20:47	19:34	10	19:07 (3)	18:26	16:34
25	08:32	07:36	06:31		06:21		05:29	05:15	05:45	06:36	07:28		18:55 (3)	07:21	08:17
	17:10	18:08	18:59		20:54		21:42	22:07	21:44	20:45	19:32	9	19:04 (3)	17:24	16:33
26	08:31	07:34	06:29		06:19		05:28	05:16	05:47	06:37	07:30		18:54 (3)	07:23	08:18
	17:11	18:10	19:01		20:55		21:44	22:07	21:42	20:42	19:30	8	19:02 (3)	17:22	16:32
27	08:30	07:32	06:27		06:16		05:27	05:16	05:48	06:39	07:31		18:53 (3)	07:24	08:20
	17:13	18:12	19:03		20:57		21:45	22:06	21:41	20:40	19:27	7	19:00 (3)	17:20	16:31
28	08:28	07:29	06:24		06:14		05:26	05:16	05:50	06:41	07:33		18:52 (3)	07:26	08:21
	17:15	18:14	19:04		20:59		21:47	22:06	21:39	20:38	19:25	5	18:57 (3)	17:18	16:30
29	08:27		07:22		06:12		05:24	05:17	05:51	06:42	07:35		18:52 (3)	07:28	08:23
	17:17		20:06		21:01		21:48	22:06	21:37	20:36	19:22	3	18:55 (3)	17:16	16:30
30	08:25		07:20		06:10		05:23	05:18	05:53	06:44	07:36		17:02	16:30	16:29
	17:19		20:08		21:02		21:49	22:06	21:36	20:33	19:20		17:14	16:29	16:31
31	08:24		07:17				05:23		05:55	06:46			17:12		16:32
	17:21		20:10				21:50		21:34	20:31					
Potential sun hours	256	276	367		418		489	503	506	456	381		330	263	240
Total, worst case				55		42						102			
Sun reduction				0.24		0.35						0.28			
Oper. time red.				1.00		1.00						1.00			
Wind dir. red.				0.67		0.68						0.68			
Total reduction				0.16		0.24						0.19			
Total, real				9		10						20			

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Kathryn Feeney / kfeeney@jodireland.com

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16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: EF - H136

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
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N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:51 16:34	08:22 17:23	07:27 18:16	07:15 20:12	06:09 21:04	05:22 21:52	05:18 22:06	05:56 21:33	06:48 20:29	07:38 19:18	07:34 17:10	08:02 (2) 16:28
2	08:50 16:35	08:21 17:25	07:25 18:18	07:13 20:13	06:07 21:06	05:21 21:53	05:19 22:06	05:58 21:31	06:49 20:27	07:40 19:16	07:36 17:08	08:03 (2) 16:28
3	08:50 16:36	08:19 17:27	07:23 18:20	07:10 20:15	06:05 21:08	05:20 21:54	05:20 22:05	05:59 21:29	06:51 20:24	07:42 19:13	07:38 17:06	08:29 16:27
4	08:50 16:37	08:17 17:29	07:21 18:22	07:08 20:17	06:03 21:09	05:19 21:55	05:21 22:05	06:01 21:28	06:53 20:22	07:44 19:11	07:39 17:04	08:31 16:26
5	08:50 16:38	08:16 17:30	07:18 18:23	07:06 20:19	06:01 21:11	05:19 21:56	05:22 22:04	06:03 21:26	06:54 20:20	07:45 19:08	07:41 17:03	08:32 16:26
6	08:49 16:40	08:14 17:32	07:16 18:25	07:03 20:21	05:59 21:13	05:18 21:57	05:22 22:04	06:04 21:24	06:56 20:17	07:47 19:06	07:43 17:01	08:33 16:25
7	08:49 16:41	08:12 17:34	07:14 18:27	07:01 20:22	05:57 21:15	05:17 21:58	05:23 22:03	06:06 21:22	06:58 20:15	07:49 19:04	07:45 16:59	08:35 16:25
8	08:48 16:42	08:10 17:36	07:11 18:29	06:59 20:24	05:55 21:16	05:17 21:59	05:24 22:02	06:08 21:20	06:59 20:13	07:50 19:01	07:47 16:57	08:36 16:24
9	08:48 16:44	08:09 17:38	07:09 18:31	06:56 20:26	05:53 21:18	05:16 22:00	05:25 22:02	06:09 21:18	07:01 20:10	07:52 18:59	07:49 16:56	08:37 16:24
10	08:47 16:45	08:07 17:40	07:07 18:34 (2)	06:54 20:28	05:52 21:20	05:16 22:01	05:26 22:01	06:11 21:16	07:03 20:08	07:54 18:57	07:50 16:54	08:38 16:24
11	08:47 16:46	08:05 17:42	07:05 18:35 (2)	06:52 20:29	05:50 21:21	05:15 22:01	05:27 22:01	06:12 21:14	07:05 20:06	07:56 18:55	07:52 16:52	08:39 16:24
12	08:46 16:48	08:03 17:44	07:02 18:36 (2)	06:49 20:31	05:48 21:23	05:15 22:02	05:28 21:59	06:14 21:12	07:06 20:03	07:58 18:52	07:54 16:51	08:40 16:24
13	08:45 16:49	08:01 17:46	07:00 18:38 (2)	06:47 20:33	05:47 21:25	05:15 22:03	05:30 21:58	06:16 21:10	07:08 20:01	07:59 18:50	07:56 16:49	08:41 16:24
14	08:45 16:51	07:59 17:48	06:58 18:40 (2)	06:45 20:35	05:45 21:26	05:14 22:03	05:31 21:57	06:17 21:08	07:10 19:58	08:01 18:48	07:58 16:48	08:42 16:24
15	08:44 16:53	07:57 17:50	06:55 18:42 (2)	06:43 20:36	05:43 21:28	05:14 22:04	05:32 21:56	06:19 21:06	07:11 19:56	08:03 18:46	08:00 16:46	08:43 16:24
16	08:43 16:54	07:55 17:52	06:53 18:43 (2)	06:40 20:38	05:42 21:29	05:14 22:04	05:33 21:55	06:21 21:04	07:13 19:54	08:05 18:43	08:01 16:45	08:44 16:24
17	08:42 16:56	07:53 17:53	06:50 18:45 (2)	06:38 20:40	05:40 21:31	05:14 22:05	05:35 21:54	06:22 21:02	07:15 19:51	08:06 18:41	08:03 16:43	08:45 16:24
18	08:41 16:58	07:51 17:55	06:48 18:47 (2)	06:36 20:42	05:39 21:32	05:14 22:05	05:36 21:53	06:24 21:00	07:16 19:49	08:08 18:39	08:05 16:42	08:46 16:24
19	08:40 16:59	07:49 17:57	06:46 18:49 (2)	06:34 20:43	05:37 21:34	05:14 22:06	05:37 21:52	06:26 20:58	07:18 19:46	08:10 18:37	08:07 16:41	08:46 16:24
20	08:39 17:01	07:47 17:59	06:43 18:51 (2)	06:32 20:45	05:36 21:36	05:14 22:06	05:38 21:51	06:28 20:56	07:20 19:44	08:12 18:35	08:08 16:39	08:47 16:25
21	08:38 17:03	07:45 18:01	06:41 18:52 (2)	06:29 20:47	05:34 21:37	05:14 22:06	05:40 21:49	06:29 20:54	07:21 19:42	08:14 18:32	08:10 16:38	08:48 16:25
22	08:36 17:04	07:43 18:03	06:39 18:54 (2)	06:27 20:49	05:33 21:38	05:14 22:07	05:41 21:48	06:31 20:51	07:23 19:39	08:15 18:30	08:12 16:37	08:48 16:26
23	08:35 17:06	07:40 18:05	06:36 18:56 (2)	06:25 20:50	05:32 21:40	05:15 22:07	05:43 21:47	06:33 20:49	07:25 19:37	08:17 18:28	08:14 16:36	08:49 16:26
24	08:34 17:08	07:38 18:07	06:34 18:58 (2)	06:23 20:52	05:30 21:41	05:15 22:07	05:44 21:45	06:34 20:47	07:26 19:34	08:19 18:26	08:15 16:35	08:49 16:27
25	08:33 17:10	07:36 18:09	06:32 18:59 (2)	06:21 20:54	05:29 21:43	05:15 22:07	05:46 21:44	06:36 20:45	07:28 19:32	08:21 18:24	08:17 16:34	08:50 16:27
26	08:31 17:12	07:34 18:10	06:29 19:01 (2)	06:19 20:56	05:28 21:44	05:16 22:07	05:47 21:42	06:38 20:43	07:30 19:30	08:23 18:22	08:19 16:33	08:50 16:28
27	08:30 17:13	07:32 18:12	06:27 19:03 (2)	06:17 20:57	05:27 21:45	05:16 22:07	05:49 21:41	06:39 20:40	07:31 19:27	08:25 18:20	08:20 16:32	08:50 16:29
28	08:28 17:15	07:30 18:14	06:24 19:05 (2)	06:15 20:59	05:26 21:47	05:17 22:07	05:50 21:39	06:41 20:38	07:33 19:25	08:27 18:18	08:22 16:31	08:50 16:30
29	08:27 17:17		07:22 20:06	06:13 21:01	05:25 21:48	05:17 22:06	06:43 21:38	07:35 20:36	07:35 19:23	08:28 18:16	08:23 16:30	08:50 16:30
30	08:25 17:19		07:20 20:08	06:11 21:03	05:24 21:49	05:18 22:06	06:44 21:36	07:37 20:34	07:37 19:20	08:25 18:14	08:25 16:29	08:51 16:31
31	08:24 17:21		07:17 20:10	06:07 21:51	05:23 21:51	05:15 22:06	06:46 21:34	07:32 20:31	07:32 17:12	08:00 (2) 08:04 (2)	08:00 (2) 16:32	08:51 16:32
Potential sun hours	256	276	367	418	489	503	506	456	381	330	263	240
Total, worst case												
Sun reduction		106								108	1	
Oper. time red.		0.21								0.24	0.19	
Wind dir. red.		1.00								1.00	1.00	
Total reduction		0.67								0.67	0.67	
Total, real		0.14								0.16	0.12	
		15								17	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	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: EG - H137

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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:32	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:35	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:26	19:15	17:08	16:28
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:06	06:01	05:19	05:22	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:25	20:19	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:40	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:07	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	21:59	22:01	21:18	20:10	18:59	16:56	16:24
10	08:47	08:06	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:46	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:02	21:58	21:10	20:01	18:50	16:49	16:24
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:23
15	08:43	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:50	18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:58	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:49	20:43	21:34	22:05	21:52	20:58	19:46	18:37	16:41	16:24
20	08:38	07:47	06:43	06:31	05:36	05:14	05:38	06:27	07:19	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:34	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:42	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:32	07:25	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:46	06:36	07:28	08:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:42	22:07	21:44	20:45	19:32	18:24	16:34	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:55	21:44	22:07	21:42	20:42	19:30	18:22	16:33	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:48	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:41	20:40	19:27	18:20	16:32	16:29
28	08:28	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:21	08:50
	17:15	18:14	19:05	20:59	21:46	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:13	05:25	05:17	05:52	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:36	19:22	18:16	16:30	16:30
30	08:25		07:20	06:10	05:24	05:18	05:53	06:44	07:36	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	264	240
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)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** EH - H138**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January		February		March		April		May		June	
1	08:50	08:22			07:27		07:15		06:08		05:22	
	16:34	17:23			18:16		20:12		21:04		21:52	
2	08:50	08:21			07:25		07:13		06:06		05:21	
	16:35	17:25			18:18		20:13		21:06		21:53	
3	08:50	08:19			07:23		07:10		06:05		05:20	
	16:36	17:26			18:20		20:15		21:08		21:54	
4	08:50	08:17			07:21	07:52 (8)	07:08		06:03		05:19	
	16:37	17:28			18:21	7 07:59 (8)	20:17		21:09		21:55	
5	08:50	08:16			07:18	07:50 (8)	07:06		06:01		05:18	
	16:38	17:30			18:23	11 08:01 (8)	20:19		21:11		21:56	
6	08:49	08:14			07:16	07:49 (8)	07:03		05:59		05:18	
	16:39	17:32			18:25	14 08:03 (8)	20:20		21:13		21:57	
7	08:49	08:12			07:14	07:47 (8)	07:01		05:57		05:17	
	16:41	17:34			18:27	15 08:02 (8)	20:22		21:15		21:58	
8	08:48	08:10			07:11	07:47 (8)	06:59		05:55		05:17	
	16:42	17:36			18:29	16 08:03 (8)	20:24		21:16		21:59	
9	08:48	08:08			07:09	07:47 (8)	06:56		05:53		05:16	
	16:43	17:38			18:31	16 08:03 (8)	20:26		21:18		22:00	
10	08:47	08:07			07:07	07:47 (8)	06:54	07:27 (10)	05:52		05:16	
	16:45	17:40			18:32	14 08:01 (8)	20:27	6 07:33 (10)	21:20		22:01	
11	08:47	08:05			07:04	07:48 (8)	06:52	07:25 (10)	05:50		05:15	
	16:46	17:42			18:34	13 08:01 (8)	20:29	11 07:36 (10)	21:21		22:01	
12	08:46	08:03			07:02	07:49 (8)	06:49	07:23 (10)	05:48		05:15	
	16:48	17:44			18:36	10 07:59 (8)	20:31	14 07:37 (10)	21:23		22:02	
13	08:45	08:01			07:00	07:51 (8)	06:47	07:23 (10)	05:46		05:15	
	16:49	17:46			18:38	5 07:56 (8)	20:33	15 07:38 (10)	21:24		22:03	
14	08:44	07:59			06:57	06:45	06:45	07:21 (10)	05:45		05:14	
	16:51	17:48			18:40	20:35	17 07:38 (10)	21:26	22:03			
15	08:44	07:57			06:55	06:43	07:21 (10)	05:43	05:14			
	16:52	17:49			18:41	20:36	17 07:38 (10)	21:28	22:04			
16	08:43	07:55			06:53	06:40	07:21 (10)	05:42	05:14			
	16:54	17:51			18:43	20:38	17 07:38 (10)	21:29	22:04			
17	08:42	07:53	08:20 (6)	06:50	06:38	07:21 (10)	05:40	05:14				
	16:56	17:53	6 08:26 (6)	18:45	20:40	16 07:37 (10)	21:31	22:05				
18	08:41	07:51	08:19 (6)	06:48	06:36	07:21 (10)	05:39	05:14				
	16:57	17:55	9 08:28 (6)	18:47	20:42	16 07:37 (10)	21:32	22:05				
19	08:40	07:49	08:18 (6)	06:46	06:34	07:21 (10)	05:37	05:14				
	16:59	17:57	11 08:29 (6)	18:49	20:43	14 07:35 (10)	21:34	22:06				
20	08:39	07:47	08:16 (6)	06:43	06:31	07:22 (10)	05:36	05:14				
	17:01	17:59	12 08:28 (6)	18:50	20:45	11 07:33 (10)	21:35	22:06				
21	08:38	07:45	08:17 (6)	06:41	06:29	07:24 (10)	05:34	05:14				
	17:03	18:01	11 08:28 (6)	18:52	20:47	7 07:31 (10)	21:37	22:06				
22	08:36	07:43	08:17 (6)	06:39	06:27		05:33	05:14				
	17:04	18:03	11 08:28 (6)	18:54	20:49		21:38	22:06				
23	08:35	07:40	08:18 (6)	06:36	07:03 (9)	06:25	05:32	05:15				
	17:06	18:05	10 08:28 (6)	18:56	8 07:11 (9)	20:50	21:40	22:07				
24	08:34	07:38	08:19 (6)	06:34	07:02 (9)	06:23	05:30	05:15				
	17:08	18:07	7 08:26 (6)	18:57	10 07:12 (9)	20:52	21:41	22:07				
25	08:33	07:36		06:31	07:01 (9)	06:21	05:29	05:15				
	17:10	18:08		18:59	12 07:13 (9)	20:54	21:43	22:07				
26	08:31	07:34		06:29	06:59 (9)	06:19	05:28	05:16				
	17:12	18:10		19:01	14 07:13 (9)	20:56	21:44	22:07				
27	08:30	07:32		06:27	06:59 (9)	06:17	05:27	05:16				
	17:13	18:12		19:03	14 07:13 (9)	20:57	21:45	22:07				
28	08:28	07:29		06:24	06:59 (9)	06:14	05:26	05:17				
	17:15	18:14		19:05	13 07:12 (9)	20:59	21:47	22:07				
29	08:27			07:22	08:00 (9)	06:12	05:25	05:17				
	17:17			20:06	11 08:11 (9)	21:01	21:48	22:06				
30	08:25			07:20	08:01 (9)	06:10	05:23	05:18				
	17:19			20:08	9 08:10 (9)	21:03	21:49	22:06				
31	08:24			07:17	08:04 (9)		05:23					
	17:21			20:10	1 08:05 (9)		21:50					
Potential sun hours	255	276		367		418	489	503				
Total, worst case			77		213		161					
Sun reduction			0.21		0.24		0.35					
Oper. time red.			1.00		1.00		1.00					
Wind dir. red.			0.67		0.68		0.67					
Total reduction			0.14		0.17		0.24					
Total, real			11		35		38					

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: EH - H138

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
229 231 210 320 200 640 608 691 568 658 724 1,086 671 733 661 530 8,760

	July	August	September	October	November	December
1	05:18 22:06	05:56 21:33	06:48 20:29	07:24 (10) 07:35 (10)	07:38 19:18	08:29 (8) 17:10
2	05:19 22:06	05:58 21:31	06:49 20:27	07:26 (10) 07:32 (10)	07:40 19:15	08:27 (8) 17:08
3	05:20 22:05	05:59 21:29	06:51 20:24	07:42 19:13	08:25 (8) 14 08:39 (8)	17:07 17:06
4	05:21 22:05	06:01 21:27	06:53 20:22	07:43 19:11	08:24 (8) 16 08:40 (8)	17:39 17:04
5	05:21 22:04	06:03 21:26	06:54 20:20	07:45 19:08	08:24 (8) 16 08:40 (8)	17:41 17:02
6	05:22 22:04	06:04 21:24	06:56 20:17	07:47 19:06	08:24 (8) 16 08:40 (8)	17:43 17:01
7	05:23 22:03	06:06 21:22	06:58 20:15	07:49 19:04	08:23 (8) 15 08:38 (8)	17:45 16:59
8	05:24 22:02	06:07 21:20	06:59 20:13	07:50 19:01	08:24 (8) 13 08:37 (8)	17:47 16:57
9	05:25 22:02	06:09 21:18	07:01 20:10	07:52 18:59	08:26 (8) 10 08:36 (8)	17:49 16:56
10	05:26 22:01	06:11 21:16	07:03 20:08	07:54 18:57	08:28 (8) 5 08:33 (8)	17:50 16:54
11	05:27 22:00	06:12 21:14	07:04 20:05	07:56 18:54	07:52 16:52	17:52 16:24
12	05:28 21:59	06:14 21:12	07:06 20:03	07:57 18:52	07:54 16:51	17:54 16:23
13	05:29 21:58	06:16 21:10	07:08 20:01	07:59 08:01 (9)	07:56 16:49	17:56 16:23
14	05:31 21:57	06:17 21:08	07:09 19:58	07:50 (9) 08:01 (9)	08:01 16:48	17:58 16:23
15	05:32 21:56	06:19 21:06	07:11 19:56	07:49 (9) 08:02 (9)	08:03 16:46	17:59 16:23
16	05:33 21:55	06:21 21:04	07:13 19:54	07:48 (9) 08:01 (9)	08:05 16:45	17:59 16:24
17	05:34 21:54	06:22 21:02	07:14 19:51	07:48 (9) 08:01 (9)	08:06 16:43	17:59 16:24
18	05:36 21:53	06:24 21:00	07:16 19:49	07:48 (9) 08:01 (9)	08:08 16:42	17:59 16:24
19	05:37 21:52	06:26 20:58	07:18 19:46	07:48 (9) 07:59 (9)	08:10 16:40	17:59 16:24
20	05:38 21:51	06:27 20:56	07:20 19:44	07:49 (9) 07:58 (9)	08:12 16:39	17:59 16:25
21	05:40 21:49	06:29 20:54	07:21 19:42	07:58 (9) 18:34	12 08:59 (6) 08:47 (6)	16:39 16:25
22	05:41 21:48	06:31 20:51	07:23 19:39	18:32 18:30	12 08:59 (6) 12 08:59 (6)	16:38 16:25
23	05:42 21:47	06:32 20:49	07:25 19:37	18:32 18:28	12 08:59 (6) 11 08:58 (6)	16:37 16:26
24	05:44 21:45	06:34 20:47	07:26 19:34	18:32 18:26	9 08:58 (6) 9 08:57 (6)	16:37 16:27
25	05:45 21:44	06:36 20:45	07:28 19:32	18:32 17:24	3 07:51 (6) 3 07:54 (6)	16:37 16:27
26	05:47 21:42	06:37 20:43	07:30 19:30	17:23 17:22	16:33 16:32	16:27 16:28
27	05:48 21:41	06:39 20:40	07:31 19:27	17:25 17:20	16:32 16:31	16:28 16:29
28	05:50 21:39	06:41 20:38	07:33 19:25	17:26 17:18	16:32 16:31	16:28 16:29
29	05:51 21:38	06:43 20:36	07:35 19:22	17:28 17:16	16:33 16:30	16:29 16:30
30	05:53 21:36	06:44 20:33	07:37 19:20	17:30 17:14	16:30 16:29	16:30 16:31
31	05:55 21:34	06:46 20:31	07:39 19:18	17:32 17:12	16:30 16:28	16:30 16:32
Potential sun hours	506	456	381	330	263	240
Total, worst case		145	108	204		
Sun reduction		0.30	0.28	0.24		
Oper. time red.		1.00	1.00	1.00		
Wind dir. red.		0.67	0.68	0.67		
Total reduction		0.20	0.19	0.16		
Total, real		29	21	33		

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	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** EI - H139**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:32	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:35	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:26	19:15	17:08	16:28
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:06	06:01	05:19	05:22	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:25	20:19	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:40	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:07	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	21:59	22:01	21:18	20:10	18:59	16:56	16:24
10	08:47	08:06	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:46	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:02	21:58	21:10	20:01	18:50	16:49	16:24
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:23
15	08:43	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:50	18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:58	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:49	20:43	21:34	22:05	21:52	20:58	19:46	18:37	16:41	16:24
20	08:38	07:47	06:43	06:31	05:36	05:14	05:38	06:27	07:19	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:34	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:42	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:32	07:25	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:46	06:36	07:28	08:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:42	22:07	21:44	20:45	19:32	18:24	16:34	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:55	21:44	22:07	21:42	20:42	19:30	18:22	16:33	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:48	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:41	20:40	19:27	18:20	16:32	16:29
28	08:28	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:21	08:50
	17:15	18:14	19:05	20:59	21:46	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:13	05:25	05:17	05:52	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:36	19:22	18:16	16:30	16:30
30	08:25		07:20	06:10	05:24	05:18	05:53	06:44	07:36	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	264	240
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)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** EJ - H140**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:32	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:35	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:26	19:15	17:08	16:28
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:06	06:01	05:19	05:22	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:25	20:19	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:40	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
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	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:07	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	21:59	22:01	21:18	20:10	18:59	16:56	16:24
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	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
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	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
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	16:49	17:46	18:38	20:33	21:24	22:02	21:58	21:10	20:01	18:50	16:49	16:24
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:23
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	16:53	17:50	18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
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	16:58	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:49	20:43	21:34	22:05	21:52	20:58	19:46	18:37	16:41	16:24
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	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:34	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:42	18:32	16:38	16:25
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	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:32	07:25	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:46	06:36	07:28	08:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:42	22:07	21:44	20:45	19:32	18:24	16:34	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:55	21:44	22:07	21:42	20:42	19:30	18:22	16:33	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:48	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:41	20:40	19:27	18:20	16:32	16:29
28	08:28	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:21	08:50
	17:15	18:14	19:05	20:59	21:46	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:13	05:25	05:17	05:52	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:36	19:22	18:16	16:30	16:30
30	08:25		07:20	06:10	05:24	05:18	05:53	06:44	07:36	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	264	240
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)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: EK - H141

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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50 16:34	08:22 17:23	07:27 18:16	07:15 20:11	06:08 21:04	05:22 21:51	05:18 22:06	05:56 21:32	06:48 20:29	07:38 19:18	07:34 17:10	08:26 16:28
2	08:50 16:35	08:20 17:25	07:25 18:18	07:12 20:13	06:06 21:06	05:21 21:53	05:19 22:05	05:58 21:31	06:49 20:26	07:40 19:15	07:35 17:08	08:28 16:27
3	08:50 16:36	08:19 17:26	07:23 18:20	07:10 20:15	06:04 21:08	05:20 21:54	05:20 22:05	05:59 21:29	06:51 20:24	07:42 19:13	07:37 17:06	08:29 16:27
4	08:50 16:37	08:17 17:28	07:20 18:21	07:08 20:17	06:03 21:09	05:19 21:55	05:21 22:04	06:01 21:27	06:53 20:22	07:43 19:11	07:39 17:04	08:30 16:26
5	08:49 16:38	08:15 17:30	07:18 18:23	07:05 20:19	06:01 21:11	05:18 21:56	05:21 22:04	06:02 21:25	06:54 20:19	07:44 19:08	07:41 17:02	08:32 16:26
6	08:49 16:39	08:14 17:32	07:16 18:25	07:03 20:20	05:59 21:13	05:18 21:57	05:22 22:03	06:04 21:24	06:56 20:17	07:45 19:06	07:43 17:01	08:33 16:25
7	08:49 16:41	08:12 17:34	07:14 18:27	07:01 20:22	05:57 21:14	05:17 21:58	05:23 22:03	06:06 21:22	06:58 20:15	07:46 19:04	07:45 16:59	08:34 16:25
8	08:48 16:42	08:10 17:36	07:11 18:29	06:58 20:24	05:55 21:16	05:17 21:59	05:24 22:02	06:07 21:20	06:59 20:12	07:47 19:01	07:47 16:57	08:36 16:24
9	08:48 16:43	08:08 17:38	07:09 18:31	06:56 20:26	05:53 21:18	05:16 22:00	05:25 22:01	06:09 21:18	07:01 20:10	07:48 18:59	07:48 16:55	08:37 16:24
10	08:47 16:43	08:06 17:40	07:07 18:32	06:54 20:27	05:52 21:19	05:16 22:00	05:26 22:01	06:11 21:16	07:03 20:08	07:54 18:57	07:50 16:54	08:38 16:24
11	08:47 16:46	08:05 17:42	07:04 18:34	06:52 20:29	05:50 21:21	05:15 22:01	05:27 22:00	06:12 21:14	07:04 20:05	07:56 18:54	07:52 16:52	08:39 16:24
12	08:46 16:48	08:03 17:44	07:02 18:36	06:49 20:31	05:48 21:23	05:15 22:02	05:28 21:59	06:14 21:12	07:06 20:03	07:57 18:52	07:54 16:51	08:40 16:23
13	08:45 16:49	08:01 17:46	07:00 18:38	06:47 20:33	05:46 21:24	05:15 22:02	05:29 21:58	06:16 21:10	07:08 20:01	07:59 18:50	07:56 16:49	08:41 16:23
14	08:44 16:51	07:59 17:48	06:57 18:40	06:45 20:34	05:45 21:26	05:14 22:03	05:31 21:57	06:17 21:08	07:09 19:58	08:01 18:48	07:58 16:47	08:42 16:23
15	08:43 16:52	07:57 17:49	06:55 18:41	06:42 20:36	05:43 21:28	05:14 22:04	05:32 21:56	06:19 21:06	07:11 19:56	08:03 18:45	07:59 16:46	08:43 16:23
16	08:43 16:54	07:55 17:51	06:53 18:43	06:40 20:38	05:42 21:29	05:14 22:04	05:33 21:55	06:21 21:04	07:13 19:53	08:04 18:43	08:01 16:45	08:44 16:24
17	08:42 16:56	07:53 17:53	06:50 18:45	06:38 20:40	05:40 21:31	05:14 22:05	05:34 21:54	06:22 21:02	07:14 19:51	08:06 18:41	08:03 16:43	08:45 16:24
18	08:41 16:57	07:51 17:55	06:48 18:47	06:36 20:41	05:38 21:32	05:14 22:05	05:36 21:53	06:24 21:00	07:16 19:49	08:08 18:39	08:05 16:42	08:46 16:24
19	08:40 16:59	07:49 17:57	06:46 18:49	06:34 20:43	05:37 21:34	05:14 22:05	05:37 21:52	06:26 20:58	07:18 19:46	08:10 18:37	08:06 16:40	08:46 16:24
20	08:38 17:01	07:47 17:59	06:43 18:50	06:31 20:45	05:36 21:35	05:14 22:06	05:38 21:50	06:27 20:56	07:19 19:44	08:12 18:34	08:08 16:39	08:47 16:25
21	08:37 17:03	07:44 18:01	06:41 18:52	06:29 20:47	05:34 21:37	05:14 22:06	05:40 21:49	06:29 20:53	07:21 19:41	08:13 18:32	08:10 16:38	08:47 16:25
22	08:36 17:04	07:42 18:03	06:38 18:54	06:27 20:48	05:33 21:38	05:14 22:06	05:41 21:48	06:31 20:51	07:23 19:39	08:15 18:30	08:12 16:37	08:48 16:25
23	08:35 17:06	07:40 18:05	06:36 18:56	06:25 20:50	05:32 21:40	05:15 22:06	05:42 21:46	06:32 20:49	07:24 19:37	08:17 18:28	08:13 16:36	08:48 16:26
24	08:34 17:08	07:38 18:06	06:34 18:57	06:23 20:52	05:30 21:41	05:15 22:07	05:44 21:45	06:34 20:47	07:26 19:34	08:19 18:26	08:15 16:34	08:49 16:27
25	08:32 17:10	07:36 18:08	06:31 18:59	06:21 20:54	05:29 21:42	05:15 22:07	05:45 21:44	06:36 20:45	07:28 19:32	08:21 18:24	08:17 16:33	08:49 16:27
26	08:31 17:11	07:34 18:10	06:29 19:01	06:19 20:55	05:28 21:44	05:16 22:07	05:47 21:42	06:37 20:42	07:30 19:30	08:23 18:22	08:18 16:32	08:50 16:28
27	08:30 17:13	07:32 18:12	06:27 19:03	06:16 20:57	05:27 21:45	05:16 22:06	05:48 21:41	06:39 20:40	07:31 19:27	08:24 18:20	08:20 16:31	08:50 16:29
28	08:28 17:15	07:29 18:14	06:24 19:04	06:14 20:59	05:26 21:47	05:16 22:06	05:50 21:39	06:41 20:38	07:33 19:25	08:26 18:17	08:21 16:30	08:50 16:29
29	08:27 17:17	07:22 18:17	06:22 19:06	06:12 21:01	05:24 21:48	05:17 22:06	05:51 21:37	06:42 20:36	07:35 19:22	08:28 18:15	08:23 16:30	08:50 16:30
30	08:25 17:19	07:20 18:19	06:20 19:08	06:10 21:02	05:23 21:49	05:18 22:06	05:53 21:36	06:44 20:33	07:36 19:20	08:30 18:12	08:25 16:29	08:50 16:31
31	08:24 17:21	07:17 18:20	06:17 19:10	06:08 21:10	05:23 21:50	05:16 22:06	05:54 21:34	06:46 20:31	07:37 19:12	08:31 18:10	08:26 16:28	08:50 16:32
Potential sun hours	256	276	367	418	489	503	506	456	381	330	263	240
Total, worst case			51	40					91			
Sun reduction			0.24	0.35					0.28			
Oper. time red.			1.00	1.00					1.00			
Wind dir. red.			0.67	0.68					0.67			
Total reduction			0.16	0.24					0.19			
Total, real			8	10					17			

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	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
Kathryn Feeney / kfeeney@jodireland.com
Calculated:
16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: EL - H142

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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:51 16:34	08:22 17:23	07:27 18:16	07:15 20:12	06:09 21:04	05:22 21:52	05:18 22:06	05:56 21:33	06:48 20:29	07:38 19:18	07:34 17:10	08:02 (2) 16:28
2	08:50 16:35	08:21 17:25	07:25 18:18	07:13 20:13	06:07 21:06	05:21 21:53	05:19 22:06	05:58 21:31	06:49 20:27	07:40 19:15	07:36 17:08	08:04 (2) 16:28
3	08:50 16:36	08:19 17:27	07:23 18:20	07:10 20:15	06:05 21:08	05:20 21:54	05:20 22:05	05:59 21:29	06:51 20:24	07:42 19:13	07:38 17:06	08:06 (2) 16:27
4	08:50 16:37	08:17 17:29	07:21 18:22	07:08 20:17	06:03 21:10	05:19 21:55	05:21 22:05	06:01 21:28	06:53 20:22	07:44 19:11	07:39 17:04	08:08 (2) 16:26
5	08:50 16:38	08:16 17:30	07:18 18:23	07:06 20:19	06:01 21:11	05:19 21:56	05:22 22:04	06:03 21:26	06:54 20:20	07:45 19:08	07:41 17:03	08:10 (2) 16:26
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7	08:49 16:41	08:12 17:34	07:14 18:27	07:01 20:22	05:57 21:15	05:17 21:58	05:23 22:03	06:06 21:22	06:58 20:15	07:49 19:04	07:45 16:59	08:35 16:25
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16	08:43 16:54	07:55 17:52	06:53 18:43	06:40 20:38	05:42 21:29	05:14 22:04	05:33 21:55	06:21 21:04	07:13 19:54	08:05 18:45	08:01 16:45	08:44 16:24
17	08:42 16:56	07:53 17:53	06:50 18:45	06:38 20:40	05:40 21:31	05:14 22:05	05:35 21:54	06:22 21:02	07:15 19:51	08:06 18:41	08:03 16:43	08:45 16:24
18	08:41 16:58	07:51 17:55	06:48 18:47	06:36 20:42	05:39 21:32	05:14 22:05	05:36 21:53	06:24 21:00	07:16 19:49	08:08 18:39	08:05 16:42	08:46 16:24
19	08:40 16:59	07:49 17:57	06:46 18:49	06:34 20:43	05:37 21:34	05:14 22:06	05:37 21:52	06:26 20:58	07:18 19:46	08:10 18:37	08:07 16:41	08:46 16:24
20	08:39 17:01	07:47 17:59	06:43 18:51	06:32 20:45	05:36 21:36	05:14 22:06	05:38 21:51	06:28 20:56	07:20 19:44	08:12 18:35	08:08 16:39	08:47 16:25
21	08:38 17:03	07:45 18:01	06:41 18:52	06:29 20:47	05:34 21:37	05:14 22:06	05:40 21:49	06:29 20:54	07:21 19:42	08:14 18:32	08:10 16:38	08:48 16:25
22	08:36 17:04	07:43 18:03	06:39 18:54	06:27 20:49	05:33 21:38	05:14 22:07	05:41 21:48	06:31 20:51	07:23 19:39	08:15 18:30	08:12 16:37	08:48 16:26
23	08:35 17:06	07:40 18:05	06:36 18:56	06:25 20:50	05:32 21:40	05:15 22:07	05:43 21:47	06:33 20:49	07:25 19:37	08:17 18:28	08:14 16:36	08:49 16:26
24	08:34 17:08	07:38 18:07	06:34 18:58	06:23 20:52	05:30 21:41	05:15 22:07	05:44 21:45	06:34 20:47	07:26 19:34	08:19 18:26	08:15 16:35	08:49 16:27
25	08:33 17:10	07:36 18:09	06:32 18:59	06:21 20:54	05:29 21:43	05:15 22:07	05:46 21:44	06:36 20:45	07:28 19:32	08:21 17:24	08:17 16:34	08:50 16:27
26	08:31 17:12	07:34 18:10	06:29 19:01	06:19 20:56	05:28 21:44	05:16 22:07	05:47 21:42	06:38 20:43	07:30 19:30	08:23 17:22	08:19 16:33	08:50 16:28
27	08:30 17:13	07:32 18:12	06:27 19:03	06:17 20:57	05:27 21:45	05:16 22:07	05:49 21:41	06:39 20:40	07:31 19:27	08:25 17:20	08:20 16:32	08:50 16:29
28	08:28 17:15	07:30 18:14	06:24 19:05	06:15 20:59	05:26 21:47	05:17 22:07	05:50 21:39	06:41 20:38	07:33 19:25	08:26 17:18	08:22 16:31	08:50 16:30
29	08:27 17:17	07:22 18:13	06:13 20:06	06:13 21:01	05:25 21:48	05:17 22:06	06:43 21:38	07:35 20:36	07:35 19:23	08:28 17:16	08:23 16:30	08:50 16:30
30	08:25 17:19	07:20 18:14	06:11 20:08	06:11 21:03	05:24 21:49	05:18 22:06	06:44 21:36	07:37 20:34	07:37 19:20	08:30 17:14	08:25 16:29	08:51 16:31
31	08:24 17:21	07:19 18:15	06:10 20:10	06:10 21:04	05:23 21:51	05:17 22:06	06:46 21:34	07:38 20:31	07:38 17:12	08:31 (2) 16:29	08:31 (2) 16:32	08:51 16:32
Potential sun hours	256	276	367	418	489	503	506	456	381	330	263	240
Total, worst case												
Sun reduction		106								68	38	
Oper. time red.		0.21								0.24	0.19	
Wind dir. red.		1.00								1.00	1.00	
Total reduction		0.66								0.66	0.66	
Total, real		0.14								0.16	0.12	
		15								11	5	

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	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: EM - H143

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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:32	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:35	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:26	19:15	17:08	16:28
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:06	06:01	05:19	05:22	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:25	20:19	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:40	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:07	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	21:59	22:01	21:18	20:10	18:59	16:56	16:24
10	08:47	08:06	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:46	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:02	21:58	21:10	20:01	18:50	16:49	16:24
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:23
15	08:43	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:50	18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:58	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:49	20:43	21:34	22:05	21:52	20:58	19:46	18:37	16:41	16:24
20	08:38	07:47	06:43	06:31	05:36	05:14	05:38	06:27	07:19	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:34	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:42	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:32	07:25	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:46	06:36	07:28	08:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:42	22:07	21:44	20:45	19:32	18:24	16:34	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:55	21:44	22:07	21:42	20:42	19:30	18:22	16:33	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:48	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:41	20:40	19:27	18:20	16:32	16:29
28	08:28	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:21	08:50
	17:15	18:14	19:04	20:59	21:46	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:12	05:25	05:17	05:52	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:36	19:22	18:16	16:30	16:30
30	08:25		07:20	06:10	05:24	05:18	05:53	06:44	07:36	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	264	240
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)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** EN - H144**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:32	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:35	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:26	19:15	17:08	16:28
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:06	06:01	05:19	05:22	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:25	20:19	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:40	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:07	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	21:59	22:01	21:18	20:10	18:59	16:56	16:24
10	08:47	08:06	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:46	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:02	21:58	21:10	20:01	18:50	16:49	16:24
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:23
15	08:43	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:50	18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:58	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:49	20:43	21:34	22:05	21:52	20:58	19:46	18:37	16:41	16:24
20	08:38	07:47	06:43	06:31	05:36	05:14	05:38	06:27	07:19	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:34	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:41	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:32	07:25	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:46	06:36	07:28	08:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:42	22:07	21:44	20:45	19:32	18:24	16:34	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:55	21:44	22:06	21:42	20:42	19:30	18:22	16:33	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:48	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:41	20:40	19:27	18:20	16:32	16:29
28	08:28	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:21	08:50
	17:15	18:14	19:04	20:59	21:46	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:12	05:25	05:17	05:52	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:36	19:22	18:16	16:30	16:30
30	08:25		07:20	06:10	05:24	05:18	05:53	06:44	07:36	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	264	240
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)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: EO - H145

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
229 231 210 320 200 640 608 691 568 658 724 1,086 671 733 661 530 8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:32	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:35	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:26	19:15	17:08	16:28
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:06	06:01	05:19	05:22	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:25	20:19	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:40	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:07	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	21:59	22:01	21:18	20:10	18:59	16:56	16:24
10	08:47	08:06	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:46	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:02	21:58	21:10	20:01	18:50	16:49	16:24
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:23
15	08:43	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:50	18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:58	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:49	20:43	21:34	22:05	21:52	20:58	19:46	18:37	16:41	16:24
20	08:38	07:47	06:43	06:31	05:36	05:14	05:38	06:27	07:19	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:34	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:42	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:32	07:25	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:46	06:36	07:28	08:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:42	22:07	21:44	20:45	19:32	18:24	16:34	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:55	21:44	22:06	21:42	20:42	19:30	18:22	16:33	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:48	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:41	20:40	19:27	18:20	16:32	16:29
28	08:28	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:21	08:50
	17:15	18:14	19:04	20:59	21:46	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:13	05:25	05:17	05:52	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:36	19:22	18:16	16:30	16:30
30	08:25		07:20	06:10	05:24	05:18	05:53	06:44	07:36	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	264	240
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)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: EP - H146

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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:51 16:34	08:22 17:23		07:27 18:16	06:09 20:12	05:22 21:04	05:18 21:52	05:56 22:06	06:48 21:33	07:38 20:29		08:02 (2) 17:10
2	08:50 16:35	08:21 17:25		07:25 18:18	06:07 20:13	05:21 21:06	05:19 21:53	05:19 22:06	06:49 21:31	07:40 20:27	7	08:09 (2) 17:08
3	08:50 16:36	08:19 17:27		07:23 18:20	06:05 20:15	05:20 21:08	05:20 21:54	05:59 22:05	06:51 21:29	07:42 20:24	4	08:08 (2) 17:06
4	08:50 16:37	08:17 17:29		07:21 18:22	06:03 20:17	05:19 21:10	05:21 21:55	06:01 22:05	06:53 21:28	07:44 20:22	2	08:08 (2) 17:04
5	08:50 16:38	08:16 17:30		07:18 18:23	06:01 20:19	05:19 21:11	05:22 21:56	06:03 22:04	06:54 21:26	07:45 20:20		08:08 (2) 17:03
6	08:49 16:40	08:14 17:32		07:16 18:25	05:59 20:21	05:18 21:13	05:22 21:57	06:04 22:04	06:56 21:24	07:47 20:17		08:33 17:01
7	08:49 16:41	08:12 17:34		07:14 18:27	05:57 20:22	05:17 21:15	05:23 21:58	06:06 22:03	06:58 21:22	07:49 20:15		08:35 16:59
8	08:48 16:42	08:10 17:36	08:36 (2)	07:11 18:29	05:55 20:24	05:17 21:16	05:24 21:59	06:08 22:02	06:59 21:20	07:50 20:13		08:36 16:57
9	08:48 16:44	08:09 17:38	08:34 (2)	07:09 18:31	05:53 20:26	05:16 21:18	05:25 22:00	06:09 21:18	07:01 20:10	07:52 18:59		08:37 16:56
10	08:47 16:45	08:07 17:40	08:32 (2)	07:07 18:33	05:52 20:28	05:16 21:20	05:26 22:01	06:11 21:16	07:03 20:08	07:54 18:57		08:38 16:54
11	08:47 16:46	08:05 17:42	08:30 (2)	07:05 18:34	05:50 20:29	05:15 21:21	05:27 22:01	06:12 21:14	07:05 20:06	07:56 18:55		08:39 16:52
12	08:46 16:48	08:03 17:44	08:28 (2)	07:02 18:36	05:48 20:31	05:15 21:23	05:28 22:02	06:14 21:12	07:06 20:03	07:58 18:52		08:40 16:51
13	08:45 16:49	08:01 17:46	08:26 (2)	07:00 18:38	05:47 20:33	05:15 21:25	05:30 22:03	06:16 21:10	07:08 20:01	07:59 18:50		08:41 16:49
14	08:45 16:51	07:59 17:48	08:24 (2)	06:58 18:40	05:45 20:35	05:14 21:26	05:31 22:03	06:17 21:08	07:10 19:58	08:01 18:48		08:42 16:48
15	08:44 16:53	07:57 17:50	08:22 (2)	06:55 18:42	05:43 20:36	05:14 21:28	05:32 22:04	06:19 21:06	07:11 19:56	08:03 18:46		08:43 16:46
16	08:43 16:54	07:55 17:52	08:24 (2)	06:53 18:43	05:42 20:38	05:14 21:29	05:33 22:04	06:21 21:04	07:13 19:54	08:05 18:43		08:44 16:45
17	08:42 16:56	07:53 17:53	08:26 (2)	06:50 18:45	05:40 20:40	05:14 21:31	05:35 22:05	06:22 21:02	07:15 19:51	08:06 18:41		08:45 16:43
18	08:41 16:58	07:51 17:55	08:34 (2)	06:48 18:47	05:39 20:42	05:14 21:32	05:36 22:05	06:24 21:00	07:16 19:49	08:08 18:39		08:46 16:42
19	08:40 16:59	07:49 17:57		06:46 18:49	05:34 20:43	05:14 21:34	05:37 22:06	06:26 20:58	07:18 19:46	08:10 18:37		08:47 16:41
20	08:39 17:01	07:47 17:59		06:43 18:51	05:36 20:45	05:14 21:36	05:38 22:06	06:28 20:56	07:20 19:44	08:12 18:35		08:48 16:39
21	08:38 17:03	07:45 18:01		06:41 18:52	05:34 20:47	05:14 21:37	05:40 22:06	06:29 20:54	07:21 19:42	08:14 18:32		08:49 16:38
22	08:36 17:04	07:43 18:03		06:39 18:54	05:27 20:49	05:14 21:38	05:41 22:07	06:31 20:51	07:23 19:39	08:15 18:30		08:48 16:37
23	08:35 17:06	07:40 18:05		06:36 18:56	05:25 20:50	05:15 21:40	05:43 22:07	06:33 20:49	07:25 19:37	08:17 18:28		08:49 16:36
24	08:34 17:08	07:38 18:07		06:34 18:58	05:23 20:52	05:15 21:41	05:44 22:07	06:34 20:47	07:26 19:34	08:19 18:26	08:59 (2)	08:49 16:35
25	08:33 17:10	07:36 18:09		06:32 18:59	05:21 20:54	05:15 21:43	05:46 22:07	06:36 20:45	07:28 19:32	08:17 18:24	07:55 (2)	08:50 16:34
26	08:31 17:12	07:34 18:10		06:29 19:01	05:19 20:56	05:16 21:44	05:47 22:07	06:38 20:43	07:30 19:30	08:19 18:22	08:05 (2)	08:50 16:33
27	08:30 17:13	07:32 18:12		06:27 19:03	05:17 20:57	05:16 21:45	05:49 22:07	06:39 20:40	07:31 19:27	08:20 18:20	07:53 (2)	08:50 16:32
28	08:28 17:15	07:30 18:14		06:24 19:05	05:15 20:59	05:17 21:47	05:50 22:07	06:41 19:25	07:33 18:18	08:22 18:14	07:54 (2)	08:50 16:31
29	08:27 17:17			07:22 20:06	06:13 21:01	05:25 21:48	05:52 22:06	06:43 20:36	07:35 19:23	08:23 18:16	07:56 (2)	08:50 16:30
30	08:25 17:19			07:20 20:08	06:11 21:03	05:24 21:49	05:18 22:06	06:44 20:34	07:37 19:20	08:25 18:14	07:58 (2)	08:51 16:29
31	08:24 17:21			07:17 20:10	06:08 21:51	05:23 21:51	05:55 21:34	06:46 20:31	07:32 19:12	08:26 18:09	08:09 (2)	08:51 16:32
Potential sun hours	256	276		367	418	489	503	506	456	381	330	263
Total, worst case												
Sun reduction		97										13
Oper. time red.		0.21										0.19
Wind dir. red.		1.00										1.00
Total reduction		0.67										0.67
Total, real		0.14										0.12
		13										2

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: EQ - H147

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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:11	21:04	21:51	22:06	21:32	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:12	06:06	05:21	05:19	05:58	06:49	07:40	07:35	08:27
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10	06:04	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:26	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:05	06:01	05:18	05:21	06:02	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:25	20:19	19:08	17:02	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:58	05:55	05:17	05:24	06:07	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:43	17:38	18:31	20:26	21:18	21:59	22:01	21:18	20:10	18:59	16:55	16:24
10	08:47	08:06	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
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	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:23
13	08:45	08:01	07:00	06:47	05:46	05:15	05:29	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:02	21:58	21:10	20:01	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:47	16:23
15	08:43	07:57	06:55	06:42	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:52	17:49	18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	16:23
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	20:13 (3)	21:31	22:05	21:54	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:57	17:55	18:47	20:41	20:14 (3)	21:32	22:05	21:53	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	20:21 (3)	07:18	08:10	08:46
	16:59	17:57	18:49	20:43	20:15 (3)	21:34	22:05	21:52	6 20:27 (3)	19:46	18:37	16:40
20	08:38	07:47	06:43	06:31	05:36	05:14	05:38	06:27	20:19 (3)	07:19	08:12	08:47
	17:01	17:59	18:50	20:45	20:17 (3)	21:35	22:06	21:50	8 20:27 (3)	19:44	18:34	16:39
21	08:37	07:44	06:41	06:29	05:34	05:14	05:40	06:29	20:16 (3)	07:21	08:13	08:47
	17:03	18:01	18:52	20:47	20:19 (3)	21:37	22:06	21:49	9 20:25 (3)	19:41	18:32	16:38
22	08:36	07:42	06:38	06:27	05:33	05:14	05:41	06:31	20:16 (3)	07:23	08:15	08:48
	17:04	18:03	18:54	20:48	20:20 (3)	21:38	22:06	21:48	7 20:23 (3)	19:39	18:30	16:37
23	08:35	07:40	06:36	06:25	05:32	05:15	05:42	06:32	20:15 (3)	07:24	08:17	08:48
	17:06	18:05	18:56	20:50	20:22 (3)	21:40	22:06	21:46	6 20:21 (3)	19:37	18:28	16:36
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	20:14 (3)	07:26	08:19	08:49
	17:08	18:06	18:57	20:52	5 20:21 (3)	21:41	22:06	21:45	5 20:19 (3)	19:34	18:26	16:34
25	08:32	07:36	06:31	06:21	05:29	05:15	05:45	06:36	20:14 (3)	07:28	07:21	08:17
	17:10	18:08	18:59	20:54	21:42	22:07	21:44	20:45	3 20:17 (3)	19:32	17:24	16:33
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:37	20:13 (3)	07:30	07:23	08:18
	17:11	18:10	19:01	20:55	21:44	22:07	21:42	20:42	1 20:14 (3)	19:30	17:22	16:32
27	08:30	07:32	06:27	06:17	05:27	05:16	05:48	06:39		07:31	07:24	08:20
	17:13	18:12	19:03	20:57	21:45	22:06	21:41	20:40		19:27	17:20	16:31
28	08:28	07:29	06:24	06:14	05:26	05:17	05:50	06:41		07:33	07:26	08:21
	17:15	18:14	19:04	20:59	21:46	22:06	21:39	20:38		19:25	17:18	16:31
29	08:27		07:22	06:12	05:25	05:17	05:51	06:42		07:35	07:28	08:23
	17:17		20:06	21:01	21:48	22:06	21:37	20:36		19:22	17:16	16:30
30	08:25		07:20	06:10	05:24	05:18	05:53	06:44		07:36	07:30	08:25
	17:19		20:08	21:02	21:49	22:06	21:36	20:33		19:20	17:14	16:29
31	08:24		07:17		05:23		05:55	06:46			07:32	08:50
	17:21		20:10		21:50		21:34	20:31			17:12	16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
Total, worst case				47				45				
Sun reduction				0.35				0.30				
Oper. time red.				1.00				1.00				
Wind dir. red.				0.67				0.67				
Total reduction				0.24				0.20				
Total, real				11				9				

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
Kathryn Feeney / kfeeney@jodireland.com
Calculated:
16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** ER - H148**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50 16:34	08:22 17:23	07:27 18:16	07:15 20:12	06:09 21:04	05:22 21:52	05:51 (2) 21:52	05:57 (2) 21:52	06:48 20:29	07:38 19:18	07:34 17:10	08:26 16:28
2	08:50 16:35	08:21 17:25	07:25 18:18	07:13 20:13	06:07 21:06	05:21 21:53	05:50 (2) 21:53	05:57 (2) 21:53	06:49 20:27	07:40 19:16	07:36 17:08	08:28 16:28
3	08:50 16:36	08:19 17:27	07:23 18:20	07:10 20:15	06:05 21:08	05:20 21:54	05:50 (2) 22:05	05:57 (2) 22:05	06:51 20:24	07:42 19:13	07:37 17:06	08:29 16:27
4	08:50 16:37	08:17 17:29	07:21 18:22	07:08 20:17	06:03 21:09	05:19 21:55	05:49 (2) 22:05	05:56 (2) 22:05	06:53 20:22	07:44 19:11	07:39 17:04	08:31 16:26
5	08:50 16:38	08:16 17:30	07:18 18:23	07:06 20:19	06:01 21:11	05:19 21:56	05:49 (2) 22:04	05:56 (2) 22:04	06:54 20:20	07:45 19:08	07:41 17:03	08:32 16:26
6	08:49 16:40	08:14 17:32	07:16 18:25	07:03 20:21	05:59 21:13	05:18 21:57	05:50 (2) 22:04	05:56 (2) 22:04	06:56 20:17	07:47 19:06	07:43 17:01	08:33 16:25
7	08:49 16:41	08:12 17:34	07:14 18:27	07:01 20:22	05:57 21:15	05:17 21:58	05:51 (2) 22:03	05:58 (2) 22:03	06:58 20:15	07:49 19:04	07:45 16:59	08:34 16:25
8	08:48 16:42	08:10 17:36	07:11 18:29	06:59 20:24	05:55 21:16	05:17 21:59	05:51 (2) 22:02	05:58 (2) 22:02	06:59 20:13	07:50 19:02	07:47 16:57	08:36 16:25
9	08:48 16:44	08:08 17:38	07:09 18:31	06:56 20:26	05:54 21:18	05:16 22:00	05:52 (2) 22:02	05:57 (2) 22:02	07:01 20:10	07:52 18:59	07:49 16:56	08:37 16:24
10	08:47 16:45	08:07 17:40	07:07 18:33	06:54 20:28	05:52 21:20	05:16 22:00	05:52 (2) 22:01	05:58 (2) 22:01	07:03 20:08	07:54 18:57	07:50 16:54	08:38 16:24
11	08:47 16:47	08:05 17:42	07:05 18:34	06:52 20:29	05:50 21:21	05:15 22:01	05:53 (2) 22:00	05:59 (2) 22:00	07:05 20:14	07:56 18:55	07:52 16:52	08:39 16:24
12	08:46 16:48	08:03 17:44	07:02 18:36	06:50 20:31	05:48 21:23	05:15 22:02	06:02 (2) 21:59	06:00 (2) 21:59	07:06 20:13	07:57 18:52	07:54 16:51	08:40 16:24
13	08:45 16:50	08:01 17:46	07:00 18:38	06:47 20:33	05:47 21:24	05:15 22:03	05:55 (2) 21:58	06:01 (2) 21:58	07:08 20:11	07:59 18:50	07:56 16:49	08:41 16:24
14	08:44 16:51	07:59 17:48	06:58 18:40	06:45 20:35	05:45 21:26	05:15 22:03	05:55 (2) 21:57	06:02 (2) 21:57	07:10 19:58	08:01 18:48	07:58 16:48	08:42 16:24
15	08:44 16:53	07:57 17:50	06:55 18:42	06:43 20:36	05:43 21:28	05:14 22:04	05:56 (2) 21:56	06:03 (2) 21:56	07:11 19:56	08:03 18:46	08:00 16:46	08:43 16:24
16	08:43 16:54	07:55 17:52	06:53 18:43	06:40 20:38	05:42 21:29	05:14 22:04	05:57 (2) 21:55	06:04 (2) 21:55	07:13 19:54	08:05 18:43	08:01 16:45	08:44 16:24
17	08:42 16:56	07:53 17:53	06:50 18:45	06:38 20:40	05:40 21:31	05:14 22:05	06:00 (2) 21:54	06:05 (2) 21:54	07:15 19:51	08:06 18:41	08:03 16:43	08:45 16:24
18	08:41 16:58	07:51 17:55	06:48 18:47	06:36 20:42	05:39 21:32	05:14 22:05	06:01 (2) 21:53	06:06 (2) 21:53	07:16 19:49	08:08 18:39	08:05 16:42	08:46 16:24
19	08:40 16:59	07:49 17:57	06:46 18:49	06:34 20:43	05:37 21:34	05:14 22:06	06:02 (2) 21:52	06:07 (2) 21:52	07:18 19:46	08:10 18:37	08:07 16:41	08:46 16:24
20	08:39 17:01	07:47 17:59	06:43 18:51	06:32 20:45	05:36 21:35	05:14 22:06	06:03 (2) 21:51	06:08 (2) 21:51	07:20 19:44	08:12 18:35	08:08 16:39	08:47 16:25
21	08:38 17:03	07:45 18:01	06:41 18:52	06:29 20:47	05:34 21:37	05:14 22:06	06:04 (2) 21:49	06:09 (2) 21:49	07:21 19:42	08:14 18:32	08:10 16:38	08:48 16:25
22	08:36 17:05	07:43 18:03	06:39 18:54	06:27 20:49	05:33 21:38	05:15 22:06	06:12 (2) 21:48	06:17 (2) 21:48	07:23 19:39	08:15 18:30	08:12 16:37	08:48 16:26
23	08:35 17:06	07:40 18:05	06:36 18:56	06:25 20:50	05:32 21:40	05:15 22:07	06:13 (2) 21:47	06:18 (2) 21:47	07:25 19:37	08:17 18:28	08:14 16:36	08:49 16:26
24	08:34 17:08	07:38 18:07	06:34 18:58	06:23 20:52	05:30 21:41	05:15 22:07	06:14 (2) 21:45	06:19 (2) 21:45	07:26 19:34	08:19 18:26	08:15 16:35	08:49 16:27
25	08:33 17:10	07:36 18:09	06:32 18:59	06:21 20:54	05:29 21:43	05:15 22:07	06:15 (2) 21:44	06:20 (2) 21:44	07:28 19:32	08:21 18:24	08:17 16:34	08:49 16:27
26	08:31 17:12	07:34 18:10	06:29 19:01	06:19 20:56	05:28 21:44	05:16 22:07	06:16 (2) 21:42	06:21 (2) 21:42	07:30 19:30	08:23 18:22	08:18 16:33	08:50 16:28
27	08:30 17:14	07:32 18:12	06:27 19:03	06:17 20:57	05:27 21:45	05:16 22:07	06:17 (2) 21:41	06:22 (2) 21:41	07:31 19:27	08:25 18:20	08:20 16:32	08:50 16:29
28	08:28 17:15	07:30 18:14	06:24 19:05	06:15 20:59	05:26 21:47	05:17 22:07	06:18 (2) 21:39	06:23 (2) 21:39	07:33 19:25	08:26 18:18	08:22 16:31	08:50 16:30
29	08:27 17:17		07:22 20:06	06:13 21:01	05:25 21:48	05:17 22:06	06:19 (2) 21:38	06:24 (2) 21:38	07:35 19:23	08:28 18:16	08:23 16:30	08:50 16:31
30	08:25 17:19		07:20 20:08	06:11 21:03	05:24 21:49	05:18 22:06	06:20 (2) 21:36	06:25 (2) 21:36	07:37 19:20	08:30 18:14	08:25 16:29	08:50 16:31
31	08:24 17:21		07:17 20:10		05:23 21:50	05:13 22:06	06:21 (2) 21:34	06:26 (2) 21:34	07:38 19:21	08:31 18:15		08:50 16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
Total, worst case					84	194	236					
Sun reduction					0.37	0.30	0.26					
Oper. time red.					1.00	1.00	1.00					
Wind dir. red.					0.63	0.63	0.63					
Total reduction					0.23	0.19	0.17					
Total, real					20	36	39					

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case

Shadow receptor: ES - H149

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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50 16:34	08:22 17:23	07:27 18:16	07:15 20:11	06:08 21:04	05:22 21:51	05:18 22:06	05:56 21:32	06:48 20:29	07:38 19:18	07:34 17:10	08:26 16:28
2	08:50 16:35	08:20 17:25	07:25 18:18	07:12 20:13	06:06 21:06	05:21 21:53	05:19 22:05	05:58 21:31	06:49 20:26	07:40 19:15	07:35 17:08	08:28 16:27
3	08:50 16:36	08:19 17:26	07:23 18:20	07:10 20:15	06:04 21:08	05:20 21:54	05:20 22:05	05:59 21:29	06:51 20:24	07:42 19:13	07:37 17:06	08:29 16:27
4	08:50 16:37	08:17 17:28	07:20 18:21	07:08 20:17	06:03 21:09	05:19 21:55	05:21 22:04	06:01 21:27	06:53 20:22	07:43 19:11	07:39 17:04	08:30 16:26
5	08:49 16:38	08:15 17:30	07:18 18:23	07:05 20:19	06:01 21:11	05:18 21:56	05:21 22:04	06:02 21:25	06:54 20:19	07:45 19:08	07:41 17:02	08:32 16:26
6	08:49 16:39	08:14 17:32	07:16 18:25	07:03 20:20	05:59 21:13	05:18 21:57	05:22 22:03	06:04 21:24	06:56 20:17	07:47 19:06	07:43 17:01	08:33 16:25
7	08:49 16:41	08:12 17:34	07:14 18:27	07:01 20:22	05:57 21:14	05:17 21:58	05:23 22:03	06:06 21:22	06:58 20:15	07:49 19:04	07:45 16:59	08:34 16:25
8	08:48 16:42	08:10 17:36	07:11 18:29	06:58 20:24	05:55 21:16	05:17 21:59	05:24 22:02	06:07 21:20	06:59 20:12	07:50 19:01	07:47 16:57	08:36 16:24
9	08:48 16:43	08:08 17:38	07:09 18:31	06:56 20:26	05:53 21:18	05:16 22:00	05:25 22:01	06:09 21:18	07:01 20:10	07:52 18:59	07:48 16:55	08:37 16:24
10	08:47 16:43	08:06 17:38	07:07 18:31	06:54 20:26	05:52 21:18	05:16 22:00	05:26 22:01	06:11 21:16	07:03 20:08	07:54 18:57	07:50 16:54	08:38 16:24
11	08:46 16:45	08:05 17:40	07:04 18:32	06:52 20:27	05:50 21:19	05:15 22:00	05:27 22:01	06:12 21:16	07:04 20:08	07:56 18:57	07:52 16:54	08:39 16:24
12	08:46 16:46	08:03 17:42	07:02 18:34	06:49 20:29	05:48 21:21	05:15 22:01	05:28 22:00	06:14 21:14	07:06 20:05	07:57 18:54	07:54 16:52	08:40 16:24
13	08:45 16:48	08:01 17:44	07:00 18:36	06:47 20:31	05:46 21:23	05:15 22:02	05:29 21:59	06:16 21:12	07:08 20:03	07:59 18:52	07:56 16:51	08:41 16:23
14	08:44 16:49	07:59 17:46	06:57 18:38	06:45 20:33	05:45 21:24	05:14 22:02	05:31 21:58	06:17 21:10	07:09 20:01	08:01 18:50	07:58 16:49	08:42 16:23
15	08:43 16:51	07:57 17:48	06:55 18:40	06:42 20:34	05:43 21:26	05:14 22:03	05:32 21:57	06:19 21:08	07:11 19:58	08:03 18:48	07:59 16:47	08:43 16:23
16	08:43 16:52	07:57 17:49	06:55 18:41	06:42 20:36	05:43 21:28	05:14 22:04	05:32 21:56	06:19 21:06	07:11 19:56	08:03 18:45	07:59 16:46	08:43 16:23
17	08:43 16:54	07:55 17:51	06:53 18:43	06:40 20:38	05:42 21:29	05:14 22:04	05:33 21:55	06:21 21:04	07:13 19:53	08:04 18:43	08:01 16:45	08:44 16:24
18	08:42 16:56	07:53 17:53	06:50 18:45	06:38 20:40	05:40 21:31	05:14 22:05	05:34 21:54	06:22 21:02	07:14 19:51	08:06 18:41	08:03 16:43	08:45 16:24
19	08:41 16:57	07:51 17:55	06:48 18:47	06:36 20:41	05:38 21:32	05:14 22:05	05:36 21:53	06:24 21:00	07:16 19:49	08:08 19:17 (3)	08:05 18:39	08:45 16:42
20	08:40 16:59	07:49 17:57	06:46 18:49	06:34 20:43	05:37 21:34	05:14 22:05	05:37 21:52	06:26 20:58	07:18 19:46	08:09 19:09 (3)	08:06 18:37	08:46 16:40
21	08:38 17:01	07:47 17:59	06:43 18:50	06:31 20:45	05:36 21:35	05:14 22:06	05:38 21:50	06:27 20:56	07:19 19:44	08:12 19:17 (3)	08:08 18:34	08:47 16:39
22	08:37 17:03	07:44 18:01	06:41 18:52	06:29 20:47	05:34 21:37	05:14 22:06	05:40 21:49	06:29 20:53	07:21 19:41	08:13 19:14 (3)	08:10 18:32	08:47 16:38
23	08:36 17:04	07:42 18:03	06:38 18:54	06:27 20:48	05:33 21:38	05:14 22:06	05:41 21:48	06:31 20:51	07:23 19:39	08:15 19:05 (3)	08:12 18:30	08:48 16:37
24	08:35 17:06	07:40 18:05	06:36 18:56	06:25 20:50	05:32 21:40	05:15 22:06	05:42 21:46	06:32 20:49	07:24 19:37	08:17 19:04 (3)	08:13 18:28	08:48 16:36
25	08:34 17:08	07:38 18:06	06:34 18:57	06:23 20:52	05:30 21:41	05:15 22:06	05:44 21:45	06:34 20:47	07:26 19:34	08:19 19:07 (3)	08:15 18:26	08:49 16:34
26	08:32 17:10	07:36 18:08	06:31 18:59	06:21 20:54	05:29 21:42	05:15 22:07	05:45 21:44	06:36 20:45	07:28 19:32	08:21 19:03 (3)	08:17 17:24	08:49 16:33
27	08:31 17:11	07:34 18:10	06:29 19:01	06:19 20:55	05:28 21:44	05:16 22:07	05:47 21:42	06:37 20:42	07:30 19:30	08:23 19:04 (3)	08:18 17:22	08:50 16:32
28	08:30 17:13	07:32 18:12	06:27 19:03	06:16 20:57	05:27 21:45	05:16 22:06	05:48 21:41	06:39 20:40	07:31 19:27	08:24 19:06 (3)	08:20 17:20	08:50 16:31
29	08:28 17:15	07:29 18:14	06:24 19:04	06:14 20:59	05:26 21:46	05:16 22:06	05:50 21:39	06:41 20:38	07:33 19:25	08:26 19:08 (3)	08:21 17:18	08:50 16:29
30	08:27 17:17	07:22 18:17	06:22 19:06	06:12 21:01	05:24 21:48	05:17 22:06	05:51 21:37	06:42 20:36	07:35 19:22	08:28 19:10 (3)	08:23 17:16	08:50 16:30
31	08:25 17:19	07:20 18:19	06:20 19:08	06:10 21:02	05:23 21:49	05:18 22:06	05:53 21:36	06:44 20:33	07:36 19:20	08:29 19:12 (3)	08:25 17:14	08:50 16:31
Potential sun hours	256	276	367	418	489	503	506	456	381	330	263	240
Total, worst case			44									
Sun reduction			0.24									
Oper. time red.			1.00									
Wind dir. red.			0.68									
Total reduction			0.17									
Total, real			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	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
Kathryn Feeney / kfeeney@jodireland.com
Calculated:
16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** ET - H150

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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

January		February		March		April		May		June	
1	08:50	08:22		09:01 (6)	07:27	08:35 (8)	07:15	06:08		07:20 (10)	05:22
	16:34	17:23	5	09:06 (6)	18:16	20	08:55 (8)	20:12	28	07:48 (10)	21:52
2	08:50	08:21		08:59 (6)	07:25		08:36 (8)	07:13		07:20 (10)	05:21
	16:35	17:25	9	09:08 (6)	18:18	18	08:54 (8)	20:13	28	07:48 (10)	21:53
3	08:50	08:19		08:58 (6)	07:23		08:38 (8)	07:10		07:21 (10)	05:20
	16:36	17:26	12	09:10 (6)	18:20	14	08:52 (8)	20:15	27	07:48 (10)	21:54
4	08:50	08:17		08:58 (6)	07:20		08:40 (8)	07:08		07:21 (10)	05:19
	16:37	17:28	13	09:11 (6)	18:21	8	08:48 (8)	20:17	26	07:47 (10)	21:55
5	08:50	08:16		08:57 (6)	07:18		07:05			07:22 (10)	05:18
	16:38	17:30	15	09:12 (6)	18:23		20:19		24	07:46 (10)	21:56
6	08:49	08:14		08:57 (6)	07:16		07:03			07:22 (10)	05:18
	16:39	17:32	15	09:12 (6)	18:25		20:20		23	07:45 (10)	21:57
7	08:49	08:12		08:38 (5)	07:14		07:01			07:24 (10)	05:17
	16:41	17:34	23	09:12 (6)	18:27		20:22		20	07:44 (10)	21:58
8	08:48	08:10		08:37 (5)	07:11		06:59			07:25 (10)	05:17
	16:42	17:36	24	09:12 (6)	18:29		20:24		17	07:42 (10)	21:59
9	08:48	08:08		08:36 (5)	07:09		06:56			07:26 (10)	05:16
	16:43	17:38	26	09:12 (6)	18:31		20:26		14	07:40 (10)	22:00
10	08:47	08:07		08:36 (5)	07:07		06:54			07:29 (10)	05:16
	16:45	17:40	24	09:11 (6)	18:32		20:27		10	07:39 (10)	22:01
11	08:47	08:05		08:36 (5)	07:04		06:52				05:15
	16:46	17:42	22	09:10 (6)	18:34		20:29				22:01
12	08:46	08:03		08:37 (5)	07:02		06:49				05:15
	16:48	17:44	19	09:09 (6)	18:36		20:31				22:02
13	08:45	08:01		08:38 (5)	07:00		06:47				05:15
	16:49	17:46	8	08:46 (5)	18:38		20:33				22:03
14	08:44	07:59		08:40 (5)	06:57		06:45				05:14
	16:51	17:48	4	08:44 (5)	18:40		20:34				22:03
15	08:44	07:57			06:55		06:43				05:14
	16:52	17:49			18:41		20:36				22:04
16	08:43	07:55			06:53		06:40				05:14
	16:54	17:51			18:43		20:38				22:04
17	08:42	07:53		08:45 (8)	06:50		06:38				05:14
	16:56	17:53	3	08:48 (8)	18:45		20:40				22:05
18	08:41	07:51		08:41 (8)	06:48		06:36				05:14
	16:57	17:55	12	08:53 (8)	18:47		20:42	2	07:39 (10)	21:32	22:05
19	08:40	07:49		08:39 (8)	06:46		07:28 (9)	06:34		07:30 (10)	05:14
	16:59	17:57	16	08:55 (8)	18:49	4	07:32 (9)	20:43	13	07:43 (10)	21:34
20	08:39	07:47		08:37 (8)	06:43		07:23 (9)	06:31		07:28 (10)	05:36
	17:01	17:59	18	08:55 (8)	18:50	12	07:35 (9)	20:45	17	07:45 (10)	21:35
21	08:37	07:45		08:36 (8)	06:41		07:22 (9)	06:29		07:26 (10)	05:34
	17:03	18:01	20	08:56 (8)	18:52	15	07:37 (9)	20:47	21	07:47 (10)	21:37
22	08:36	07:42		08:35 (8)	06:39		07:20 (9)	06:27		07:25 (10)	05:33
	17:04	18:03	22	08:57 (8)	18:54	18	07:38 (9)	20:49	23	07:48 (10)	21:38
23	08:35	07:40		08:35 (8)	06:36		07:19 (9)	06:25		07:24 (10)	05:32
	17:06	18:05	23	08:58 (8)	18:56	19	07:38 (9)	20:50	24	07:48 (10)	21:40
24	08:34	07:38		08:35 (8)	06:34		07:18 (9)	06:23		07:23 (10)	05:30
	17:08	18:07	23	08:58 (8)	18:57	20	07:38 (9)	20:52	26	07:49 (10)	21:41
25	08:33	07:36		08:34 (8)	06:31		07:18 (9)	06:21		07:22 (10)	05:29
	17:10	18:08	23	08:57 (8)	18:59	20	07:38 (9)	20:54	27	07:49 (10)	21:43
26	08:31	07:34		08:34 (8)	06:29		07:17 (9)	06:19		07:21 (10)	05:28
	17:11	18:10	23	08:57 (8)	19:01	20	07:37 (9)	20:56	29	07:50 (10)	21:44
27	08:30	07:32		08:34 (8)	06:27		07:18 (9)	06:17		07:21 (10)	05:27
	17:13	18:12	23	08:57 (8)	19:03	19	07:37 (9)	20:57	29	07:50 (10)	21:45
28	08:28	07:29		08:35 (8)	06:24		07:17 (9)	06:14		07:20 (10)	05:26
	17:15	18:14	21	08:56 (8)	19:05	19	07:36 (9)	20:59	30	07:50 (10)	21:47
29	08:27				07:22		08:18 (9)	06:12		07:20 (10)	05:24
	17:17				20:06	17	08:35 (9)	21:01	29	07:49 (10)	21:48
30	08:25				07:20		08:20 (9)	06:10		07:20 (10)	05:23
	17:19				20:08	13	08:33 (9)	21:03	29	07:49 (10)	21:49
31	08:24				07:17		08:21 (9)				05:22
	17:21				20:10	9	08:30 (9)				21:50
Potential sun hours	255	276		367		418		489		503	
Total, worst case			446		265		299		217		
Sun reduction			0.21		0.24		0.35		0.37		
Oper. time red.			1.00		1.00		1.00		1.00		
Wind dir. red.			0.66		0.67		0.67		0.67		
Total reduction			0.14		0.16		0.24		0.25		
Total, real			61		44		71		53		

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: ET - H150

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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	July		August		September		October		November		December	
1	05:18	05:56			06:48		07:38		07:34		08:06 (5)	08:26
	22:06	21:33			20:29		19:18		17:10	25	08:41 (6)	16:28
2	05:19	05:58			06:49		07:40		07:36		08:06 (5)	08:28
	22:05	21:31	5	07:46 (10)	20:27		19:15		17:08	26	08:42 (6)	16:27
3	05:20	05:59			06:51		07:42		07:37		08:07 (5)	08:29
	22:05	21:29	12	07:49 (10)	20:24		19:13		17:06	25	08:42 (6)	16:27
4	05:21	06:01			06:53		07:43		07:39		08:08 (5)	08:31
	22:05	21:27	15	07:51 (10)	20:22		19:11		17:04	22	08:42 (6)	16:26
5	05:21	06:02			06:54		07:45		07:41		08:26 (6)	08:32
	22:04	21:26	18	07:52 (10)	20:20		19:08		17:02	16	08:42 (6)	16:26
6	05:22	06:04			06:56		07:47		07:43		08:27 (6)	08:33
	22:04	21:24	21	07:54 (10)	20:17		19:06		17:01	15	08:42 (6)	16:25
7	05:23	06:06			06:58		07:49		07:45		08:27 (6)	08:34
	22:03	21:22	22	07:55 (10)	20:15		19:04		16:59	14	08:41 (6)	16:25
8	05:24	06:07			06:59		07:50		07:47		08:28 (6)	08:36
	22:02	21:20	25	07:56 (10)	20:13		19:01		16:57	12	08:40 (6)	16:24
9	05:25	06:09			07:01		07:52		07:49		08:30 (6)	08:37
	22:02	21:18	26	07:57 (10)	20:10		18:59		16:55	9	08:39 (6)	16:24
10	05:26	06:11			07:03		07:54		07:50		08:33 (6)	08:38
	22:01	21:16	27	07:57 (10)	20:08		18:57	12	09:25 (8)	4	08:37 (6)	16:24
11	05:27	06:12			07:04		07:56		09:11 (8)			08:39
	22:00	21:14	28	07:57 (10)	20:05		18:54	16	09:27 (8)			16:24
12	05:28	06:14			07:06		07:57		09:09 (8)			08:40
	21:59	21:12	29	07:57 (10)	20:03	8	08:22 (9)	18	09:27 (8)			16:23
13	05:29	06:16			07:08		08:10 (9)		09:08 (8)			08:41
	21:58	21:10	29	07:58 (10)	20:01	13	08:23 (9)	20	09:28 (8)			16:23
14	05:31	06:17			07:09		08:09 (9)		09:07 (8)			08:42
	21:57	21:08	29	07:57 (10)	19:58	16	08:25 (9)	22	09:29 (8)			16:23
15	05:32	06:19			07:11		08:08 (9)		09:06 (8)			08:43
	21:56	21:06	29	07:57 (10)	19:56	18	08:26 (9)	23	09:29 (8)			16:23
16	05:33	06:21			07:13		08:06 (9)		09:06 (8)			08:44
	21:55	21:04	29	07:57 (10)	19:53	19	08:25 (9)	23	09:29 (8)			16:23
17	05:34	06:22			07:14		08:06 (9)		09:06 (8)			08:45
	21:54	21:02	28	07:56 (10)	19:51	20	08:26 (9)	23	09:29 (8)			16:24
18	05:36	06:24			07:16		08:08 (9)		09:06 (8)			08:46
	21:53	21:00	27	07:56 (10)	19:49	20	08:26 (9)	23	09:29 (8)			16:24
19	05:37	06:26			07:18		08:05 (9)		09:06 (8)			08:46
	21:52	20:58	27	07:55 (10)	19:46	20	08:25 (9)	23	09:29 (8)			16:24
20	05:38	06:27			07:19		08:05 (9)		09:06 (8)			08:47
	21:51	20:56	25	07:54 (10)	19:44	19	08:24 (9)	21	09:27 (8)			16:25
21	05:40	06:29			07:21		08:06 (9)		09:06 (8)			08:48
	21:49	20:53	22	07:52 (10)	19:42	18	08:24 (9)	20	09:26 (8)			16:25
22	05:41	06:31			07:23		08:06 (9)		09:07 (8)			08:48
	21:48	20:51	20	07:51 (10)	19:39	16	08:22 (9)	18	09:25 (8)			16:25
23	05:42	06:32			07:25		08:07 (9)		09:09 (8)			08:49
	21:47	20:49	17	07:50 (10)	19:37	13	08:20 (9)	15	09:24 (8)			16:26
24	05:44	06:34			07:26		08:10 (9)		09:11 (8)			08:49
	21:45	20:47	11	07:46 (10)	19:34	7	08:17 (9)	10	09:21 (8)			16:27
25	05:45	06:36			07:28		07:21		08:17			08:49
	21:44	20:45			19:32		17:24		16:33			16:27
26	05:47	06:37			07:30		07:23		08:18			08:50
	21:42	20:42			19:30		17:22		16:32			16:28
27	05:48	06:39			07:31		07:24		08:20			08:50
	21:41	20:40			19:27		17:20		16:31			16:29
28	05:50	06:41			07:33		07:26		08:08 (5)			08:50
	21:39	20:38			19:25		17:18	6	08:14 (5)			16:29
29	05:51	06:43			07:35		07:28		08:07 (5)			08:50
	21:38	20:36			19:22		17:16	13	08:36 (6)			16:30
30	05:53	06:44			07:36		07:30		08:06 (5)			08:50
	21:36	20:33			19:20		17:14	20	08:39 (6)			16:31
31	05:55	06:46					07:32		08:06 (5)			08:50
	21:34	20:31					17:12	23	08:40 (6)			16:32
Potential sun hours	506	456			381		330		263			240
Total, worst case					207		349		168			
Sun reduction			0.30		0.28		0.24		0.19			
Oper. time red.			1.00		1.00		1.00		1.00			
Wind dir. red.			0.67		0.68		0.66		0.66			
Total reduction			0.20		0.19		0.16		0.12			
Total, real			103		40		55		21			

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** EU - H151**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:09	05:22	05:19	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:33	20:29	19:18	17:10	16:28
2	08:50	08:21	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:36	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:27	19:15	17:08	16:28
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:29	18:22	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:06	06:01	05:19	05:22	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:26	20:20	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:40	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:08	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:13	19:01	16:57	16:25
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	22:00	22:01	21:18	20:10	18:59	16:56	16:24
10	08:47	08:07	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:47	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:55	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:29	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:50	17:46	18:38	20:33	21:24	22:03	21:58	21:10	20:01	18:50	16:49	16:24
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:24
15	08:43	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:50	18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:46	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:54	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:35	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:58	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:49	20:43	21:34	22:05	21:52	20:58	19:46	18:37	16:41	16:24
20	08:39	07:47	06:43	06:32	05:36	05:14	05:38	06:27	07:20	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:35	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:42	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:33	07:25	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:57	20:52	21:41	22:07	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:46	06:36	07:28	08:21	08:17	08:49
	17:10	18:09	18:59	20:54	21:43	22:07	21:44	20:45	19:32	18:24	16:34	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:55	21:44	22:07	21:42	20:42	19:30	18:22	16:33	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:49	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:41	20:40	19:27	18:20	16:32	16:29
28	08:28	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:22	08:50
	17:15	18:14	19:05	20:59	21:47	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:13	05:25	05:17	05:52	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:36	19:23	18:16	16:30	16:31
30	08:25		07:20	06:11	05:24	05:18	05:53	06:44	07:37	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	264	240
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)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
Kathryn Feeney / kfeeney@jodireland.com
Calculated:
16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case
Assumptions for shadow calculations

Shadow receptor: EV - H152

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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:51 16:34	08:22 17:23	08:49 (2) 18:16	07:27 20:12	07:15 21:04	06:09 21:52	05:22 22:06	05:18 21:33	06:48 20:29	07:38 19:18	07:34 17:10	08:26 16:28
2	08:50 16:35	08:21 17:25	08:47 (2) 18:18	07:25 20:13	07:13 21:06	06:07 21:53	05:19 22:06	05:58 21:31	06:49 20:27	07:40 19:15	07:36 17:08	08:28 16:28
3	08:50 16:36	08:19 17:27	08:46 (2) 18:20	07:23 20:15	07:10 21:08	06:05 21:54	05:20 22:05	05:59 21:29	06:51 20:24	07:42 19:13	07:38 17:06	08:29 16:27
4	08:50 16:37	08:17 17:29	08:44 (2) 18:22	07:21 20:17	07:08 21:10	06:03 21:55	05:21 22:05	06:01 21:28	06:53 20:22	07:44 19:11	07:39 17:04	08:31 16:26
5	08:50 16:38	08:16 17:30	08:42 (2) 18:23	07:18 20:19	07:06 21:11	06:01 21:56	05:22 22:04	06:03 21:26	06:54 20:20	07:45 19:08	07:41 17:03	08:32 16:26
6	08:49 16:40	08:14 17:32	08:41 (2) 18:25	07:16 20:21	07:03 21:13	05:59 21:57	05:18 22:04	06:04 21:24	06:56 20:17	07:47 19:06	07:43 17:01	08:33 16:25
7	08:49 16:41	08:12 17:34	08:42 (2) 18:27	07:14 20:22	07:01 21:15	05:57 21:58	05:23 22:03	06:06 21:22	06:58 20:15	07:49 19:04	07:45 16:59	08:35 16:25
8	08:48 16:42	08:10 17:36	08:44 (2) 18:29	07:11 20:24	06:59 21:16	05:55 21:59	05:24 22:02	06:08 21:20	06:59 20:13	07:50 19:01	07:47 16:57	08:36 16:24
9	08:48 16:44	08:09 17:38	08:52 (2) 18:31	07:09 20:26	06:56 21:18	05:53 22:00	05:16 22:02	06:09 21:18	07:01 20:10	07:52 18:59	07:49 16:56	08:37 16:24
10	08:47 16:45	08:07 17:40	07:05 18:33	06:52 20:28	06:52 21:20	05:16 22:01	05:26 22:01	06:11 21:16	07:03 20:08	07:54 18:57	07:50 16:54	08:38 16:24
11	08:47 16:46	08:05 17:42	07:05 18:34	06:52 20:29	06:50 21:21	05:15 22:01	05:27 22:00	06:12 21:14	07:05 20:06	07:56 18:55	07:52 16:52	08:39 16:24
12	08:46 16:48	08:03 17:44	07:02 18:36	06:49 20:31	06:48 21:23	05:15 22:02	05:28 21:59	06:14 21:12	07:06 20:03	07:58 18:52	07:54 16:51	08:40 16:24
13	08:45 16:49	08:01 17:46	07:00 18:38	06:47 20:33	06:47 21:25	05:15 22:03	05:30 21:58	06:16 21:10	07:08 20:01	07:59 18:50	07:56 16:49	08:41 16:24
14	08:45 16:51	07:59 17:48	06:58 18:40	06:45 20:35	06:45 21:26	05:14 22:03	05:31 21:57	06:17 21:08	07:10 19:58	08:01 18:48	07:58 16:48	08:42 16:24
15	08:44 16:53	07:57 17:50	06:55 18:42	06:43 20:36	06:43 21:28	05:14 22:04	05:32 21:56	06:19 21:06	07:11 19:56	08:03 18:46	08:00 16:46	08:43 16:24
16	08:43 16:54	07:55 17:52	06:53 18:43	06:40 20:38	06:40 21:29	05:14 22:04	05:33 21:55	06:21 21:04	07:13 19:54	08:05 18:43	08:01 16:45	08:44 16:24
17	08:42 16:56	07:53 17:53	06:50 18:45	06:38 20:40	06:38 21:31	05:14 22:05	05:34 21:54	06:22 21:02	07:15 19:51	08:06 18:41	08:03 16:43	08:45 16:24
18	08:41 16:58	07:51 17:55	06:48 18:47	06:36 20:42	06:36 21:32	05:14 22:05	05:36 21:53	06:24 21:00	07:16 19:49	08:08 18:39	08:05 16:42	08:46 16:24
19	08:40 16:59	07:49 17:57	06:46 18:49	06:34 20:43	06:34 21:34	05:14 22:06	05:37 21:52	06:26 20:58	07:18 19:46	08:10 18:37	08:07 16:41	08:46 16:24
20	08:39 17:01	07:47 17:59	06:43 18:51	06:32 20:45	06:32 21:36	05:14 22:06	05:38 21:51	06:28 20:56	07:20 19:44	08:12 18:35	08:08 16:39	08:47 16:25
21	08:38 17:03	07:45 18:01	06:41 18:52	06:29 20:47	06:29 21:37	05:14 22:06	05:40 21:49	06:29 20:54	07:21 19:42	08:14 18:32	08:10 16:38	08:48 16:25
22	08:36 17:04	07:43 18:03	06:39 18:54	06:27 20:49	06:27 21:38	05:14 22:07	05:41 21:48	06:31 20:51	07:23 19:39	08:15 18:30	08:12 16:37	08:48 16:26
23	08:35 17:06	07:40 18:05	06:36 18:56	06:25 20:50	06:25 21:40	05:15 22:07	05:43 21:47	06:33 20:49	07:25 19:37	08:17 18:28	08:14 16:36	08:49 16:26
24	08:34 17:08	07:38 18:07	06:34 18:58	06:23 20:52	06:23 21:41	05:15 22:07	05:44 21:45	06:34 20:47	07:26 19:34	08:19 18:26	08:15 16:35	08:49 16:27
25	08:33 17:10	07:36 18:09	06:32 18:59	06:21 20:54	06:21 21:43	05:15 22:07	05:46 21:44	06:36 20:45	07:28 19:32	08:21 18:24	08:17 16:34	08:50 16:27
26	08:31 17:12	07:34 18:10	06:29 19:01	06:19 20:56	06:19 21:44	05:16 22:07	05:47 21:42	06:38 20:43	07:30 19:30	08:23 18:22	08:19 16:33	08:50 16:28
27	08:30 17:13	07:32 18:12	06:27 19:03	06:17 20:57	06:17 21:45	05:16 22:07	05:49 21:41	06:39 20:40	07:31 19:27	08:25 18:20	08:20 16:32	08:50 16:29
28	08:28 17:15	07:30 18:14	06:24 19:05	06:15 20:59	06:15 21:47	05:17 22:07	05:50 21:39	06:41 20:38	07:33 19:25	08:26 18:18	08:22 16:31	08:50 16:30
29	08:27 17:17	07:22 18:55 (2)	06:13 20:06	06:13 21:01	06:13 21:48	05:17 22:06	05:52 21:38	06:43 20:36	07:35 19:23	08:28 18:16	08:23 16:30	08:50 16:30
30	08:25 17:19	08:53 (2) 08:56 (2)	06:11 21:03	06:11 21:03	06:11 21:49	05:18 22:06	05:53 21:36	06:44 20:34	07:37 19:20	08:25 18:14	08:25 16:29	08:51 16:31
31	08:24 17:21	08:51 (2) 08:57 (2)	07:17 20:10	07:17 20:10	07:17 21:51	05:23 21:34	05:55 21:31	06:46 20:31	07:32 17:12	08:24 16:23	08:24 16:32	08:51 16:32
Potential sun hours	256	276	367	418	489	503	506	456	381	330	263	240
Total, worst case	10	90									99	
Sun reduction	0.16	0.21									0.19	
Oper. time red.	1.00	1.00									1.00	
Wind dir. red.	0.65	0.65									0.65	
Total reduction	0.10	0.14									0.12	
Total, real	1	12									12	

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	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: EW - H153

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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:32	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:35	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:26	19:15	17:08	16:28
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:06	06:01	05:19	05:22	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:25	20:19	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
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	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
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	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	21:59	22:01	21:18	20:10	18:59	16:56	16:24
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	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:46	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:02	21:58	21:10	20:01	18:50	16:49	16:24
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:23
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	16:53	17:50	18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:45	16:24
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18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:45
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	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:46	06:36	07:28	08:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:42	22:07	21:44	20:45	19:32	18:24	16:34	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:55	21:44	22:06	21:42	20:42	19:30	18:22	16:33	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:48	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:41	20:40	19:27	18:20	16:32	16:29
28	08:28	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:21	08:50
	17:15	18:14	19:04	20:59	21:46	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:12	05:25	05:17	05:52	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:36	19:22	18:16	16:30	16:30
30	08:25		07:20	06:10	05:24	05:18	05:53	06:44	07:36	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	264	240
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)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: EX - H154

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
229 231 210 320 200 640 608 691 568 658 724 1,086 671 733 661 530 8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:51 16:34	08:22 17:23	07:27 18:16	07:15 20:12	06:09 21:04	05:22 21:52	05:18 22:06	05:56 21:33	06:48 20:29	07:38 19:18		08:02 (2) 16:28
2	08:50 16:35	08:21 17:25	07:25 18:18	07:13 20:13	06:07 21:06	05:21 21:53	05:19 22:06	05:58 21:31	06:49 20:27	07:40 19:16	12	08:14 (2) 16:28
3	08:50 16:36	08:19 17:27	07:23 18:20	07:10 20:15	06:05 21:08	05:20 21:54	05:20 22:05	05:59 21:29	06:51 20:24	07:42 19:13	10	08:14 (2) 16:28
4	08:50 16:37	08:17 17:29	07:21 18:22	07:08 20:17	06:03 21:10	05:19 21:55	05:21 22:05	06:01 21:28	06:53 20:22	07:44 19:11	8	08:14 (2) 16:27
5	08:50 16:38	08:16 17:30	07:18 18:23	07:06 20:19	06:01 21:11	05:19 21:56	05:22 22:04	06:03 21:26	06:54 20:20	07:45 19:08	6	08:14 (2) 16:26
6	08:49 16:40	08:14 17:32	07:16 18:25	07:03 20:21	05:59 21:13	05:18 21:57	05:22 22:04	06:04 21:24	06:56 20:17	07:47 19:06	4	08:14 (2) 16:26
7	08:49 16:41	08:12 17:34	07:14 18:27	07:01 20:22	05:57 21:15	05:17 21:58	05:23 22:03	06:06 21:22	06:58 20:15	07:49 19:04	2	08:14 (2) 16:25
8	08:48 16:42	08:10 17:36	07:11 18:29	06:59 20:24	05:55 21:16	05:17 21:59	05:24 22:02	06:08 21:20	06:59 20:13	07:50 19:01		16:25
9	08:48 16:44	08:09 17:38	07:09 18:31	06:56 20:26	05:53 21:18	05:16 22:00	05:25 22:02	06:09 21:18	07:01 20:10	07:52 18:59		16:24
10	08:47 16:45	08:07 17:40	07:07 18:33	06:54 20:28	05:52 21:20	05:16 22:01	05:26 22:01	06:11 21:16	07:03 20:08	07:54 18:57		16:24
11	08:47 16:46	08:05 17:42	07:05 18:34	06:52 20:29	05:50 21:21	05:15 22:01	05:27 22:01	06:12 21:14	07:05 20:06	07:56 18:55		16:24
12	08:46 16:48	08:03 17:44	07:02 18:36	06:49 20:31	05:48 21:23	05:15 22:02	05:28 21:59	06:14 21:12	07:06 20:03	07:58 18:52		16:24
13	08:45 16:49	08:01 17:46	07:00 18:38	06:47 20:33	05:47 21:25	05:15 22:03	05:30 21:58	06:16 21:10	07:08 20:01	07:59 18:50		16:24
14	08:45 16:51	07:59 17:48	06:58 18:32	06:45 20:35	05:45 21:26	05:14 22:03	05:31 21:57	06:17 21:08	07:10 19:58	08:01 18:48		16:24
15	08:44 16:53	07:57 17:50	06:55 18:42	06:43 20:36	05:43 21:28	05:14 22:04	05:32 21:56	06:19 21:06	07:11 19:56	08:03 18:46		16:24
16	08:43 16:54	07:55 17:52	06:53 18:43	06:40 20:38	05:42 21:29	05:14 22:04	05:33 21:55	06:21 21:04	07:13 19:54	08:05 18:43		16:24
17	08:42 16:56	07:53 17:53	06:50 18:45	06:38 20:40	05:40 21:31	05:14 22:05	05:35 21:54	06:22 21:02	07:15 19:51	08:06 18:41		16:24
18	08:41 16:58	07:51 17:55	06:48 18:47	06:36 20:42	05:39 21:32	05:14 22:05	05:36 21:53	06:24 21:00	07:16 19:49	08:08 18:39		16:24
19	08:40 16:59	07:49 17:57	06:46 18:49	06:34 20:43	05:37 21:34	05:14 22:06	05:37 21:52	06:26 20:58	07:18 19:46	08:10 18:37		16:24
20	08:39 17:01	07:47 17:59	06:43 18:51	06:32 20:45	05:36 21:36	05:14 22:06	05:38 21:51	06:28 20:56	07:20 19:44	08:12 18:35		16:25
21	08:38 17:03	07:45 18:01	06:41 18:52	06:29 20:47	05:34 21:37	05:14 22:06	05:40 21:49	06:29 20:54	07:21 19:42	08:14 18:32		16:25
22	08:36 17:04	07:43 18:03	06:39 18:54	06:27 20:49	05:33 21:38	05:14 22:07	05:41 21:48	06:31 20:51	07:23 19:39	08:15 18:30		16:26
23	08:35 17:06	07:40 18:05	06:36 18:56	06:25 20:50	05:32 21:40	05:15 22:07	05:43 21:47	06:33 20:49	07:25 19:37	08:17 18:28		16:26
24	08:34 17:08	07:38 18:07	06:34 18:58	06:23 20:52	05:30 21:41	05:15 22:07	05:44 21:45	06:34 20:47	07:26 19:34	08:19 18:26		16:27
25	08:33 17:10	07:36 18:09	06:32 18:59	06:21 20:54	05:29 21:43	05:15 22:07	05:46 21:44	06:36 20:45	07:28 19:32	08:21 17:24		16:27
26	08:31 17:12	07:34 18:10	06:29 19:01	06:19 20:56	05:28 21:44	05:16 22:07	05:47 21:42	06:38 20:43	07:30 19:30	08:23 17:22		16:28
27	08:30 17:13	07:32 18:12	06:27 19:03	06:17 20:57	05:27 21:45	05:16 22:07	05:49 21:41	06:39 20:40	07:31 19:27	08:25 17:20		16:29
28	08:28 17:15	07:30 18:14	06:24 19:05	06:15 20:59	05:26 21:47	05:17 22:07	05:50 21:39	06:41 20:38	07:33 19:25	08:26 17:18	8	08:09 (2) 16:31
29	08:27 17:17		07:22 20:06	06:13 21:01	05:25 21:48	05:17 22:06	05:52 21:38	06:43 20:36	07:35 19:23	08:28 17:16	12	08:11 (2) 16:30
30	08:25 17:19		07:20 20:08	06:11 21:03	05:24 21:49	05:18 22:06	05:53 21:36	06:44 20:34	07:37 19:20	08:30 17:14	15	08:13 (2) 16:29
31	08:24 17:21		07:17 20:10	06:10 21:51	05:23 21:51	05:15 22:06	05:55 21:34	06:46 20:31	07:32 17:12	08:00 18:13	13	08:13 (2) 16:32
Potential sun hours	256	276	367	418	489	503	506	456	381	330	263	240
Total, worst case		91								48	42	
Sun reduction		0.21								0.24	0.19	
Oper. time red.		1.00								1.00	1.00	
Wind dir. red.		0.66								0.66	0.66	
Total reduction		0.14								0.16	0.12	
Total, real		12								8	5	

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	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: EY - H155

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
229 231 210 320 200 640 608 691 568 658 724 1,086 671 733 661 530 8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:11	21:04	21:51	22:06	21:32	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:12	06:06	05:21	05:19	05:58	06:49	07:40	07:35	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10	06:04	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:26	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:05	06:01	05:18	05:21	06:02	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:25	20:19	19:08	17:02	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
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	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:58	05:55	05:17	05:24	06:07	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:43	17:38	18:31	20:26	21:18	22:00	22:01	21:18	20:10	18:59	16:55	16:24
10	08:47	08:06	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:46	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:23
13	08:45	08:01	07:00	06:47	05:46	05:15	05:29	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:02	21:58	21:10	20:01	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:47	16:23
15	08:43	07:57	06:55	06:42	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:52	17:49	18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	16:23
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:45	16:23
17	08:42	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:38	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:57	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:49	20:43	21:34	22:05	21:52	20:58	19:46	18:37	16:40	16:24
20	08:38	07:47	06:43	06:31	05:36	05:14	05:38	06:27	07:19	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:34	16:39	16:25
21	08:37	07:44	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:41	18:32	16:38	16:25
22	08:36	07:42	06:38	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:25
23	08:35	07:40	06:36	06:25	05:31	05:14	05:42	06:32	07:24	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:06	18:57	20:52	21:41	22:07	21:45	20:47	19:34	18:26	16:34	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:45	06:36	07:28	08:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:42	22:07	21:44	20:45	19:32	18:24	16:33	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:37	07:30	08:23	08:18	08:50
	17:11	18:10	19:01	20:55	21:44	22:07	21:42	20:42	19:30	18:22	16:32	16:28
27	08:30	07:32	06:27	06:16	05:27	05:16	05:48	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:41	20:40	19:27	18:20	16:31	16:29
28	08:28	07:29	06:24	06:14	05:26	05:16	05:50	06:41	07:33	08:26	08:21	08:50
	17:15	18:14	19:04	20:59	21:47	22:06	21:39	20:38	19:25	18:18	16:30	16:29
29	08:27		07:22	06:12	05:24	05:17	05:51	06:42	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:36	19:22	18:16	16:30	16:30
30	08:25		07:20	06:10	05:23	05:18	05:53	06:44	07:36	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:22		05:54	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	489	503	506	456	381	330	263	240
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)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: EZ - H156

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
229 231 210 320 200 640 608 691 568 658 724 1,086 671 733 661 530 8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:32	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:13	06:06	05:21	05:19	05:58	06:49	07:40	07:35	08:27
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:05	06:01	05:19	05:21	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:25	20:19	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:07	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	21:59	22:01	21:18	20:10	18:59	16:56	16:24
10	08:47	08:06	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:46	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:46	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:02	21:58	21:10	20:01	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:23
15	08:43	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:49	18:41	20:36	21:27	22:04	21:56	21:06	19:56	18:45	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:57	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:49	20:43	21:34	22:05	21:52	20:58	19:46	18:37	16:41	16:24
20	08:38	07:47	06:43	06:31	05:36	05:14	05:38	06:27	07:19	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:34	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:41	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:32	07:25	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:45	06:36	07:28	08:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:42	22:06	21:44	20:45	19:32	18:24	16:33	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:37	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:55	21:44	22:06	21:42	20:42	19:30	18:22	16:32	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:48	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:41	20:40	19:27	18:20	16:32	16:29
28	08:28	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:21	08:50
	17:15	18:14	19:04	20:59	21:46	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:12	05:25	05:17	05:51	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:36	19:22	18:16	16:30	16:30
30	08:25		07:20	06:10	05:24	05:18	05:53	06:44	07:36	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: FA - H157

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
229 231 210 320 200 640 608 691 568 658 724 1,086 671 733 661 530 8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:51 16:34	08:22 17:23	07:27 18:16	07:15 20:12	06:09 21:04	05:22 21:52	05:18 22:06	05:56 21:33	06:48 20:29	07:38 19:18	07:34 17:10	08:26 16:28
2	08:50 16:35	08:21 17:25	07:25 18:18	07:13 20:13	06:07 21:06	05:21 21:53	05:19 22:06	05:58 21:31	06:49 20:27	07:40 19:16	07:36 17:08	08:28 16:28
3	08:50 16:36	08:19 17:27	07:23 18:20	07:10 20:15	06:05 21:08	05:20 21:54	05:20 22:05	05:59 21:29	06:51 20:24	07:42 19:13	07:38 17:06	08:29 16:27
4	08:50 16:37	08:17 17:29	07:21 18:22	07:08 20:17	06:03 21:10	05:19 21:55	05:21 22:05	06:01 21:28	06:53 20:22	07:44 19:11	07:39 17:04	08:31 16:26
5	08:50 16:38	08:16 17:30	07:18 18:23	07:06 20:19	06:01 21:11	05:19 21:56	05:22 22:04	06:03 21:26	06:54 20:20	07:45 19:08	07:41 17:03	08:32 16:26
6	08:49 16:40	08:14 17:32	07:16 18:25	07:03 20:21	05:59 21:13	05:18 21:57	05:22 22:04	06:04 21:24	06:56 20:17	07:47 19:06	07:43 17:01	08:33 16:25
7	08:49 16:41	08:12 17:34	07:14 18:27	07:01 20:22	05:57 21:15	05:17 21:58	05:23 22:03	06:06 21:22	06:58 20:15	07:49 19:04	07:45 16:59	08:35 16:25
8	08:48 16:42	08:10 17:36	07:11 18:29	06:59 20:24	05:55 21:16	05:17 21:59	05:24 22:02	06:08 21:20	06:59 20:13	07:50 19:01	07:47 16:57	08:36 16:24
9	08:48 16:44	08:09 17:38	07:09 18:31	06:56 20:26	05:53 21:18	05:16 22:00	05:25 22:02	06:09 21:18	07:01 20:10	07:52 18:59	07:49 16:56	08:37 16:24
10	08:47 16:45	08:07 17:40	07:07 18:33	06:54 20:28	05:52 21:20	05:16 22:01	05:26 22:01	06:11 21:16	07:03 20:08	07:54 18:57	07:50 16:54	08:38 16:24
11	08:47 16:46	08:05 17:42	07:05 18:34	06:52 20:29	05:50 21:21	05:15 22:01	05:27 22:00	06:12 21:14	07:05 20:06	07:56 18:55	07:52 16:52	08:39 16:24
12	08:46 16:48	08:03 17:44	07:02 18:36	06:49 20:31	05:48 21:23	05:15 22:02	05:28 21:59	06:14 21:12	07:06 20:03	07:58 18:52	07:54 16:51	08:40 16:24
13	08:45 16:49	08:01 17:46	07:00 18:38	06:47 20:33	05:47 21:25	05:15 22:03	05:30 21:58	06:16 21:10	07:08 20:01	07:59 18:50	07:56 16:49	08:41 16:24
14	08:45 16:51	07:59 17:48	06:58 18:40	06:45 20:35	05:45 21:26	05:14 22:03	05:31 21:57	06:17 21:08	07:10 19:58	08:01 18:48	07:58 16:48	08:42 16:24
15	08:44 16:53	07:57 17:50	06:55 18:42	06:43 20:36	05:43 21:28	05:14 22:04	05:32 21:56	06:19 21:06	07:11 19:56	08:03 18:46	08:00 16:46	08:43 16:24
16	08:43 16:54	07:55 17:52	06:53 18:43	06:40 20:38	05:42 21:29	05:14 22:04	05:33 21:55	06:21 21:04	07:13 19:54	08:05 18:43	08:01 16:45	08:44 16:24
17	08:42 16:56	07:53 17:53	06:50 18:45	06:38 20:40	05:40 21:31	05:14 22:05	05:34 21:54	06:22 21:02	07:15 19:51	08:06 18:41	08:03 16:43	08:45 16:24
18	08:41 16:58	07:51 17:55	06:48 18:47	06:36 20:42	05:39 21:32	05:14 22:05	05:36 21:53	06:24 21:00	07:16 19:49	08:08 18:39	08:05 16:42	08:46 16:24
19	08:40 16:59	07:49 17:57	06:46 18:49	06:34 20:43	05:37 21:34	05:14 22:06	05:37 21:52	06:26 20:58	07:18 19:46	08:10 18:37	08:07 16:41	08:46 16:24
20	08:39 17:01	07:47 17:59	06:43 18:51	06:32 20:45	05:36 21:36	05:14 22:06	05:38 21:51	06:28 20:56	07:20 19:44	08:12 18:35	08:08 16:39	08:47 16:25
21	08:38 17:03	07:45 18:01	06:41 18:52	06:29 20:47	05:34 21:37	05:14 22:06	05:40 21:49	06:29 20:54	07:21 19:42	08:14 18:32	08:10 16:38	08:48 16:25
22	08:36 17:04	07:43 18:03	06:39 18:54	06:27 20:49	05:33 21:38	05:14 22:07	05:41 21:48	06:31 20:51	07:23 19:39	08:15 18:30	08:12 16:37	08:48 16:26
23	08:35 17:06	07:40 18:05	06:36 18:56	06:25 20:50	05:32 21:40	05:15 22:07	05:43 21:47	06:33 20:49	07:25 19:37	08:17 18:28	08:14 16:36	08:49 16:26
24	08:34 17:08	07:38 18:07	06:34 18:58	06:23 20:52	05:30 21:41	05:15 22:07	05:44 21:45	06:34 20:47	07:26 19:34	08:19 18:26	08:15 16:35	08:49 16:27
25	08:33 17:10	07:36 18:09	06:32 18:59	06:21 20:54	05:29 21:43	05:15 22:07	05:46 21:44	06:36 20:45	07:28 19:32	08:21 17:24	08:17 16:34	08:50 16:27
26	08:31 17:12	07:34 18:10	06:29 19:01	06:19 20:56	05:28 21:44	05:16 22:07	05:47 21:42	06:38 20:43	07:30 19:30	08:23 17:22	08:19 16:33	08:50 16:28
27	08:30 17:13	07:32 18:12	06:27 19:03	06:17 20:57	05:27 21:45	05:16 22:07	05:49 21:41	06:39 20:40	07:31 19:27	08:25 17:20	08:20 16:32	08:50 16:29
28	08:28 17:15	07:30 18:14	06:24 19:05	06:15 20:59	05:26 21:47	05:17 22:07	05:50 21:39	06:41 20:38	07:33 19:25	08:26 17:18	08:22 16:31	08:50 16:30
29	08:27 17:17		07:22 20:06	06:13 21:01	05:25 21:48	05:17 22:06	05:52 21:38	06:43 20:36	07:35 19:23	08:28 17:16	08:23 16:30	08:50 16:30
30	08:25 17:19		07:20 20:08	06:11 21:03	05:24 21:49	05:18 22:06	05:53 21:36	06:44 20:34	07:37 19:20	08:30 17:14	08:25 16:29	08:51 16:31
31	08:24 17:21		07:17 20:10		05:23 21:51		05:55 21:34	06:46 20:31		07:32 17:12		08:51 16:32
Potential sun hours	256	276	367	418	489	503	506	456	381	330	263	240
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)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** FB - H158**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:32	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:13	06:06	05:21	05:19	05:58	06:49	07:40	07:35	08:27
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:05	06:01	05:19	05:21	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:25	20:19	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:07	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	21:59	22:01	21:18	20:10	18:59	16:56	16:24
10	08:47	08:06	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:46	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:46	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:02	21:58	21:10	20:01	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:23
15	08:43	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:49	18:41	20:36	21:27	22:04	21:56	21:06	19:56	18:45	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:45
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19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
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	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:32	07:25	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
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27	08:30	07:32	06:27	06:17	05:27	05:16	05:48	06:39	07:31	08:24	08:20	08:50
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	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
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	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** FC - H159**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:51	08:22	07:27	07:15	06:09	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:52	22:06	21:33	20:29	19:18	17:10	16:28
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	16:35	17:25	18:18	20:13	21:06	21:53	22:06	21:31	20:27	19:16	17:08	16:28
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:38	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:21	07:08	06:03	05:19	05:21	06:01	06:53	07:44	07:39	08:31
	16:37	17:29	18:22	20:17	21:10	21:55	22:05	21:28	20:22	19:11	17:04	16:26
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	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:13	19:01	16:57	16:24
9	08:48	08:09	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:49	08:37
	16:44	17:38	18:31	20:26	21:18	22:00	22:02	21:18	20:10	18:59	16:56	16:24
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12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:58	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:25	22:03	21:58	21:10	20:01	18:50	16:49	16:24
14	08:45	07:59	06:58	06:45	05:45	05:14	05:31	06:17	07:10	08:01	07:58	08:42
	16:51	17:48	18:40	20:35	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:24
15	08:44	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	08:00	08:43
	16:53	17:50	18:42	20:36	21:28	22:04	21:56	21:06	19:56	18:46	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:05	08:01	08:44
	16:54	17:52	18:43	20:38	21:29	22:04	21:55	21:04	19:54	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:15	08:06	08:03	08:45
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18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:46
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	17:10	18:09	18:59	20:54	21:43	22:07	21:44	20:45	19:32	18:24	16:34	16:27
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	17:15	18:14	19:05	20:59	21:47	22:07	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:13	05:25	05:17	05:52	06:43	07:35	08:28	08:23	08:50
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Potential sun hours	256	276	367	418	489	503	506	456	381	330	263	240
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)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** FD - H160**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
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5	08:49	08:15	07:18	07:06	06:01	05:19	05:22	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:25	20:19	19:08	17:03	16:26
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	16:40	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
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	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
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12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:02	21:58	21:10	20:01	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:23
15	08:43	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:50	18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	16:24
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	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:45	16:24
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	16:59	17:57	18:49	20:43	21:34	22:05	21:52	20:58	19:46	18:37	16:41	16:24
20	08:38	07:47	06:43	06:31	05:36	05:14	05:38	06:27	07:19	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:34	16:39	16:25
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	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:41	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:32	07:25	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:46	06:36	07:28	08:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:42	22:06	21:44	20:45	19:32	18:24	16:34	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:55	21:44	22:06	21:42	20:42	19:30	18:22	16:32	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:48	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:41	20:40	19:27	18:20	16:32	16:29
28	08:28	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:21	08:50
	17:15	18:14	19:04	20:59	21:46	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:12	05:25	05:17	05:52	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:36	19:22	18:16	16:30	16:30
30	08:25		07:20	06:10	05:24	05:18	05:53	06:44	07:36	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	264	240
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)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: FE - H161

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
229 231 210 320 200 640 608 691 568 658 724 1,086 671 733 661 530 8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:09	05:22	05:19	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:52	22:06	21:33	20:29	19:18	17:10	16:28
2	08:50	08:21	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:36	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:27	19:16	17:08	16:28
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	06:00	06:51	07:42	07:38	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:21	07:08	06:03	05:19	05:21	06:01	06:53	07:44	07:39	08:31
	16:37	17:29	18:22	20:17	21:09	21:55	22:05	21:27	20:22	19:11	17:04	16:26
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	16:38	17:31	18:23	20:19	21:11	21:56	22:04	21:26	20:20	19:08	17:03	16:26
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	16:40	17:32	18:25	20:21	21:13	21:57	22:04	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:35
	16:41	17:34	18:27	20:22	21:15	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:08	07:00	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:13	19:02	16:57	16:25
9	08:48	08:09	07:09	06:56	05:54	05:16	05:25	06:09	07:01	07:52	07:49	08:37
	16:44	17:38	18:31	20:26	21:18	22:00	22:02	21:18	20:10	18:59	16:56	16:24
10	08:47	08:07	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:33	20:28	21:20	22:01	22:01	21:16	20:08	18:57	16:54	16:24
11	08:47	08:05	07:05	06:52	05:50	05:15	05:27	06:13	07:05	07:56	07:52	08:39
	16:47	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:06	18:55	16:52	16:24
12	08:46	08:03	07:02	06:50	05:48	05:15	05:29	06:14	07:06	07:57	07:54	08:40
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13	08:45	08:01	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:50	17:46	18:38	20:33	21:25	22:03	21:58	21:10	20:01	18:50	16:49	16:24
14	08:44	07:59	06:58	06:45	05:45	05:15	05:31	06:18	07:10	08:01	07:58	08:42
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	16:53	17:50	18:42	20:36	21:28	22:04	21:56	21:06	19:56	18:46	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:05	08:01	08:44
	16:54	17:52	18:43	20:38	21:29	22:04	21:55	21:04	19:54	18:43	16:45	16:24
17	08:42	07:53	06:51	06:38	05:40	05:14	05:35	06:23	07:15	08:06	08:03	08:45
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18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:46
	16:58	17:55	18:47	20:42	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
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20	08:39	07:47	06:43	06:32	05:36	05:14	05:39	06:28	07:20	08:12	08:08	08:47
	17:01	17:59	18:51	20:45	21:35	22:06	21:51	20:56	19:44	18:35	16:39	16:25
21	08:38	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:14	08:10	08:48
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:54	19:42	18:32	16:38	16:25
22	08:36	07:43	06:39	06:27	05:33	05:15	05:41	06:31	07:23	08:15	08:12	08:48
	17:05	18:03	18:54	20:49	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:33	07:25	08:17	08:14	08:49
	17:06	18:05	18:56	20:50	21:40	22:07	21:47	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:58	20:52	21:41	22:07	21:45	20:47	19:35	18:26	16:35	16:27
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	17:10	18:09	18:59	20:54	21:43	22:07	21:44	20:45	19:32	18:24	16:34	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:18	08:50
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	17:14	18:12	19:03	20:57	21:45	22:07	21:41	20:40	19:27	18:20	16:32	16:29
28	08:28	07:30	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:22	08:50
	17:15	18:14	19:05	20:59	21:47	22:07	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:13	05:25	05:17	05:52	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:38	20:36	19:23	18:16	16:30	16:31
30	08:25		07:20	06:11	05:24	05:18	05:53	06:44	07:37	08:30	08:25	08:50
	17:19		20:08	21:03	21:49	22:06	21:36	20:34	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** FF - H162**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:32	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:13	06:06	05:21	05:19	05:58	06:49	07:40	07:35	08:27
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:05	06:01	05:19	05:21	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:25	20:19	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
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	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	21:59	22:01	21:18	20:10	18:59	16:56	16:24
10	08:47	08:06	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:46	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:46	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:02	21:58	21:10	20:01	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:23
15	08:43	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:49	18:41	20:36	21:27	22:04	21:56	21:06	19:56	18:45	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:57	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:49	20:43	21:34	22:05	21:52	20:58	19:46	18:37	16:41	16:24
20	08:38	07:47	06:43	06:31	05:36	05:14	05:38	06:27	07:19	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:34	16:39	16:25
21	08:37	07:44	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:41	18:32	16:38	16:25
22	08:36	07:42	06:38	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:32	07:25	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:45	06:36	07:28	08:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:42	22:06	21:44	20:45	19:32	18:24	16:33	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:37	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:55	21:44	22:06	21:42	20:42	19:30	18:22	16:32	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:48	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:41	20:40	19:27	18:20	16:32	16:29
28	08:28	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:21	08:50
	17:15	18:14	19:04	20:59	21:46	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:12	05:25	05:17	05:51	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:36	19:22	18:16	16:30	16:30
30	08:25		07:20	06:10	05:24	05:18	05:53	06:44	07:36	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** FG - H163**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January		February		March		April		May		June	
1	08:50	08:22			07:27		08:06 (8)	07:15		07:59 (10)	06:08	05:22
	16:34	17:23			18:16	11	08:17 (8)	20:12	9	08:08 (10)	21:04	21:52
2	08:50	08:21			07:25		08:08 (8)	07:13		08:02 (10)	06:06	05:21
	16:35	17:25			18:18	7	08:15 (8)	20:13	3	08:05 (10)	21:06	21:53
3	08:50	08:19			07:23			07:10			06:05	05:20
	16:36	17:26			18:20			20:15			21:08	21:54
4	08:50	08:17			07:21			07:08			06:03	05:19
	16:37	17:28			18:21			20:17			21:09	21:55
5	08:50	08:16			07:18			07:06			06:01	05:18
	16:38	17:30			18:23			20:19			21:11	21:56
6	08:49	08:14			07:16			07:03			05:59	05:18
	16:39	17:32			18:25			20:20			21:13	21:57
7	08:49	08:12			07:14			07:01			05:57	05:17
	16:41	17:34			18:27			20:22			21:15	21:58
8	08:48	08:10			07:11			06:59			05:55	05:17
	16:42	17:36			18:29			20:24			21:16	21:59
9	08:48	08:08			07:09			06:56			05:53	05:16
	16:43	17:38			18:31			20:26			21:18	22:00
10	08:47	08:07			07:07			06:54			05:52	05:16
	16:45	17:40			18:32			20:27			21:20	22:01
11	08:47	08:05			07:04			06:52			05:50	05:15
	16:46	17:42			18:34			20:29			21:21	22:01
12	08:46	08:03			07:02		07:28 (9)	06:49			05:48	05:15
	16:48	17:44			18:36	7	07:35 (9)	20:31			21:23	22:02
13	08:45	08:01			07:00		07:26 (9)	06:47			05:46	05:15
	16:49	17:46			18:38	9	07:35 (9)	20:33			21:25	22:03
14	08:44	07:59			06:57		07:25 (9)	06:45			05:45	05:14
	16:51	17:48			18:40	11	07:36 (9)	20:35			21:26	22:03
15	08:44	07:57			06:55		07:24 (9)	06:43			05:43	05:14
	16:52	17:49			18:41	12	07:36 (9)	20:36			21:28	22:04
16	08:43	07:55			06:53		07:24 (9)	06:40			05:42	05:14
	16:54	17:51			18:43	12	07:36 (9)	20:38			21:29	22:04
17	08:42	07:53			06:50		07:25 (9)	06:38			05:40	05:14
	16:56	17:53			18:45	10	07:35 (9)	20:40			21:31	22:05
18	08:41	07:51			06:48		07:26 (9)	06:36			05:39	05:14
	16:57	17:55			18:47	6	07:32 (9)	20:42			21:32	22:05
19	08:40	07:49			06:46			06:34			05:37	05:14
	16:59	17:57			18:49			20:43			21:34	22:06
20	08:39	07:47			06:43			06:31			05:36	05:14
	17:01	17:59			18:50			20:45			21:35	22:06
21	08:38	07:45			06:41			06:29			05:34	05:14
	17:03	18:01			18:52			20:47			21:37	22:06
22	08:36	07:43			06:39			06:27			05:33	05:14
	17:04	18:03			18:54			20:49			21:38	22:06
23	08:35	07:40		08:09 (8)	06:36			06:25			05:32	05:15
	17:06	18:05	8	08:17 (8)	18:56			20:50			21:40	22:07
24	08:34	07:38		08:08 (8)	06:34		07:05 (10)	06:23			05:30	05:15
	17:08	18:07	10	08:18 (8)	18:58	2	07:07 (10)	20:52			21:41	22:07
25	08:33	07:36		08:06 (8)	06:31		07:02 (10)	06:21			05:29	05:15
	17:10	18:08	12	08:18 (8)	18:59	9	07:11 (10)	20:54			21:43	22:07
26	08:31	07:34		08:06 (8)	06:29		06:59 (10)	06:19			05:28	05:16
	17:12	18:10	12	08:18 (8)	19:01	12	07:11 (10)	20:56			21:44	22:07
27	08:30	07:32		08:06 (8)	06:27		06:59 (10)	06:17			05:27	05:16
	17:13	18:12	13	08:19 (8)	19:03	13	07:12 (10)	20:57			21:45	22:07
28	08:28	07:29		08:06 (8)	06:24		06:57 (10)	06:14			05:26	05:17
	17:15	18:14	12	08:18 (8)	19:05	15	07:12 (10)	20:59			21:47	22:07
29	08:27				07:22		07:57 (10)	06:12			05:25	05:17
	17:17				20:06	15	08:12 (10)	21:01			21:48	22:06
30	08:25				07:20		07:58 (10)	06:10			05:23	05:18
	17:19				20:08	13	08:11 (10)	21:03			21:49	22:06
31	08:24				07:17		07:58 (10)				05:23	
	17:21				20:10	11	08:09 (10)				21:50	
Potential sun hours	255	276			367			418			489	503
Total, worst case			67		175			12				
Sun reduction			0.21		0.24			0.35				
Oper. time red.			1.00		1.00			1.00				
Wind dir. red.			0.68		0.68			0.68				
Total reduction			0.14		0.17			0.24				
Total, real			9		29			3				

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** FG - H163**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	July	August	September	October	November	December
1	05:18	05:56	06:48	07:38	08:06 (9)	07:34
	22:06	21:33	20:29	19:18	9 08:15 (9)	17:10
2	05:19	05:58	06:49	07:40	08:09 (9)	07:36
	22:06	21:31	20:27	19:15	3 08:12 (9)	17:08
3	05:20	05:59	06:51	07:42		07:37
	22:05	21:29	20:24	19:13		17:06
4	05:21	06:01	06:53	07:43		07:39
	22:05	21:27	20:22	19:11		17:04
5	05:21	06:03	06:54	07:45		07:41
	22:04	21:26	20:20	19:08		17:02
6	05:22	06:04	06:56	07:47		07:43
	22:04	21:24	20:17	19:06		17:01
7	05:23	06:06	06:58	07:49		07:45
	22:03	21:22	20:15	19:04		16:59
8	05:24	06:07	06:59	07:50		07:47
	22:02	21:20	20:13	19:01		16:57
9	05:25	06:09	07:01	07:52		07:49
	22:02	21:18	20:10	18:59		16:56
10	05:26	06:11	07:03	07:54		07:50
	22:01	21:16	20:08	18:57		16:54
11	05:27	06:12	07:04	07:56	08:44 (8)	07:52
	22:00	21:14	20:05	18:54	3 08:47 (8)	16:52
12	05:28	06:14	07:06	07:57	08:40 (8)	07:54
	21:59	21:12	20:03	18:52	9 08:49 (8)	16:51
13	05:29	06:16	07:08	07:59	08:39 (8)	07:56
	21:58	21:10	20:01	18:50	11 08:50 (8)	16:49
14	05:31	06:17	07:09	08:01	08:38 (8)	07:58
	21:57	21:08	19:58	18:48	13 08:51 (8)	16:48
15	05:32	06:19	07:11	08:03	08:38 (8)	08:00
	21:56	21:06	19:56	18:45	13 08:51 (8)	16:46
16	05:33	06:21	07:13	08:05	08:38 (8)	08:01
	21:55	21:04	19:54	18:43	13 08:51 (8)	16:45
17	05:34	06:22	07:14	08:06	08:38 (8)	08:03
	21:54	21:02	19:51	18:41	12 08:50 (8)	16:43
18	05:36	06:24	07:16	08:08	08:39 (8)	08:05
	21:53	21:00	19:49	18:39	10 08:49 (8)	16:42
19	05:37	06:26	07:18	08:10	08:41 (8)	08:07
	21:52	20:58	19:46	18:37	6 08:47 (8)	16:40
20	05:38	06:27	07:20	08:12		08:08
	21:51	20:56	19:44	18:34		16:39
21	05:40	06:29	07:21	08:14		08:10
	21:49	20:54	19:42	18:32		16:38
22	05:41	06:31	07:23	08:15		08:12
	21:48	20:51	19:39	18:30		16:37
23	05:43	06:32	07:25	08:17		08:14
	21:47	20:49	19:37	18:28		16:36
24	05:44	06:34	07:26	08:19		08:15
	21:45	20:47	19:34	18:26		16:34
25	05:45	06:36	07:28	08:09 (9)	07:21	08:17
	21:44	20:45	19:32	18:14 (9)	17:24	16:33
26	05:47	06:37	07:30	08:07 (9)	07:23	08:18
	21:42	20:43	19:30	18:16 (9)	17:22	16:32
27	05:48	06:39	07:31	08:06 (9)	07:25	08:20
	21:41	20:40	19:27	18:17 (9)	17:20	16:31
28	05:50	06:41	07:33	08:06 (9)	07:26	08:22
	21:39	20:38	19:25	18:17 (9)	17:18	16:31
29	05:51	06:43	07:35	08:05 (9)	07:28	08:23
	21:38	20:36	19:22	18:16 (9)	17:16	16:30
30	05:53	06:44	07:37	08:05 (9)	07:30	08:25
	21:36	20:33	19:20	18:16 (9)	17:14	16:29
31	05:55	06:46		07:32		08:50
	21:34	20:31		17:12		16:32
Potential sun hours	506	456	381	330	263	240
Total, worst case			160	102		
Sun reduction			0.28	0.24		
Oper. time red.			1.00	1.00		
Wind dir. red.			0.68	0.67		
Total reduction			0.19	0.16		
Total, real			31	16		

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

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+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** FH - H164**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:32	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:35	08:27
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:06	06:01	05:19	05:22	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:25	20:19	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:40	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
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	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
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	16:44	17:38	18:31	20:26	21:18	21:59	22:01	21:18	20:10	18:59	16:56	16:24
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	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
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	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
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	16:49	17:46	18:38	20:33	21:24	22:02	21:58	21:10	20:01	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:23
15	08:43	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:50	18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:45	16:24
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	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:58	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
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	16:59	17:57	18:49	20:43	21:34	22:05	21:52	20:58	19:46	18:37	16:41	16:24
20	08:38	07:47	06:43	06:31	05:36	05:14	05:38	06:27	07:19	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:34	16:39	16:25
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	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:41	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:32	07:25	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:45	06:36	07:28	08:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:42	22:06	21:44	20:45	19:32	18:24	16:34	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:55	21:44	22:06	21:42	20:42	19:30	18:22	16:32	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:48	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:41	20:40	19:27	18:20	16:32	16:29
28	08:28	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:21	08:50
	17:15	18:14	19:04	20:59	21:46	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:12	05:25	05:17	05:52	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:36	19:22	18:16	16:30	16:30
30	08:25		07:20	06:10	05:24	05:18	05:53	06:44	07:36	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	264	240
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)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** FI - H165**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:09	05:22	05:19	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:33	20:29	19:18	17:10	16:28
2	08:50	08:21	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:36	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:27	19:15	17:08	16:28
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:29	18:22	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
5	08:49	08:16	07:18	07:06	06:01	05:19	05:22	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:26	20:20	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
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	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
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	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:13	19:01	16:57	16:25
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	22:00	22:01	21:18	20:10	18:59	16:56	16:24
10	08:47	08:07	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:47	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
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12	08:46	08:03	07:02	06:49	05:48	05:15	05:29	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:50	17:46	18:38	20:33	21:24	22:03	21:58	21:10	20:01	18:50	16:49	16:24
14	08:44	07:59	06:57	06:45	05:45	05:15	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:24
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	16:53	17:50	18:42	20:36	21:28	22:04	21:56	21:06	19:56	18:46	16:46	16:24
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18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:58	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
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	16:59	17:57	18:49	20:43	21:34	22:05	21:52	20:58	19:46	18:37	16:41	16:24
20	08:39	07:47	06:43	06:32	05:36	05:14	05:39	06:28	07:20	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:35	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:42	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:15	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:33	07:25	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:58	20:52	21:41	22:07	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:46	06:36	07:28	08:21	08:17	08:49
	17:10	18:09	18:59	20:54	21:43	22:07	21:44	20:45	19:32	18:24	16:34	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:55	21:44	22:07	21:42	20:42	19:30	18:22	16:33	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:49	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:41	20:40	19:27	18:20	16:32	16:29
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	17:15	18:14	19:05	20:59	21:47	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:13	05:25	05:17	05:52	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:36	19:23	18:16	16:30	16:31
30	08:25		07:20	06:11	05:24	05:18	05:53	06:44	07:37	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	264	240
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)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: FJ - H166

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
229 231 210 320 200 640 608 691 568 658 724 1,086 671 733 661 530 8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:11	21:04	21:51	22:06	21:32	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:12	06:06	05:21	05:19	05:58	06:49	07:40	07:35	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10	06:04	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:26	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:05	06:01	05:18	05:21	06:02	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:25	20:19	19:08	17:02	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:48	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:58	05:55	05:17	05:24	06:07	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:43	17:38	18:31	20:26	21:18	22:00	22:01	21:18	20:10	18:59	16:55	16:24
10	08:47	08:06	07:07	06:54	05:51	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:46	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:23
13	08:45	08:01	07:00	06:47	05:46	05:15	05:29	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:02	21:58	21:10	20:01	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:47	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:47	16:23
15	08:43	07:57	06:55	06:42	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:52	17:49	18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	16:23
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:45	16:23
17	08:42	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:38	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:57	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:49	20:43	21:34	22:05	21:52	20:58	19:46	18:37	16:40	16:24
20	08:38	07:47	06:43	06:31	05:36	05:14	05:38	06:27	07:19	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:34	16:39	16:25
21	08:37	07:44	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:41	18:32	16:38	16:25
22	08:36	07:42	06:38	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:25
23	08:35	07:40	06:36	06:25	05:31	05:14	05:42	06:32	07:24	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:06	18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:34	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:45	06:36	07:28	08:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:42	22:07	21:44	20:45	19:32	18:24	16:33	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:37	07:30	08:23	08:18	08:50
	17:11	18:10	19:01	20:55	21:44	22:07	21:42	20:42	19:29	18:22	16:32	16:28
27	08:30	07:32	06:27	06:16	05:27	05:16	05:48	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:41	20:40	19:27	18:20	16:31	16:29
28	08:28	07:29	06:24	06:14	05:26	05:16	05:50	06:41	07:33	08:26	08:21	08:50
	17:15	18:14	19:04	20:59	21:46	22:06	21:39	20:38	19:25	18:18	16:30	16:29
29	08:27		07:22	06:12	05:24	05:17	05:51	06:42	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:36	19:22	18:16	16:30	16:30
30	08:25		07:20	06:10	05:23	05:18	05:53	06:44	07:36	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:22		05:54	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	489	503	506	456	381	330	263	240
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)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** FK - H167**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:51	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:52	22:06	21:33	20:29	19:18	17:10	16:28
2	08:50	08:21	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:36	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:06	21:31	20:27	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:38	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:21	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:31
	16:37	17:28	18:22	20:17	21:09	21:55	22:05	21:27	20:22	19:11	17:04	16:26
5	08:50	08:16	07:18	07:06	06:01	05:18	05:21	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:26	20:20	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:13	21:57	22:04	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:35
	16:41	17:34	18:27	20:22	21:15	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:07	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:13	19:01	16:57	16:24
9	08:48	08:09	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:49	08:37
	16:43	17:38	18:31	20:26	21:18	22:00	22:02	21:18	20:10	18:59	16:56	16:24
10	08:47	08:07	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:28	21:20	22:01	22:01	21:16	20:08	18:57	16:54	16:24
11	08:47	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:55	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:23
13	08:45	08:01	07:00	06:47	05:46	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:25	22:03	21:58	21:10	20:01	18:50	16:49	16:23
14	08:45	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:35	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:23
15	08:44	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	08:00	08:43
	16:53	17:50	18:42	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	16:23
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:05	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:54	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:15	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:46
	16:57	17:55	18:47	20:42	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:07	08:46
	16:59	17:57	18:49	20:43	21:34	22:06	21:52	20:58	19:46	18:37	16:41	16:24
20	08:39	07:47	06:43	06:31	05:36	05:14	05:38	06:27	07:20	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:36	22:06	21:51	20:56	19:44	18:34	16:39	16:25
21	08:38	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:14	08:10	08:48
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:54	19:42	18:32	16:38	16:25
22	08:36	07:43	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:49	21:38	22:07	21:48	20:51	19:39	18:30	16:37	16:25
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:32	07:25	08:17	08:14	08:49
	17:06	18:05	18:56	20:50	21:40	22:07	21:47	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:58	20:52	21:41	22:07	21:45	20:47	19:34	18:26	16:35	16:27
25	08:33	07:36	06:32	06:21	05:29	05:15	05:45	06:36	07:28	08:21	08:17	08:50
	17:10	18:08	18:59	20:54	21:43	22:07	21:44	20:45	19:32	18:24	16:33	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:19	08:50
	17:12	18:10	19:01	20:56	21:44	22:07	21:42	20:43	19:30	18:22	16:32	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:48	06:39	07:31	08:25	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:07	21:41	20:40	19:27	18:20	16:31	16:29
28	08:28	07:30	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:22	08:50
	17:15	18:14	19:05	20:59	21:47	22:07	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:12	05:25	05:17	05:51	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:38	20:36	19:23	18:16	16:30	16:30
30	08:25		07:20	06:10	05:24	05:18	05:53	06:44	07:37	08:30	08:25	08:50
	17:19		20:08	21:03	21:49	22:06	21:36	20:34	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:51
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	255	276	367	418	489	503	506	456	381	330	263	240
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)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: FL - H168

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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:32	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:13	06:06	05:21	05:19	05:58	06:49	07:40	07:35	08:27
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:05	06:01	05:19	05:21	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:25	20:19	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:07	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	21:59	22:01	21:18	20:10	18:59	16:56	16:24
10	08:47	08:06	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:46	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:46	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:02	21:58	21:10	20:01	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:23
15	08:43	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:49	18:41	20:36	21:27	22:04	21:56	21:06	19:56	18:45	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:57	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:49	20:43	21:34	22:05	21:52	20:58	19:46	18:37	16:41	16:24
20	08:38	07:47	06:43	06:31	05:36	05:14	05:38	06:27	07:19	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:34	16:39	16:25
21	08:37	07:44	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:41	18:32	16:38	16:25
22	08:36	07:42	06:38	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:32	07:25	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:45	06:36	07:28	08:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:42	22:06	21:44	20:45	19:32	18:24	16:33	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:37	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:55	21:44	22:06	21:42	20:42	19:30	18:22	16:32	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:48	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:41	20:40	19:27	18:20	16:32	16:29
28	08:28	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:21	08:50
	17:15	18:14	19:04	20:59	21:46	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:12	05:25	05:17	05:51	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:36	19:22	18:16	16:30	16:30
30	08:25		07:20	06:10	05:24	05:18	05:53	06:44	07:36	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: FM - H169

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
229 231 210 320 200 640 608 691 568 658 724 1,086 671 733 661 530 8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:32	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:35	08:27
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:06	06:01	05:19	05:21	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:25	20:19	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:40	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:07	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	21:59	22:01	21:18	20:10	18:59	16:56	16:24
10	08:47	08:06	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:46	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:46	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:02	21:58	21:10	20:01	18:50	16:49	16:23
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15	08:43	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:50	18:41	20:36	21:27	22:04	21:56	21:06	19:56	18:45	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:57	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
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	16:59	17:57	18:49	20:43	21:34	22:05	21:52	20:58	19:46	18:37	16:41	16:24
20	08:38	07:47	06:43	06:31	05:36	05:14	05:38	06:27	07:19	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:34	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:41	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:32	07:25	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:45	06:36	07:28	08:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:42	22:06	21:44	20:45	19:32	18:24	16:33	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:37	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:55	21:44	22:06	21:42	20:42	19:30	18:22	16:32	16:28
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	17:13	18:12	19:03	20:57	21:45	22:06	21:41	20:40	19:27	18:20	16:32	16:29
28	08:28	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:21	08:50
	17:15	18:14	19:04	20:59	21:46	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:12	05:25	05:17	05:52	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:36	19:22	18:16	16:30	16:30
30	08:25		07:20	06:10	05:24	05:18	05:53	06:44	07:36	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	264	240
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)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** FN - H170**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:51	08:22	07:27	07:15	06:09	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:52	22:06	21:33	20:29	19:18	17:10	16:28
2	08:50	08:21	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:36	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:06	21:31	20:27	19:16	17:08	16:28
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:38	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:21	07:08	06:03	05:19	05:21	06:01	06:53	07:44	07:39	08:31
	16:37	17:29	18:22	20:17	21:10	21:55	22:05	21:28	20:22	19:11	17:04	16:26
5	08:50	08:16	07:18	07:06	06:01	05:19	05:22	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:26	20:20	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:40	17:32	18:25	20:21	21:13	21:57	22:04	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:35
	16:41	17:34	18:27	20:22	21:15	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:08	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:13	19:01	16:57	16:24
9	08:48	08:09	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:49	08:37
	16:44	17:38	18:31	20:26	21:18	22:00	22:02	21:18	20:10	18:59	16:56	16:24
10	08:47	08:07	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:33	20:28	21:20	22:01	22:01	21:16	20:08	18:57	16:54	16:24
11	08:47	08:05	07:05	06:52	05:50	05:15	05:27	06:12	07:05	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:06	18:55	16:52	16:24
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	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:25	22:03	21:58	21:10	20:01	18:50	16:49	16:24
14	08:45	07:59	06:58	06:45	05:45	05:14	05:31	06:17	07:10	08:01	07:58	08:42
	16:51	17:48	18:40	20:35	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:24
15	08:44	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	08:00	08:43
	16:53	17:50	18:42	20:36	21:28	22:04	21:56	21:06	19:56	18:46	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:05	08:01	08:44
	16:54	17:52	18:43	20:38	21:29	22:04	21:55	21:04	19:54	18:43	16:45	16:24
17	08:42	07:53	06:51	06:38	05:40	05:14	05:34	06:22	07:15	08:06	08:03	08:45
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18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:46
	16:58	17:55	18:47	20:42	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
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20	08:39	07:47	06:43	06:32	05:36	05:14	05:38	06:28	07:20	08:12	08:08	08:47
	17:01	17:59	18:51	20:45	21:36	22:06	21:51	20:56	19:44	18:35	16:39	16:25
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	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:54	19:42	18:32	16:38	16:25
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	17:17		20:06	21:01	21:48	22:06	21:38	20:36	19:23	18:16	16:30	16:30
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	17:19		20:08	21:03	21:49	22:06	21:36	20:34	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:51
	17:21		20:10		21:51		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	489	503	506	456	381	330	263	240
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)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** FO - H171**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:09	05:22	05:19	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:33	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:35	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:26	19:15	17:08	16:28
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:06	06:01	05:19	05:22	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:25	20:20	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:40	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:08	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:25
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	21:59	22:01	21:18	20:10	18:59	16:56	16:24
10	08:47	08:06	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:46	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:55	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:02	21:58	21:10	20:01	18:50	16:49	16:24
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:24
15	08:43	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:50	18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:35	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:58	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:49	20:43	21:34	22:05	21:52	20:58	19:46	18:37	16:41	16:24
20	08:38	07:47	06:43	06:32	05:36	05:14	05:38	06:27	07:20	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:35	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:42	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:33	07:25	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:46	06:36	07:28	08:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:42	22:07	21:44	20:45	19:32	18:24	16:34	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:55	21:44	22:07	21:42	20:42	19:30	18:22	16:33	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:49	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:41	20:40	19:27	18:20	16:32	16:29
28	08:28	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:21	08:50
	17:15	18:14	19:05	20:59	21:46	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:13	05:25	05:17	05:52	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:36	19:22	18:16	16:30	16:30
30	08:25		07:20	06:11	05:24	05:18	05:53	06:44	07:36	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	264	240
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)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
Kathryn Feeney / kfeeney@jodireland.com
Calculated:
16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** FP - H172**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	[January	[February	[March	[April	[May	[June	[July	[August	[September	[October	[November	[December							
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:48	07:38	08:11 (9)	07:34	08:26						
	16:34	17:23	18:16	20:12	21:04	21:52	22:06	21:33	20:29	19:18	12	08:23 (9)	17:10	16:28					
2	08:50	08:21	07:25	07:13	06:06	05:21	05:19	05:58	06:49	07:40		08:11 (9)	07:36	08:28					
	16:35	17:25	18:18	20:13	21:06	21:53	22:06	21:31	20:27	19:15	12	08:23 (9)	17:08	16:27					
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42		08:10 (9)	07:37	08:29					
	16:36	17:26	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	11	08:21 (9)	17:06	16:27					
4	08:50	08:17	07:21	07:08	06:03	05:19	05:21	06:01	06:53	07:43	9	08:11 (9)	07:39	08:31					
	16:37	17:28	18:21	20:17	21:09	21:55	22:05	21:27	20:22	19:11	9	08:20 (9)	17:04	16:26					
5	08:50	08:16	07:18	07:06	06:01	05:18	05:21	06:03	06:54	07:45		08:13 (9)	07:41	08:32					
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:26	20:20	19:08	5	08:18 (9)	17:02	16:26					
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47			07:43	08:33					
	16:39	17:32	18:25	20:20	21:13	21:57	22:04	21:24	20:17	19:06			17:01	16:25					
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49			07:45	08:35					
	16:41	17:34	18:27	20:22	21:15	21:58	22:03	21:22	20:15	19:04			16:59	16:25					
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:07	06:59	07:50			07:47	08:36					
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:13	19:01			16:57	16:24					
9	08:48	08:08	07:09	07:35 (9)	06:56	05:53	05:16	05:25	06:09	07:01			07:52	07:49	08:37				
	16:43	17:38	18:31	8 07:43 (9)	20:26	21:18	22:00	22:02	21:18	20:10			18:59	16:56	16:24				
10	08:47	08:07	07:07	07:33 (9)	06:54	05:52	05:16	05:26	06:11	07:03			07:54	07:50	08:38				
	16:45	17:40	18:32	10 07:43 (9)	20:27	21:20	22:01	22:01	21:16	20:08			18:57	16:54	16:24				
11	08:47	08:05	07:04	07:32 (9)	06:52	05:50	05:15	05:27	06:12	07:04			07:56	07:52	08:39				
	16:46	17:42	18:34	12 07:44 (9)	20:29	21:21	22:01	22:00	21:14	20:05			18:54	16:52	16:24				
12	08:46	08:03	07:02	07:32 (9)	06:49	05:48	05:15	05:28	06:14	07:06			07:57	07:54	08:40				
	16:48	17:44	18:36	12 07:44 (9)	20:31	21:23	22:02	21:59	21:12	20:03			18:52	16:51	16:23				
13	08:45	08:01	07:00	07:32 (9)	06:47	05:46	05:15	05:29	06:16	07:08			07:59	07:56	08:41				
	16:49	17:46	18:38	10 07:42 (9)	20:33	21:25	22:03	21:58	21:10	20:01			18:50	16:49	16:23				
14	08:44	07:59	06:57	07:33 (9)	06:45	05:45	05:14	05:31	06:17	07:09			08:01	07:58	08:42				
	16:51	17:48	18:40	9 07:42 (9)	20:35	21:26	22:03	21:57	21:08	19:58			18:48	16:48	16:23				
15	08:44	07:57	06:55	07:34 (9)	06:43	05:43	05:14	05:32	06:19	07:11			07:59 (10)	08:03	08:43				
	16:52	17:49	18:41	5 07:39 (9)	20:36	21:28	22:04	21:56	21:06	19:56	7	08:06 (10)	18:45	6 08:48 (8)	08:00	16:23			
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:05			07:56 (10)	08:05	08:46	08:01	08:44		
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:54	11	08:07 (10)	18:43	10 08:07 (10)	18:43	08:56 (8)	16:45	16:24		
17	08:42	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06			07:55 (10)	08:06	08:45 (8)	08:03	08:45		
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	13	08:08 (10)	18:41	12 08:08 (10)	18:41	08:57 (8)	16:43	16:24		
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08			07:55 (10)	08:08	08:45 (8)	08:05	08:46		
	16:57	17:55	18:47	20:42	21:32	22:05	21:53	21:00	19:49	14	08:09 (10)	18:39	12 08:09 (10)	18:39	08:57 (8)	16:42	16:24		
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10			07:54 (10)	08:10	08:44 (8)	08:07	08:46		
	16:59	17:57	4 08:22 (8)	18:49	20:43	21:34	22:06	21:52	20:58	19:46	14	08:08 (10)	18:37	13 08:08 (10)	18:37	08:57 (8)	16:40	16:24	
20	08:39	07:47	06:43	06:31	05:36	05:14	05:38	06:27	07:20	08:12			07:54 (10)	08:12	08:45 (8)	08:08	08:47		
	17:01	17:59	9 08:24 (8)	18:50	4 07:17 (10)	20:45	21:35	22:06	21:51	20:56	19:44	14	08:08 (10)	18:34	12 08:08 (10)	18:34	08:57 (8)	16:39	16:25
21	08:38	07:45	06:41	07:10 (10)	06:29	05:34	05:14	05:40	06:29	07:21			07:54 (10)	08:14	08:44 (8)	08:10	08:48		
	17:03	18:01	11 08:25 (8)	18:52	10 07:20 (10)	20:47	21:37	22:06	21:49	20:54	19:42	13	08:07 (10)	18:32	11 08:07 (10)	18:32	08:55 (8)	16:38	16:25
22	08:36	07:43	06:39	07:09 (10)	06:27	05:33	05:14	05:41	06:31	07:23			07:55 (10)	08:15	08:45 (8)	08:12	08:48		
	17:04	18:03	12 08:25 (8)	18:54	12 07:21 (10)	20:49	21:38	22:06	21:48	20:51	19:39	10	08:05 (10)	18:30	9 08:05 (10)	18:30	08:54 (8)	16:37	16:25
23	08:35	07:40	06:36	07:07 (10)	06:25	05:32	05:15	05:42	06:32	07:25			07:57 (10)	08:17	08:49 (8)	08:14	08:49		
	17:06	18:05	13 08:26 (8)	18:56	14 07:21 (10)	20:50	21:40	22:07	21:47	20:49	19:37	6	08:03 (10)	18:28	1 08:03 (10)	18:28	08:50 (8)	16:36	16:26
24	08:34	07:38	06:34	07:07 (10)	06:23	05:30	05:15	05:44	06:34	07:26			08:19	18:26		18:26	08:15	16:34	16:27
	17:08	18:07	13 08:26 (8)	18:58	14 07:21 (10)	20:52	21:41	22:07	21:45	20:47	19:34			18:26		18:26	08:15	16:34	16:27
25	08:33	07:36	06:31	07:07 (10)	06:21	05:29	05:15	05:45	06:36	07:28			07:21	18:21		18:21	08:17	16:33	16:27
	17:10	18:08	11 08:24 (8)	18:59	14 07:21 (10)	20:54	21:43	22:07	21:44	20:45	19:32			17:24		17:24	08:18	16:33	16:27
26	08:31	07:34	06:29	07:07 (10)	06:19	05:28	05:16	05:47	06:37	07:30			07:23	18:13		18:13	08:18	16:30	16:27
	17:12	18:10	9 08:23 (8)	19:01	13 07:20 (10)	20:56	21:44	22:07	21:42	20:43	19:30			17:23		17:23	08:18	16:32	16:28
27	08:30	07:32	06:27	07:08 (10)	06:17	05:27	05:16	05:48	06:39	07:31			07:25	18:13		18:13	08:20	16:31	16:29
	17:13	18:12	4 08:21 (8)	19:03	11 07:19 (10)	20:57	21:45	22:07	21:41	20:40	19:27			17:20		17:20	08:22	16:31	16:29
28	08:28	07:29	06:24	07:08 (10)	06:14	05:26	05:17	05:50	06:41	07:33			07:26	18:18		18:18	08:22	16:31	16:29
	17:15	18:14	19:05	9 07:17 (10)	20:59	21:47	22:07	21:39	20:38	19:25			17:18			17:18	16:31	16:31	16:29
29	08:27		07:22	06:12	05:25	05:17	05:51	06:43	07:35				08:13 (9)	07:28		07:28	16:31	16:31	16:29
	17:17		20:06	21:01	21:48	22:06	21:38	20:36	19:22	8	08:21 (9)	07:16		17:16		17:16	16:30	16:30	16:29
30	08:25		07:20	06:10	05:23	05:18	05:53	06:44	07:37				08:12 (9)	07:30		07:30	16:30	16:30	16:29
	17:19		20:08	21:03	21:49	22:06	21:36	20:33	19:20	10	08:22 (9)	07:14		17:14		17:14	16:29	16:31	16:31
31	08:24		07:17	06:09	05:21	05:15	05:55	06:46					07:32			07:32	16:30	16:30	16:31
	17:21		20:10	21:50	21:50	21:50	21:34	20:31					17:12			17:12	16:32	16:32	16:32
Potential sun hours	255	276	367	418	489	503	506	456	381	330		263	240						
Total, worst case		86	167	0.24					120	135		0.24							
Sun reduction		0.21	0.24						0.28	0.24		0.24							
Oper. time red.		1.00	1.00						1.00	1.00		1.00							
Wind dir. red.		0.67	0.68						0.68	0.67		0.67							
Total reduction		0.14	0.16						0.19	0.16		0.16							
Total, real		12	28						23	22									

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** FQ - H173**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:51	08:22	07:27	07:15	06:09	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:52	22:06	21:33	20:29	19:18	17:10	16:28
2	08:50	08:21	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:36	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:06	21:31	20:27	19:16	17:08	16:28
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:38	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:21	07:08	06:03	05:19	05:21	06:01	06:53	07:44	07:39	08:31
	16:37	17:29	18:22	20:17	21:10	21:55	22:05	21:28	20:22	19:11	17:04	16:26
5	08:50	08:16	07:18	07:06	06:01	05:19	05:22	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:26	20:20	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:40	17:32	18:25	20:21	21:13	21:57	22:04	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:35
	16:41	17:34	18:27	20:22	21:15	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:08	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:13	19:01	16:57	16:24
9	08:48	08:09	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:49	08:37
	16:44	17:38	18:31	20:26	21:18	22:00	22:02	21:18	20:10	18:59	16:56	16:24
10	08:47	08:07	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:33	20:28	21:20	22:01	22:01	21:16	20:08	18:57	16:54	16:24
11	08:47	08:05	07:05	06:52	05:50	05:15	05:27	06:12	07:05	07:56	07:52	08:39
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13	08:45	08:01	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:25	22:03	21:58	21:10	20:01	18:50	16:49	16:24
14	08:45	07:59	06:58	06:45	05:45	05:14	05:31	06:17	07:10	08:01	07:58	08:42
	16:51	17:48	18:40	20:35	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:24
15	08:44	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	08:00	08:43
	16:53	17:50	18:42	20:36	21:28	22:04	21:56	21:06	19:56	18:46	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:05	08:01	08:44
	16:54	17:52	18:43	20:38	21:29	22:04	21:55	21:04	19:54	18:43	16:45	16:24
17	08:42	07:53	06:51	06:38	05:40	05:14	05:34	06:22	07:15	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:46
	16:58	17:55	18:47	20:42	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:07	08:46
	16:59	17:57	18:49	20:43	21:34	22:06	21:52	20:58	19:46	18:37	16:41	16:24
20	08:39	07:47	06:43	06:32	05:36	05:14	05:38	06:28	07:20	08:12	08:08	08:47
	17:01	17:59	18:51	20:45	21:36	22:06	21:51	20:56	19:44	18:35	16:39	16:25
21	08:38	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:14	08:10	08:48
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:54	19:42	18:32	16:38	16:25
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	17:04	18:03	18:54	20:49	21:38	22:07	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:33	07:25	08:17	08:14	08:49
	17:06	18:05	18:56	20:50	21:40	22:07	21:47	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:58	20:52	21:41	22:07	21:45	20:47	19:34	18:26	16:35	16:27
25	08:33	07:36	06:32	06:21	05:29	05:15	05:46	06:36	07:28	08:21	08:17	08:50
	17:10	18:09	18:59	20:54	21:43	22:07	21:44	20:45	19:32	18:24	16:34	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:19	08:50
	17:12	18:10	19:01	20:56	21:44	22:07	21:42	20:43	19:30	18:22	16:33	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:49	06:39	07:31	08:25	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:07	21:41	20:40	19:27	18:20	16:32	16:29
28	08:28	07:30	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:22	08:50
	17:15	18:14	19:05	20:59	21:47	22:07	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:13	05:25	05:17	05:52	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:38	20:36	19:23	18:16	16:30	16:30
30	08:25		07:20	06:11	05:24	05:18	05:53	06:44	07:37	08:30	08:25	08:51
	17:19		20:08	21:03	21:49	22:06	21:36	20:34	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:51
	17:21		20:10		21:51		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	489	503	506	456	381	330	263	240
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)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** FR - H174**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:32	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:13	06:06	05:21	05:19	05:58	06:49	07:40	07:35	08:27
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:05	06:01	05:19	05:21	06:03	06:54	07:45	07:41	08:32
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6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
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	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	21:59	22:01	21:18	20:10	18:59	16:56	16:24
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12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:46	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:02	21:58	21:10	20:01	18:50	16:49	16:23
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	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:23
15	08:43	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:49	18:41	20:36	21:27	22:04	21:56	21:06	19:56	18:45	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:57	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:49	20:43	21:34	22:05	21:52	20:58	19:46	18:37	16:41	16:24
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	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
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	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
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	17:08	18:07	18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:35	16:27
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	17:10	18:08	18:59	20:54	21:42	22:06	21:44	20:45	19:32	18:24	16:33	16:27
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27	08:30	07:32	06:27	06:17	05:27	05:16	05:48	06:39	07:31	08:24	08:20	08:50
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28	08:28	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:21	08:50
	17:15	18:14	19:04	20:59	21:46	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:12	05:25	05:17	05:51	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:36	19:22	18:16	16:30	16:30
30	08:25		07:20	06:10	05:24	05:18	05:53	06:44	07:36	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
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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

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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: FS - H175

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
229 231 210 320 200 640 608 691 568 658 724 1,086 671 733 661 530 8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:11	21:04	21:51	22:06	21:32	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:12	06:06	05:21	05:19	05:58	06:49	07:40	07:35	08:27
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10	06:04	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:26	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:05	06:01	05:18	05:21	06:02	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:25	20:19	19:08	17:02	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:48	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:58	05:55	05:17	05:24	06:07	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:43	17:38	18:31	20:26	21:18	21:59	22:01	21:18	20:10	18:59	16:55	16:24
10	08:47	08:06	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:46	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:55	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:23
13	08:45	08:01	07:00	06:47	05:46	05:15	05:29	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:02	21:58	21:10	20:01	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:57	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:47	16:23
15	08:43	07:57	06:55	06:42	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:52	17:49	18:41	20:36	21:27	22:04	21:56	21:06	19:56	18:45	16:46	16:23
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:57	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:49	20:43	21:34	22:05	21:52	20:58	19:46	18:37	16:40	16:24
20	08:38	07:47	06:43	06:31	05:36	05:14	05:38	06:27	07:19	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:55	19:44	18:34	16:39	16:25
21	08:37	07:44	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:41	18:32	16:38	16:25
22	08:36	07:42	06:38	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:25
23	08:35	07:40	06:36	06:25	05:32	05:15	05:42	06:32	07:24	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:06	18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:34	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:45	06:36	07:28	08:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:42	22:07	21:44	20:45	19:32	18:24	16:33	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:37	07:30	08:22	08:18	08:50
	17:11	18:10	19:01	20:55	21:44	22:06	21:42	20:42	19:29	18:21	16:32	16:28
27	08:30	07:32	06:27	06:16	05:27	05:16	05:48	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:41	20:40	19:27	18:19	16:31	16:29
28	08:28	07:29	06:24	06:14	05:26	05:17	05:50	06:41	07:33	08:26	08:21	08:50
	17:15	18:14	19:04	20:59	21:46	22:06	21:39	20:38	19:25	18:17	16:31	16:29
29	08:27		07:22	06:12	05:24	05:17	05:51	06:42	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:36	19:22	18:14	16:30	16:30
30	08:25		07:20	06:10	05:23	05:18	05:53	06:44	07:36	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:12	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** FT - H176**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:32	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:35	08:27
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:06	06:01	05:19	05:21	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:25	20:19	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:40	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:07	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	21:59	22:01	21:18	20:10	18:59	16:56	16:24
10	08:47	08:06	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:46	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:02	21:58	21:10	20:01	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:23
15	08:43	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:50	18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:58	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:49	20:43	21:34	22:05	21:52	20:58	19:46	18:37	16:41	16:24
20	08:38	07:47	06:43	06:31	05:36	05:14	05:38	06:27	07:19	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:34	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:41	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:32	07:25	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:45	06:36	07:28	08:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:42	22:06	21:44	20:45	19:32	18:24	16:34	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:55	21:44	22:06	21:42	20:42	19:30	18:22	16:32	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:48	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:41	20:40	19:27	18:20	16:32	16:29
28	08:28	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:21	08:50
	17:15	18:14	19:04	20:59	21:46	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:12	05:25	05:17	05:52	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:36	19:22	18:16	16:30	16:30
30	08:25		07:20	06:10	05:24	05:18	05:53	06:44	07:36	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	264	240
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)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** FU - H177**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June
1	08:50	08:22	09:04 (8)	07:27	08:02 (9)	07:15
	16:34	17:23	18:16	11	08:13 (9)	20:12
2	08:50	08:21	09:01 (8)	07:25	08:01 (9)	07:13
	16:35	17:25	18:18	13	08:14 (9)	20:13
3	08:50	08:19	09:01 (8)	07:23	08:00 (9)	07:10
	16:36	17:26	18:20	15	08:15 (9)	20:15
4	08:50	08:17	09:00 (8)	07:21	07:58 (9)	07:08
	16:37	17:28	18:21	17	08:15 (9)	20:17
5	08:50	08:16	08:59 (8)	07:18	07:58 (9)	07:06
	16:38	17:30	18:23	17	08:15 (9)	20:19
6	08:49	08:14	08:58 (8)	07:16	07:59 (9)	07:03
	16:39	17:32	18:25	16	08:15 (9)	20:20
7	08:49	08:12	08:58 (8)	07:14	07:58 (9)	07:01
	16:41	17:34	18:27	15	08:13 (9)	20:22
8	08:48	08:10	08:58 (8)	07:11	07:59 (9)	06:59
	16:42	17:36	18:29	14	08:13 (9)	20:24
9	08:48	08:08	08:58 (8)	07:09	08:01 (9)	06:56
	16:43	17:38	18:31	10	08:11 (9)	20:26
10	08:47	08:07	08:59 (8)	07:07	08:03 (9)	06:54
	16:45	17:40	18:32	4	08:07 (9)	20:27
11	08:47	08:05	08:59 (8)	07:04		06:52
	16:46	17:42	18:34			20:29
12	08:46	08:03	09:00 (8)	07:02		06:49
	16:48	17:44	18:36			20:31
13	08:45	08:01	09:02 (8)	07:00		06:47
	16:49	17:46	18:38			20:33
14	08:44	07:59	09:04 (8)	06:57		06:45
	16:51	17:48	18:40			20:35
15	08:44	07:57	09:05	06:55		06:43
	16:52	17:49	18:41			20:36
16	08:43	07:55	09:06	06:53		06:40
	16:54	17:51	18:43	9	07:38 (10)	20:38
17	08:42	07:53	09:07	06:50		06:38
	16:56	17:53	18:45	14	07:50 (10)	20:40
18	08:41	07:51	09:08	06:48		06:36
	16:57	17:55	18:47	17	07:50 (10)	20:42
19	08:40	07:49	09:09	06:46		06:34
	16:59	17:57	18:49	20	07:52 (10)	20:43
20	08:39	07:47	09:10	06:43		06:31
	17:01	17:59	18:50	21	07:51 (10)	20:45
21	08:38	07:45	09:11	06:41		06:29
	17:03	18:01	18:52	22	07:52 (10)	20:47
22	08:36	09:11 (6)	07:43	06:39		06:27
	17:04	09:17 (6)	18:03	22	07:52 (10)	20:49
23	08:35	09:09 (6)	07:40	06:36		06:25
	17:06	09:18 (6)	18:05	22	07:51 (10)	20:50
24	08:34	09:09 (6)	07:38	06:34		06:23
	17:08	09:19 (6)	18:07	22	07:51 (10)	20:52
25	08:33	09:09 (6)	07:36	06:31		06:21
	17:10	09:21 (6)	18:08	21	07:51 (10)	20:54
26	08:31	09:08 (6)	07:34	06:29		06:19
	17:11	09:21 (6)	18:10	19	07:49 (10)	20:56
27	08:30	09:08 (6)	07:32	06:27		06:17
	17:13	09:21 (6)	18:12	17	07:48 (10)	20:57
28	08:28	09:09 (6)	07:29	06:24		06:14
	17:15	09:22 (6)	18:14	6	08:05 (9)	20:59
29	08:27	09:09 (6)	07:27	06:22		06:12
	17:17	09:21 (6)	18:14	9	08:43 (10)	21:01
30	08:25	09:10 (6)	07:25	06:20		06:10
	17:19	09:22 (6)	18:16			21:03
31	08:24	09:11 (6)	07:24	06:17		06:08
	17:21	09:21 (6)	18:17			21:05
Potential sun hours	255	276	367		418	503
Total, worst case	110	213	381			
Sun reduction	0.16	0.21	0.24			
Oper. time red.	1.00	1.00	1.00			
Wind dir. red.	0.65	0.66	0.67			
Total reduction	0.10	0.14	0.16			
Total, real	11	29	63			

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

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

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: FU - H177

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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	July	August	September	October	November	December
1	05:18 22:06	05:56 21:33	06:48 20:29	07:38 19:18	07:34 17:10	08:28 (8) 16:28
2	05:19 22:06	05:58 21:31	06:49 20:27	07:40 19:15	07:36 17:08	08:28 (8) 16:27
3	05:20 22:05	05:59 21:29	06:51 20:24	07:42 19:13	07:37 17:06	08:28 (8) 16:27
4	05:21 22:05	06:01 21:27	06:53 20:22	07:43 19:11	07:39 17:04	08:28 (8) 16:26
5	05:21 22:04	06:02 21:26	06:54 20:20	07:45 19:08	07:41 17:02	08:28 (8) 16:26
6	05:22 22:04	06:04 21:24	06:56 20:17	07:47 19:06	07:43 17:01	08:29 (8) 16:25
7	05:23 22:03	06:06 21:22	06:58 20:15	07:49 19:04	07:45 16:59	08:30 (8) 16:25
8	05:24 22:02	06:07 21:20	06:59 20:13	07:50 19:01	07:47 16:57	08:31 (8) 16:24
9	05:25 22:02	06:09 21:18	07:01 20:10	07:52 18:59	07:49 16:55	08:32 (8) 16:24
10	05:26 22:01	06:11 21:16	07:03 20:08	07:54 18:57	07:50 16:54	08:35 (8) 16:24
11	05:27 22:00	06:12 21:14	07:04 20:05	07:56 18:54	07:52 16:52	08:41 (6) 16:24
12	05:28 21:59	06:14 21:12	07:06 20:03	07:57 18:52	07:54 16:51	08:41 (6) 16:23
13	05:29 21:58	06:16 21:10	07:08 20:01	07:59 18:50	07:56 16:49	08:41 (6) 16:23
14	05:31 21:57	06:17 21:08	07:09 19:58	08:01 18:48	07:58 16:47	08:41 (6) 16:23
15	05:32 21:56	06:19 21:06	07:11 19:56	08:22 (10) 18:45	07:59 16:46	08:41 (6) 16:23
16	05:33 21:55	06:21 21:04	07:13 19:54	08:19 (10) 18:43	08:01 16:45	08:41 (6) 16:23
17	05:34 21:54	06:22 21:02	07:14 19:51	08:18 (10) 18:41	08:03 16:43	08:42 (6) 16:24
18	05:36 21:53	06:24 21:00	07:16 19:49	08:17 (10) 18:39	08:05 16:42	08:43 (6) 16:24
19	05:37 21:52	06:26 20:58	07:18 19:46	08:16 (10) 18:37	08:07 16:40	08:44 (6) 16:24
20	05:38 21:51	06:27 20:56	07:19 19:44	08:16 (10) 18:34	08:08 16:39	08:46 (6) 16:25
21	05:40 21:49	06:29 20:54	07:21 19:42	08:15 (10) 18:32	08:10 16:38	08:48 16:25
22	05:41 21:48	06:31 20:51	07:23 19:39	08:15 (10) 18:30	08:12 16:37	08:48 16:25
23	05:42 21:47	06:32 20:49	07:25 19:37	08:15 (10) 18:28	08:13 16:36	08:49 16:26
24	05:44 21:45	06:34 20:47	07:26 19:34	08:16 (10) 18:26	08:15 16:34	08:49 16:27
25	05:45 21:44	06:36 20:45	07:28 19:32	08:16 (10) 18:24	08:17 16:33	08:49 16:27
26	05:47 21:42	06:37 20:42	07:30 19:30	08:33 (10) 17:23	08:18 16:32	08:50 16:28
27	05:48 21:41	06:39 20:40	07:31 19:27	08:32 (10) 17:20	08:20 16:31	08:50 16:29
28	05:50 21:39	06:41 20:38	07:33 19:25	08:30 (10) 17:18	08:22 16:30	08:50 16:29
29	05:51 21:38	06:43 20:36	07:35 19:22	07:28 17:16	08:31 (8) 16:30	08:50 16:30
30	05:53 21:36	06:44 20:33	07:37 19:20	07:30 17:14	08:30 (8) 16:29	08:50 16:31
31	05:55 21:34	06:46 20:31		07:32 17:12	08:29 (8) 16:28	08:50 16:32
Potential sun hours	506	456	381	330	263	240
Total, worst case			251	185	267	
Sun reduction			0.28	0.24	0.19	
Oper. time red.			1.00	1.00	1.00	
Wind dir. red.			0.67	0.67	0.65	
Total reduction			0.19	0.16	0.12	
Total, real			48	30	33	

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

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** FV - H178**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December		
1	08:50 16:34	08:22 17:23	07:27 18:16	07:15 20:12	06:08 21:04	05:22 21:52	05:18 22:06	05:56 21:33	06:48 20:29	07:38 19:18	08:11 (9) 08:21 (9)	07:34 17:10	08:26 16:28	
2	08:50 16:35	08:21 17:25	07:25 18:18	07:13 20:13	06:06 21:06	05:21 21:53	05:19 22:06	05:58 21:31	06:49 20:27	07:40 19:15	08:11 (9) 08:22 (9)	07:36 17:08	08:28 16:27	
3	08:50 16:36	08:19 17:26	07:23 18:20	07:10 20:15	06:05 21:08	05:20 21:54	05:20 22:05	05:59 21:29	06:51 20:24	07:42 19:13	08:10 (9) 08:21 (9)	07:37 17:06	08:29 16:27	
4	08:50 16:37	08:17 17:28	07:21 18:21	07:08 20:17	06:03 21:09	05:19 21:55	05:21 22:05	06:01 21:27	06:53 20:22	07:43 19:11	08:10 (9) 08:20 (9)	07:39 17:04	08:31 16:26	
5	08:50 16:38	08:16 17:30	07:18 18:23	07:06 20:19	06:01 21:11	05:18 21:56	05:21 22:04	06:03 21:26	06:54 20:20	07:45 19:08	08:11 (9) 08:19 (9)	07:41 17:02	08:32 16:26	
6	08:49 16:39	08:14 17:32	07:16 18:25	07:03 20:20	05:59 21:13	05:18 21:57	05:22 22:04	06:04 21:24	06:56 20:17	07:47 19:06		07:43 17:01	08:33 16:25	
7	08:49 16:41	08:12 17:34	07:14 18:27	07:01 20:22	05:57 21:15	05:17 21:58	05:23 22:03	06:06 21:22	06:58 20:15	07:49 19:04		07:45 16:59	08:35 16:25	
8	08:48 16:42	08:10 17:36	07:11 18:29	07:35 (9) 07:41 (9)	06:59 20:24	05:55 21:16	05:17 21:59	05:24 22:02	06:07 21:20	07:50 19:01		07:47 16:57	08:36 16:24	
9	08:48 16:43	08:08 17:38	07:09 18:31	07:34 (9) 07:43 (9)	06:56 20:26	05:53 21:18	05:16 22:00	05:25 22:02	06:09 21:18	07:01 20:10		07:52 16:56	08:37 16:24	
10	08:47 16:45	08:07 17:40	07:07 18:32	07:32 (9) 07:43 (9)	06:54 20:27	05:52 21:20	05:16 22:01	05:26 22:01	06:11 21:16	07:03 20:08		07:54 16:54	08:38 16:24	
11	08:47 16:46	08:05 17:42	07:04 18:34	07:32 (9) 07:43 (9)	06:52 20:29	05:50 21:21	05:15 22:01	05:27 22:00	06:12 21:14	07:04 20:05		07:56 16:52	08:39 16:24	
12	08:46 16:48	08:03 17:44	07:02 18:36	07:32 (9) 07:43 (9)	06:49 20:31	05:48 21:23	05:15 22:02	05:28 21:59	06:14 21:12	07:06 20:03		07:57 16:51	08:40 16:23	
13	08:45 16:49	08:01 17:46	07:00 18:38	07:32 (9) 07:41 (9)	06:47 20:33	05:46 21:25	05:15 22:03	05:29 21:58	06:16 21:10	07:08 20:01		07:59 16:49	08:41 16:23	
14	08:44 16:51	07:59 17:48	06:57 18:40	07:34 (9) 07:40 (9)	06:45 20:35	05:45 21:26	05:14 22:03	05:31 21:57	06:17 21:08	07:09 19:58		07:58 16:48	08:42 16:23	
15	08:44 16:52	07:57 17:49	06:55 18:41		06:43 20:36	05:43 21:28	05:14 22:04	05:32 21:56	06:19 21:06	07:11 19:56		08:03 18:45	08:43 16:23	
16	08:43 16:54	07:55 17:51	06:53 18:43		06:40 20:38	05:42 21:29	05:14 22:04	05:33 21:55	06:21 21:04	07:13 19:54		08:05 18:43	08:44 16:24	
17	08:42 16:56	07:53 17:53	06:50 18:45		06:38 20:40	05:40 21:31	05:14 22:05	05:34 21:54	06:22 21:02	07:14 19:51	07:59 (10) 08:06 (10)	08:06 18:41	08:45 16:24	
18	08:41 16:57	07:51 17:55	06:48 18:47		06:36 20:42	05:39 21:32	05:14 22:05	05:36 21:53	06:24 21:00	07:16 19:49	7 10	07:58 (10) 08:08 (10)	08:05 18:39	08:46 16:24
19	08:40 16:59	07:49 17:57	06:46 18:49		06:34 20:43	05:37 21:34	05:14 22:06	05:37 21:52	06:26 20:58	07:18 19:46	07:56 (10) 08:08 (10)	08:10 18:37	08:46 16:24	
20	08:39 17:01	07:47 17:59	06:43 18:50	08:13 (8) 08:20 (8)	06:31 20:45	05:36 21:35	05:14 22:06	05:38 21:51	06:27 20:56	07:20 19:44	07:55 (10) 08:08 (10)	08:12 18:34	08:47 16:25	
21	08:38 17:03	07:45 18:01	06:41 18:52	08:12 (8) 08:21 (8)	06:29 20:47	05:34 21:37	05:14 22:06	05:40 21:49	06:29 20:54	07:21 19:42	07:55 (10) 08:08 (10)	08:14 18:32	08:48 16:25	
22	08:36 17:04	07:43 18:03	06:39 18:54	08:11 (8) 08:22 (8)	06:27 20:49	05:33 21:38	05:14 22:06	05:41 21:48	06:31 20:51	07:23 19:39	07:54 (10) 08:07 (10)	08:15 18:30	08:48 16:25	
23	08:35 17:06	07:40 18:05	06:36 18:56	08:11 (8) 08:23 (8)	06:25 20:50	05:32 21:40	05:15 22:07	05:43 21:47	06:32 20:49	07:25 19:37	07:55 (10) 08:06 (10)	08:17 18:28	08:49 16:26	
24	08:34 17:08	07:38 18:07	06:34 18:58	08:11 (8) 08:23 (8)	06:23 20:52	05:30 21:41	05:15 22:07	05:44 21:45	06:34 20:47	07:26 19:34	07:57 (10) 08:04 (10)	08:19 18:26	08:49 16:27	
25	08:33 17:10	07:36 18:08	06:31 18:59	08:11 (8) 08:21 (8)	06:21 20:54	05:29 21:43	05:15 22:07	05:45 21:44	06:36 20:45	07:28 19:32		07:21 17:24	08:49 16:27	
26	08:31 17:12	07:34 18:10	06:29 19:01	08:12 (8) 08:20 (8)	06:19 20:56	05:28 21:44	05:16 22:07	05:47 21:42	06:37 20:43	07:30 19:30		07:23 17:22	08:50 16:28	
27	08:30 17:13	07:32 18:12	06:27 19:03	08:14 (8) 08:18 (8)	06:17 20:57	05:27 21:45	05:16 22:07	05:48 21:41	06:39 20:40	07:31 19:27		07:25 17:20	08:50 16:29	
28	08:28 17:15	07:29 18:14	06:24 19:05		06:14 20:59	05:26 21:47	05:17 22:07	05:50 21:39	06:41 20:38	07:33 19:25		07:26 17:18	08:50 16:29	
29	08:27 17:17		07:22 20:06		06:12 21:01	05:25 21:48	05:17 22:06	05:51 21:38	06:43 20:36	07:35 19:22	08:15 (9) 08:18 (9)	07:28 17:16	08:50 16:30	
30	08:25 17:19		07:20 20:08		06:10 21:03	05:23 21:49	05:18 22:06	05:53 21:36	06:44 20:33	07:37 19:20	08:13 (9) 08:20 (9)	07:30 17:14	08:50 16:31	
31	08:24 17:21		07:17 20:10		05:23 21:50			05:55 21:34	06:46 20:31			07:32 17:12	08:50 16:32	
Potential sun hours	255	276	367		418	489	503	456		381		330	263	240
Total, worst case		73	148							96		126		
Sun reduction		0.21	0.24							0.28		0.24		
Oper. time red.		1.00	1.00							1.00		1.00		
Wind dir. red.		0.67	0.68							0.68		0.67		
Total reduction		0.14	0.16							0.19		0.16		
Total, real		10	24									20		

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** FW - H179**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:51	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:52	22:06	21:33	20:29	19:18	17:10	16:28
2	08:50	08:21	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:36	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:06	21:31	20:27	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:38	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:21	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:31
	16:37	17:28	18:22	20:17	21:09	21:55	22:05	21:27	20:22	19:11	17:04	16:26
5	08:50	08:16	07:18	07:06	06:01	05:18	05:21	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:26	20:20	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:13	21:57	22:04	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:35
	16:41	17:34	18:27	20:22	21:15	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:07	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:13	19:01	16:57	16:24
9	08:48	08:09	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:49	08:37
	16:43	17:38	18:31	20:26	21:18	22:00	22:02	21:18	20:10	18:59	16:56	16:24
10	08:47	08:07	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:28	21:20	22:01	22:01	21:16	20:08	18:57	16:54	16:24
11	08:47	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:55	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:23
13	08:45	08:01	07:00	06:47	05:46	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:25	22:03	21:58	21:10	20:01	18:50	16:49	16:23
14	08:45	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42
	16:51	17:48	18:40	20:35	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:23
15	08:44	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	08:00	08:43
	16:53	17:50	18:42	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	16:23
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	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:54	18:43	16:45	16:24
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	16:57	17:55	18:47	20:42	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
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	16:59	17:57	18:49	20:43	21:34	22:06	21:52	20:58	19:46	18:37	16:41	16:24
20	08:39	07:47	06:43	06:31	05:36	05:14	05:38	06:27	07:20	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:36	22:06	21:51	20:56	19:44	18:34	16:39	16:25
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22	08:36	07:43	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:49	21:38	22:07	21:48	20:51	19:39	18:30	16:37	16:25
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:32	07:25	08:17	08:14	08:49
	17:06	18:05	18:56	20:50	21:40	22:07	21:47	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:58	20:52	21:41	22:07	21:45	20:47	19:34	18:26	16:35	16:27
25	08:33	07:36	06:32	06:21	05:29	05:15	05:45	06:36	07:28	08:21	08:17	08:50
	17:10	18:08	18:59	20:54	21:43	22:07	21:44	20:45	19:32	18:24	16:33	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:19	08:50
	17:12	18:10	19:01	20:56	21:44	22:07	21:42	20:43	19:30	18:22	16:32	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:48	06:39	07:31	08:25	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:07	21:41	20:40	19:27	18:20	16:31	16:29
28	08:28	07:30	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:22	08:50
	17:15	18:14	19:05	20:59	21:47	22:07	21:39	20:38	19:25	18:18	16:31	16:29
29	08:27		07:22	06:12	05:25	05:17	05:51	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:38	20:36	19:23	18:16	16:30	16:30
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	17:19		20:08	21:03	21:49	22:06	21:36	20:34	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:51
	17:21		20:10		21:51		21:34	20:31		17:12		16:32
Potential sun hours	255	276	367	418	489	503	506	456	381	330	263	240
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)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: FX - H180

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
229 231 210 320 200 640 608 691 568 658 724 1,086 671 733 661 530 8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:32	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:13	06:06	05:21	05:19	05:58	06:49	07:40	07:35	08:27
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
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	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:25	20:19	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
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	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:46	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
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13	08:45	08:01	07:00	06:47	05:46	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:02	21:58	21:10	20:01	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:57	08:42
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15	08:43	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:49	18:41	20:36	21:27	22:04	21:56	21:06	19:56	18:45	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:57	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:49	20:43	21:34	22:05	21:52	20:58	19:46	18:37	16:41	16:24
20	08:38	07:47	06:43	06:31	05:36	05:14	05:38	06:27	07:19	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:34	16:39	16:25
21	08:37	07:44	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:41	18:32	16:38	16:25
22	08:36	07:42	06:38	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:32	07:25	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:45	06:36	07:28	08:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:42	22:06	21:44	20:45	19:32	18:24	16:33	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:37	07:30	08:23	08:18	08:50
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	17:13	18:12	19:03	20:57	21:45	22:06	21:41	20:40	19:27	18:20	16:32	16:29
28	08:28	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:21	08:50
	17:15	18:14	19:04	20:59	21:46	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:12	05:25	05:17	05:51	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:36	19:22	18:16	16:30	16:30
30	08:25		07:20	06:10	05:24	05:18	05:53	06:44	07:36	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	264	240
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)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** FY - H181**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:32	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:12	06:06	05:21	05:19	05:58	06:49	07:40	07:35	08:27
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:05	06:01	05:19	05:21	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:25	20:19	19:08	17:02	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
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	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:44	17:38	18:31	20:26	21:18	21:59	22:01	21:18	20:10	18:59	16:56	16:24
10	08:47	08:06	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:46	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
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13	08:45	08:01	07:00	06:47	05:46	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:02	21:58	21:10	20:01	18:50	16:49	16:23
14	08:44	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:57	08:42
	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:23
15	08:43	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:49	18:41	20:36	21:27	22:04	21:56	21:06	19:56	18:45	16:46	16:23
16	08:42	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:57	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:49	20:43	21:34	22:05	21:52	20:58	19:46	18:37	16:41	16:24
20	08:38	07:47	06:43	06:31	05:36	05:14	05:38	06:27	07:19	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:34	16:39	16:25
21	08:37	07:44	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:41	18:32	16:38	16:25
22	08:36	07:42	06:38	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:32	07:24	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:45	06:36	07:28	08:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:42	22:06	21:44	20:45	19:32	18:24	16:33	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:37	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:55	21:44	22:06	21:42	20:42	19:30	18:22	16:32	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:48	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:41	20:40	19:27	18:20	16:31	16:29
28	08:28	07:29	06:24	06:14	05:26	05:17	05:50	06:41	07:33	08:26	08:21	08:50
	17:15	18:14	19:04	20:59	21:46	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:12	05:25	05:17	05:51	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:36	19:22	18:16	16:30	16:30
30	08:25		07:20	06:10	05:24	05:18	05:53	06:44	07:36	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case Shadow receptor: FZ - H182

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
229 231 210 320 200 640 608 691 568 658 724 1,086 671 733 661 530 8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:51	22:06	21:32	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:35	08:27
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:06	06:01	05:19	05:21	06:03	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:25	20:19	19:08	17:03	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:40	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:59	05:55	05:17	05:24	06:07	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
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	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:46	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:24
13	08:45	08:01	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:02	21:58	21:10	20:01	18:50	16:49	16:23
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	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:48	16:23
15	08:43	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:50	18:41	20:36	21:27	22:04	21:56	21:06	19:56	18:45	16:46	16:24
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:45	16:24
17	08:42	07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	16:24
18	08:41	07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:45
	16:58	17:55	18:47	20:41	21:32	22:05	21:53	21:00	19:49	18:39	16:42	16:24
19	08:40	07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:06	08:46
	16:59	17:57	18:49	20:43	21:34	22:05	21:52	20:58	19:46	18:37	16:41	16:24
20	08:38	07:47	06:43	06:31	05:36	05:14	05:38	06:27	07:19	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:56	19:44	18:34	16:39	16:25
21	08:37	07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:13	08:10	08:47
	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:41	18:32	16:38	16:25
22	08:36	07:42	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48
	17:04	18:03	18:54	20:48	21:38	22:06	21:48	20:51	19:39	18:30	16:37	16:26
23	08:35	07:40	06:36	06:25	05:32	05:15	05:43	06:32	07:25	08:17	08:13	08:48
	17:06	18:05	18:56	20:50	21:40	22:06	21:46	20:49	19:37	18:28	16:36	16:26
24	08:34	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49
	17:08	18:07	18:57	20:52	21:41	22:06	21:45	20:47	19:34	18:26	16:35	16:27
25	08:32	07:36	06:31	06:21	05:29	05:15	05:45	06:36	07:28	08:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:42	22:06	21:44	20:45	19:32	18:24	16:34	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:55	21:44	22:06	21:42	20:42	19:30	18:22	16:32	16:28
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	17:13	18:12	19:03	20:57	21:45	22:06	21:41	20:40	19:27	18:20	16:32	16:29
28	08:28	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:21	08:50
	17:15	18:14	19:04	20:59	21:46	22:06	21:39	20:38	19:25	18:18	16:31	16:30
29	08:27		07:22	06:12	05:25	05:17	05:52	06:43	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:36	19:22	18:16	16:30	16:30
30	08:25		07:20	06:10	05:24	05:18	05:53	06:44	07:36	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:14	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	264	240
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)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar

Calculation: 6778 Moanmore Lower Worst Case **Shadow receptor:** GA - H183**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June	July	August	September	October	November	December
1	08:50	08:22	07:27	07:15	06:08	05:22	05:18	05:56	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:11	21:04	21:51	22:06	21:32	20:29	19:18	17:10	16:28
2	08:50	08:20	07:25	07:12	06:06	05:21	05:19	05:58	06:49	07:40	07:35	08:27
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	20:26	19:15	17:08	16:27
3	08:50	08:19	07:23	07:10	06:04	05:20	05:20	05:59	06:51	07:42	07:37	08:29
	16:36	17:26	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27
4	08:50	08:17	07:20	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:30
	16:37	17:28	18:21	20:17	21:09	21:55	22:04	21:27	20:22	19:11	17:04	16:26
5	08:49	08:15	07:18	07:05	06:01	05:18	05:21	06:02	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:25	20:19	19:08	17:02	16:26
6	08:49	08:14	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33
	16:39	17:32	18:25	20:20	21:13	21:57	22:03	21:24	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:48	07:45	08:34
	16:41	17:34	18:27	20:22	21:14	21:58	22:03	21:22	20:15	19:04	16:59	16:25
8	08:48	08:10	07:11	06:58	05:55	05:17	05:24	06:07	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:12	19:01	16:57	16:24
9	08:48	08:08	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:48	08:37
	16:43	17:38	18:31	20:26	21:18	21:59	22:01	21:18	20:10	18:59	16:55	16:24
10	08:47	08:06	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:32	20:27	21:19	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:46	08:05	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:55	07:52	08:39
	16:46	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:54	16:52	16:24
12	08:46	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	16:23
13	08:45	08:01	07:00	06:47	05:46	05:15	05:29	06:16	07:08	07:59	07:56	08:41
	16:49	17:46	18:38	20:33	21:24	22:02	21:58	21:10	20:01	18:50	16:49	16:23
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	16:51	17:48	18:40	20:34	21:26	22:03	21:57	21:08	19:58	18:48	16:47	16:23
15	08:43	07:57	06:55	06:42	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:52	17:49	18:41	20:36	21:27	22:04	21:56	21:06	19:56	18:45	16:46	16:23
16	08:43	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:04	08:01	08:44
	16:54	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:53	18:43	16:45	16:24
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20	08:38	07:47	06:43	06:31	05:36	05:14	05:38	06:27	07:19	08:12	08:08	08:47
	17:01	17:59	18:50	20:45	21:35	22:06	21:50	20:55	19:44	18:34	16:39	16:25
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	17:03	18:01	18:52	20:47	21:37	22:06	21:49	20:53	19:41	18:32	16:38	16:25
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25	08:32	07:36	06:31	06:21	05:29	05:15	05:45	06:36	07:28	08:21	08:17	08:49
	17:10	18:08	18:59	20:54	21:42	22:07	21:44	20:45	19:32	18:24	16:33	16:27
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:37	07:30	08:22	08:18	08:50
	17:11	18:10	19:01	20:55	21:44	22:06	21:42	20:42	19:29	18:21	16:32	16:28
27	08:30	07:32	06:27	06:16	05:27	05:16	05:48	06:39	07:31	08:24	08:20	08:50
	17:13	18:12	19:03	20:57	21:45	22:06	21:41	20:40	19:27	18:19	16:31	16:29
28	08:28	07:29	06:24	06:14	05:26	05:17	05:50	06:41	07:33	08:26	08:21	08:50
	17:15	18:14	19:04	20:59	21:46	22:06	21:39	20:38	19:25	18:17	16:31	16:29
29	08:27		07:22	06:12	05:24	05:17	05:51	06:42	07:35	08:28	08:23	08:50
	17:17		20:06	21:01	21:48	22:06	21:37	20:36	19:22	18:14	16:30	16:30
30	08:25		07:20	06:10	05:23	05:18	05:53	06:44	07:36	08:30	08:25	08:50
	17:19		20:08	21:02	21:49	22:06	21:36	20:33	19:20	18:12	16:29	16:31
31	08:24		07:17		05:23		05:55	06:46		07:32		08:50
	17:21		20:10		21:50		21:34	20:31		17:12		16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
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)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project:

6778 Moanmore Lower WF

Description:

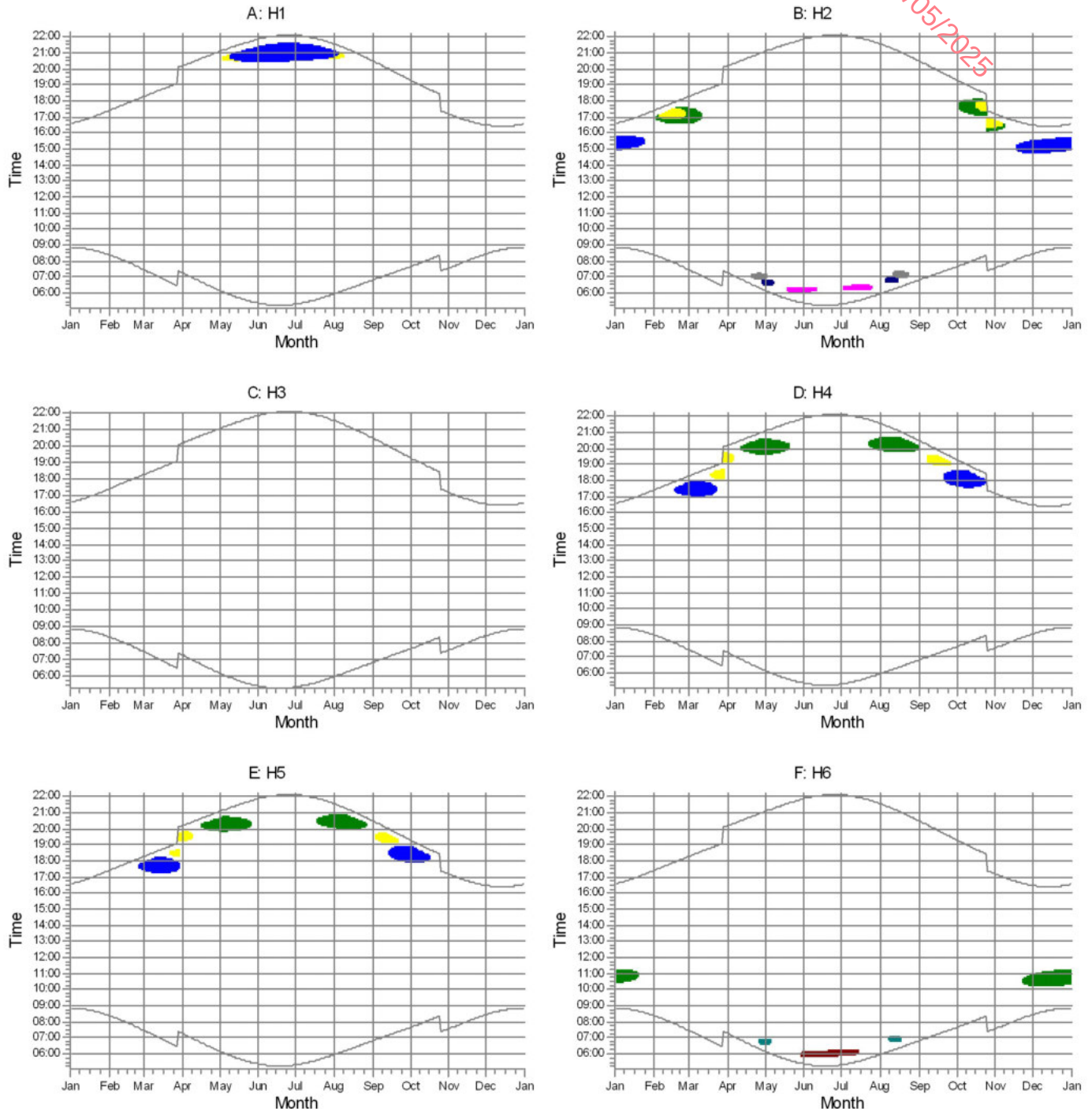
3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

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Finisklin Business Park
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+353719161416
Kathryn.Feeney / kfeeney@jodireland.com
Calculated:
16/12/2024 15:13/4.0.552

SHADOW - Calendar, graphical

Calculation: 6778 Moanmore Lower Worst Case



WTGs

	1: Moanmore Lower T1		4: Moanmore T1
	2: Moanmore Lower T2		5: Moanmore T2
	3: Moanmore Lower T3		6: Moanmore T3

	7: Moanmore T4
	8: Moanmore T5

Project:

6778 Moanmore Lower WF

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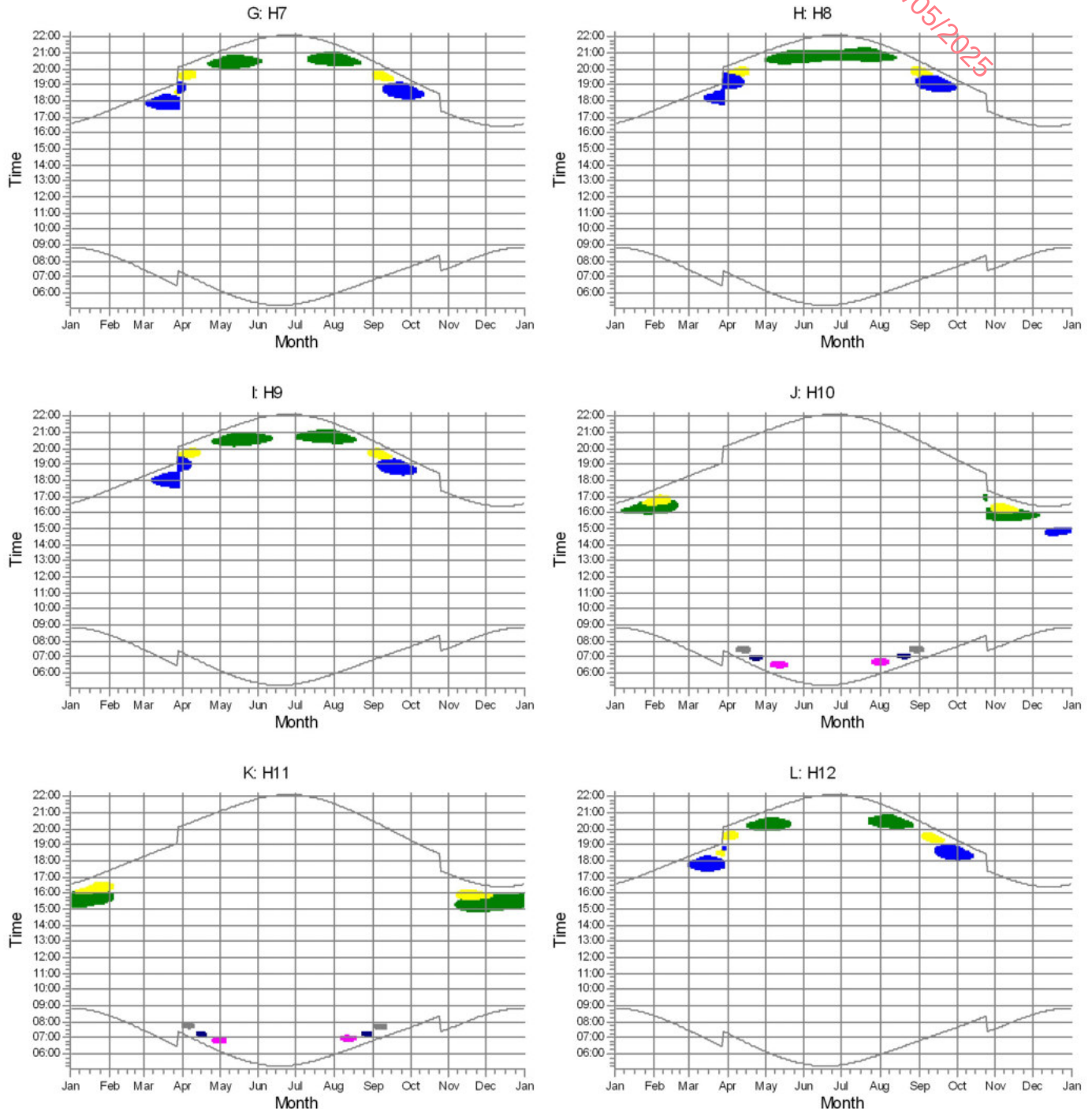
Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar, graphical

Calculation: 6778 Moanmore Lower Worst Case



WTGs

 1: Moanmore Lower T1	 3: Moanmore Lower T3	 5: Moanmore T2
 2: Moanmore Lower T2	 4: Moanmore T1	 7: Moanmore T4

Project:

6778 Moanmore Lower WF

Description:

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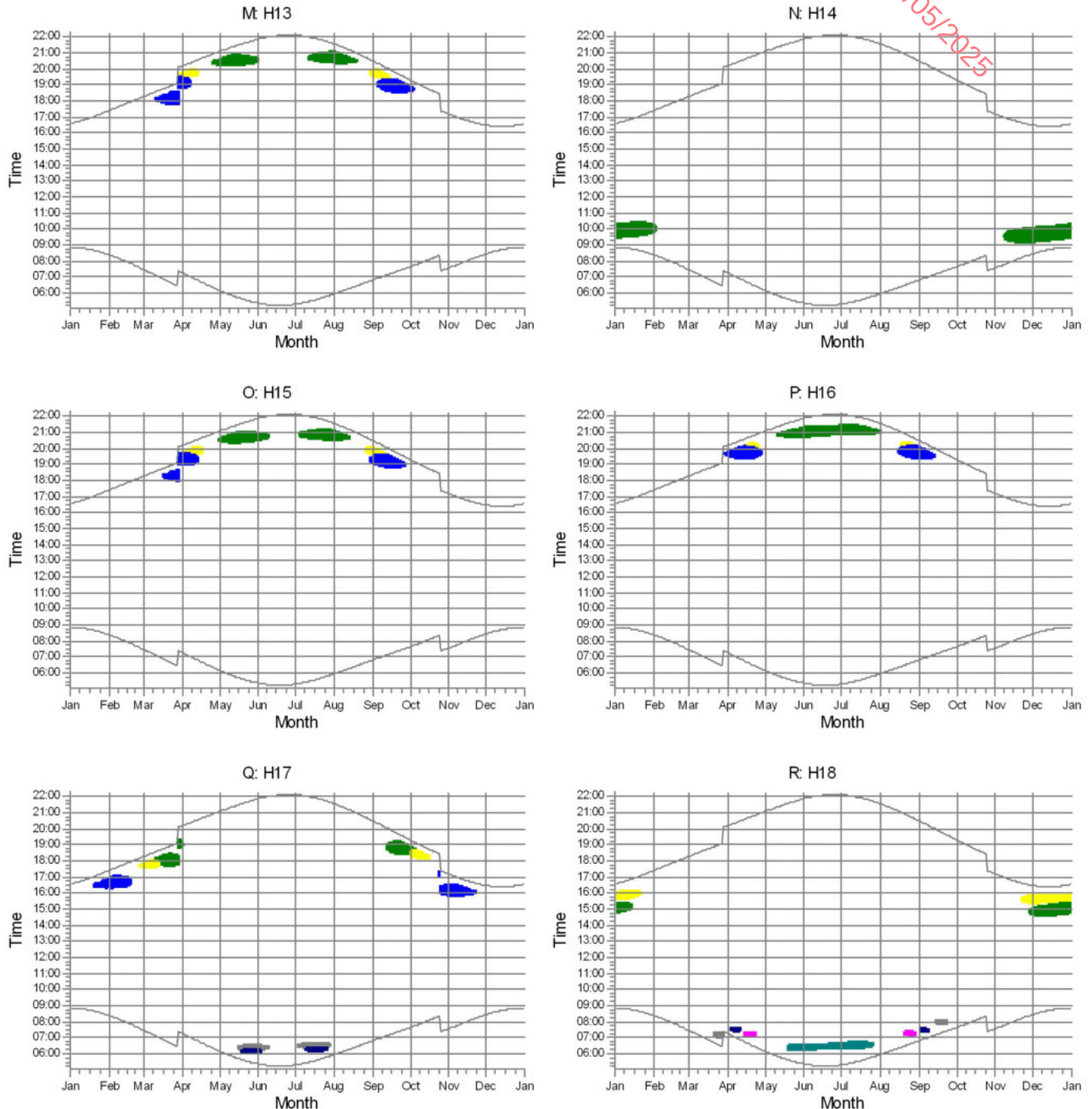
Kathryn Feeney / kfeeney@jodireland.com

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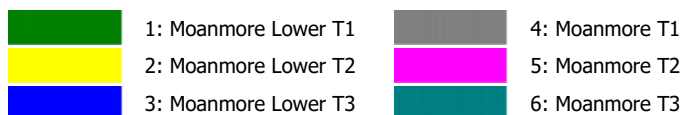
16/12/2024 15:13/4.0.552

SHADOW - Calendar, graphical

Calculation: 6778 Moanmore Lower Worst Case



WTGs



Project:

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Description:

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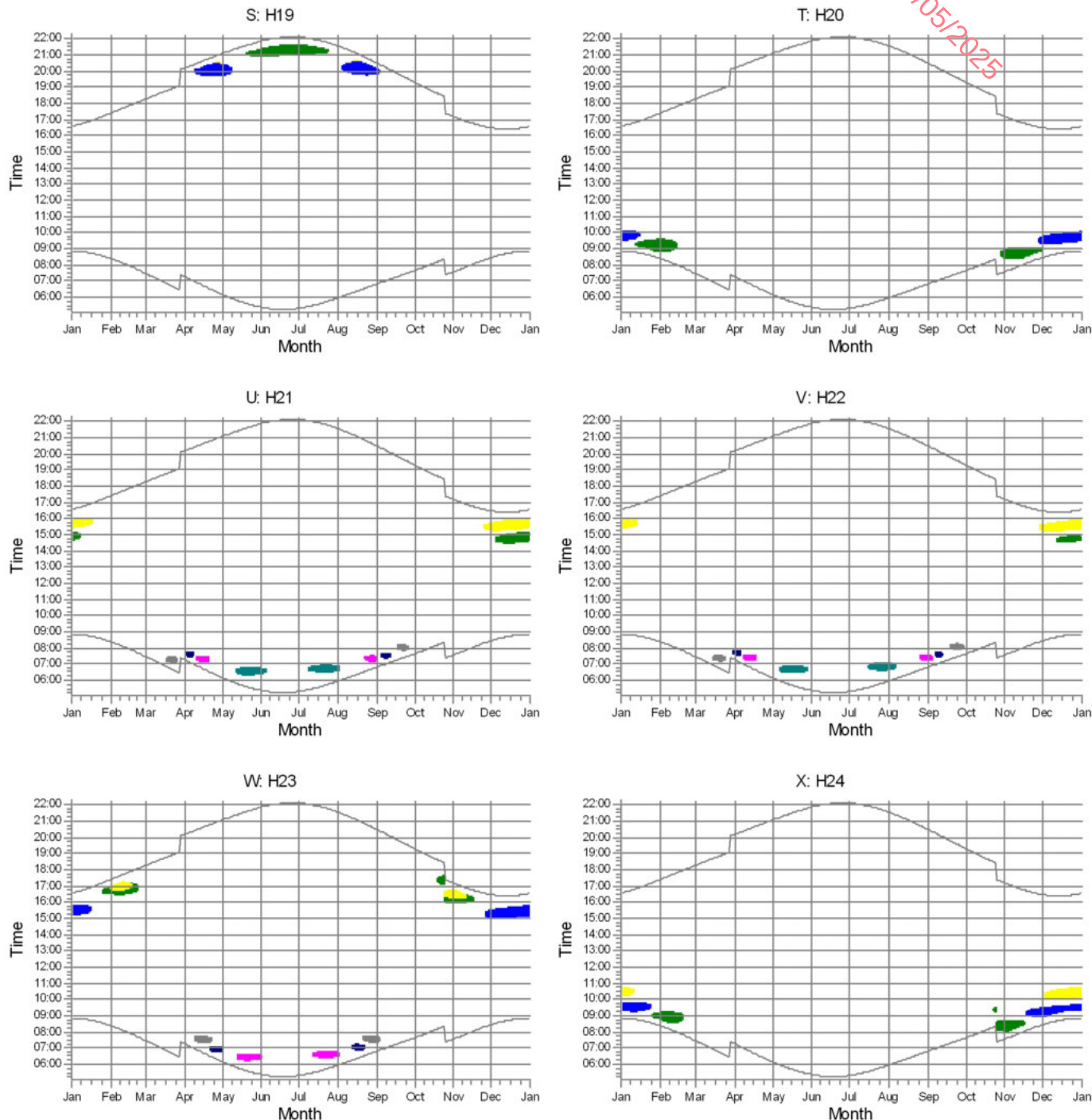
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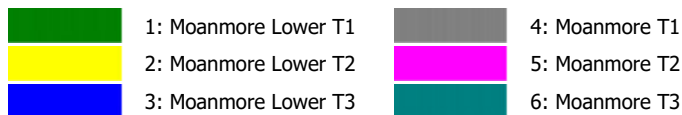
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SHADOW - Calendar, graphical

Calculation: 6778 Moanmore Lower Worst Case



WTGs



Project:

6778 Moanmore Lower WF

Description:

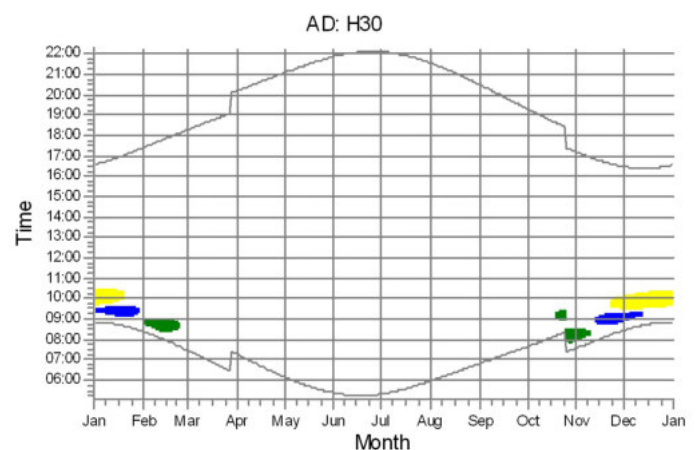
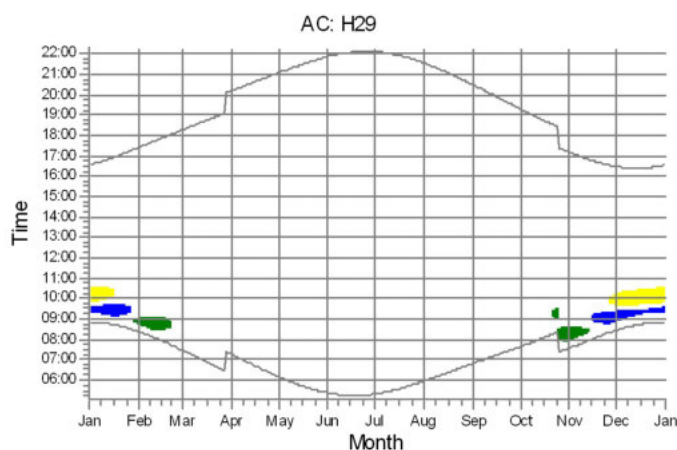
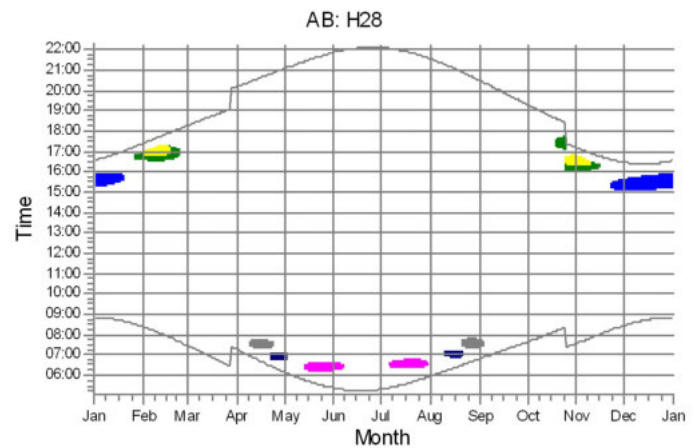
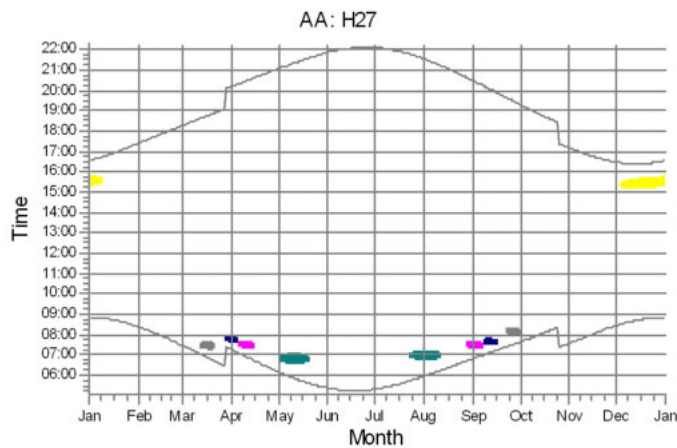
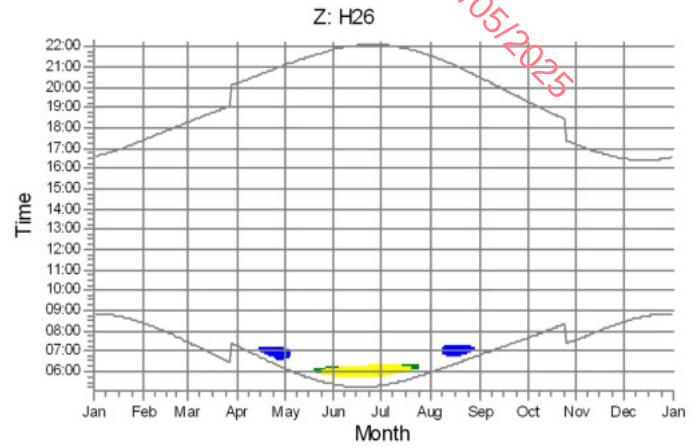
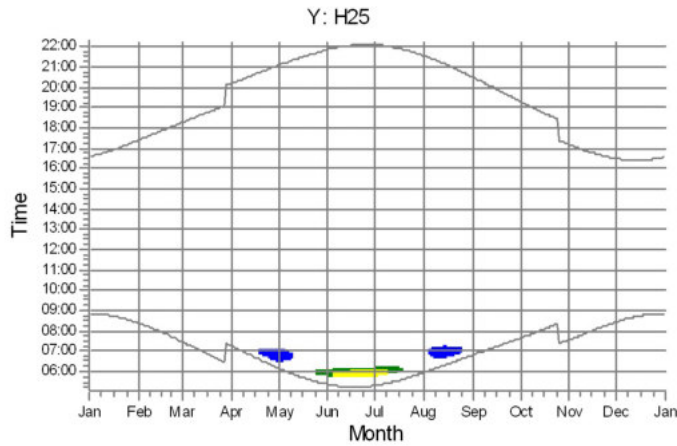
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Licensed user:

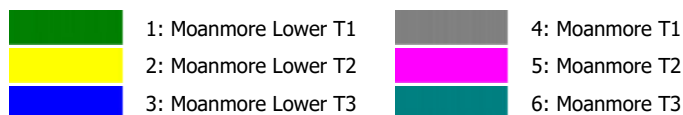
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SHADOW - Calendar, graphical

Calculation: 6778 Moanmore Lower Worst Case



WTGs



Project:

6778 Moanmore Lower WF

Description:

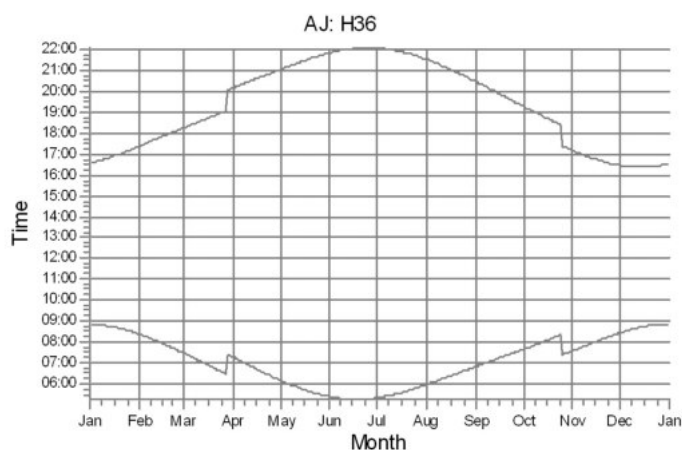
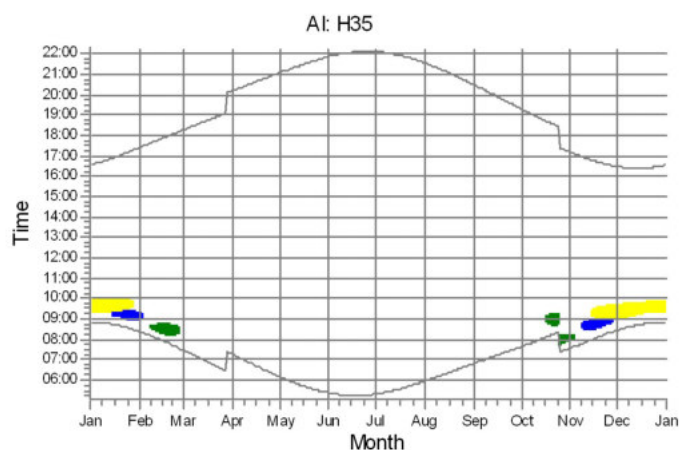
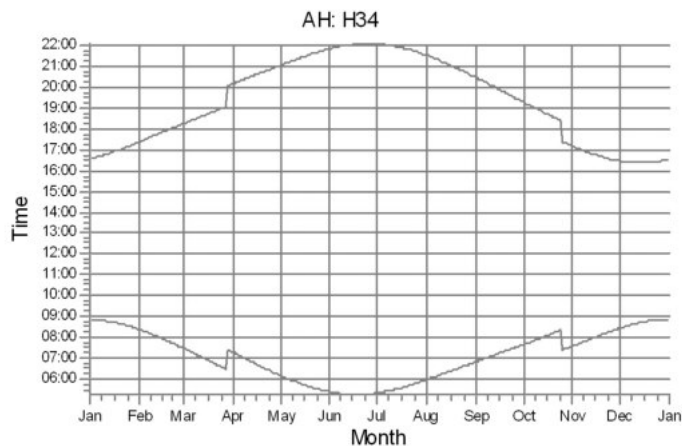
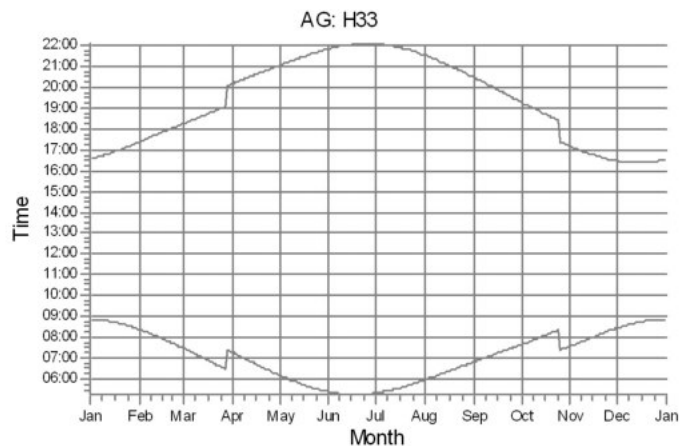
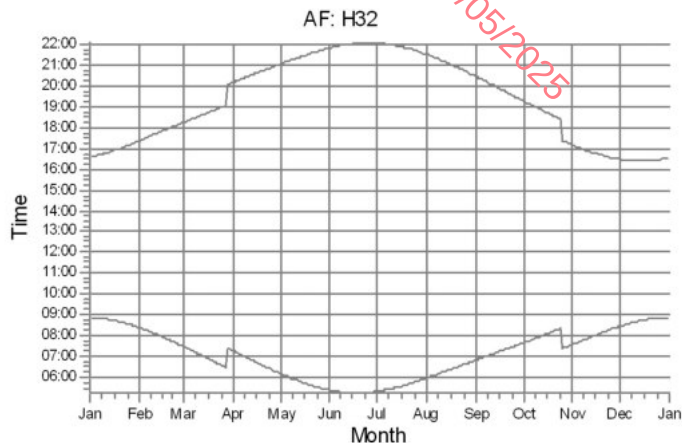
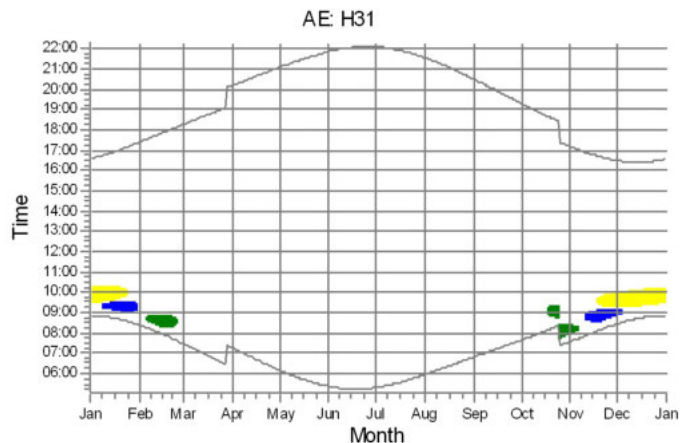
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SHADOW - Calendar, graphical

Calculation: 6778 Moanmore Lower Worst Case



WTGs

1: Moanmore Lower T1 2: Moanmore Lower T2 3: Moanmore Lower T3

Project:

6778 Moanmore Lower WF

Description:

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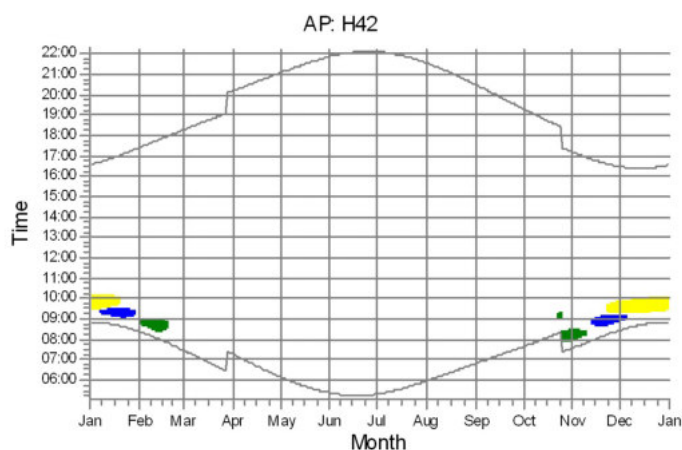
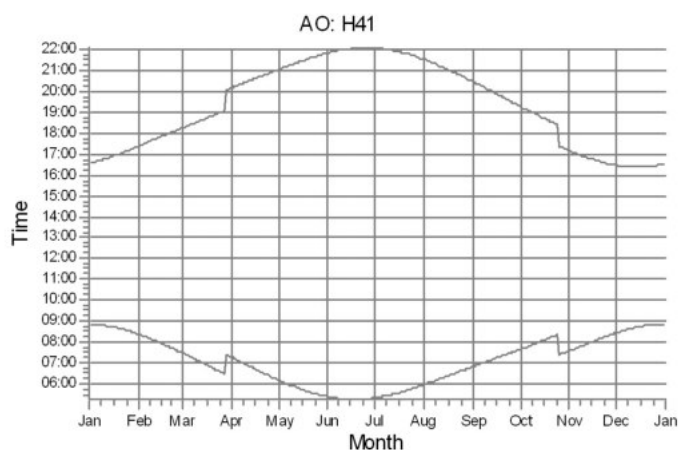
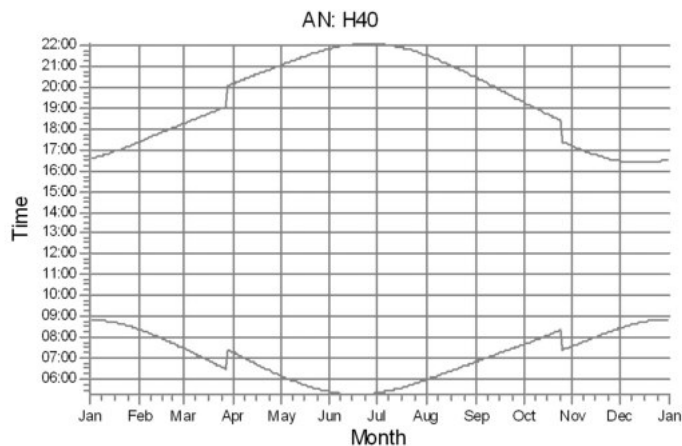
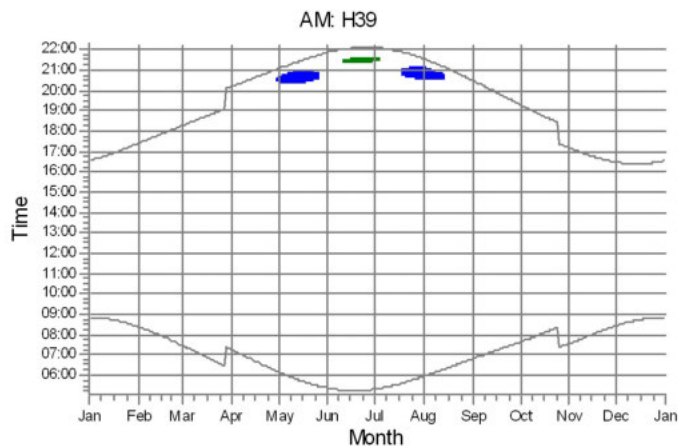
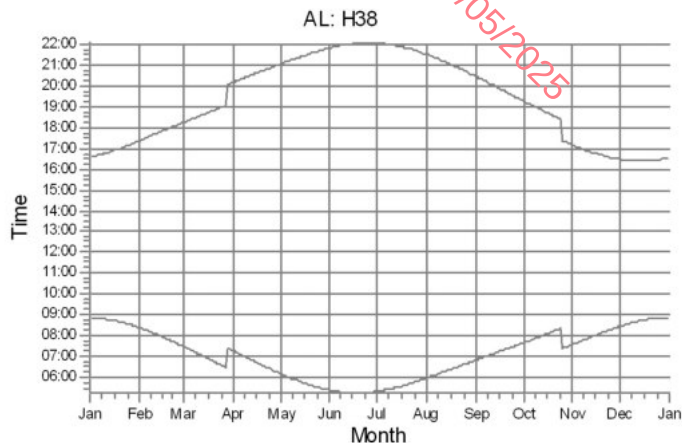
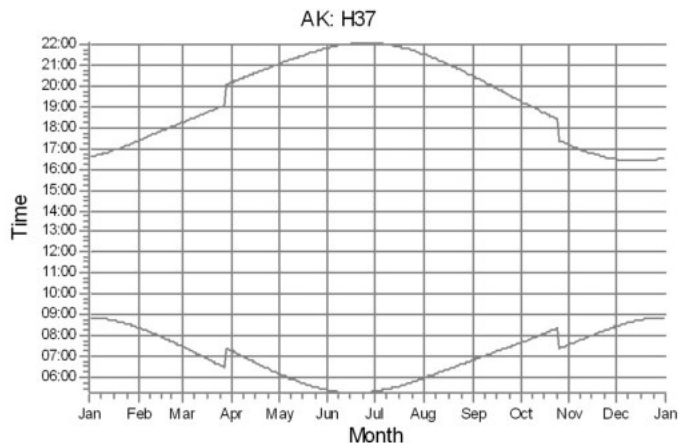
Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar, graphical

Calculation: 6778 Moanmore Lower Worst Case



WTGs



1: Moanmore Lower T1



2: Moanmore Lower T2



3: Moanmore Lower T3

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
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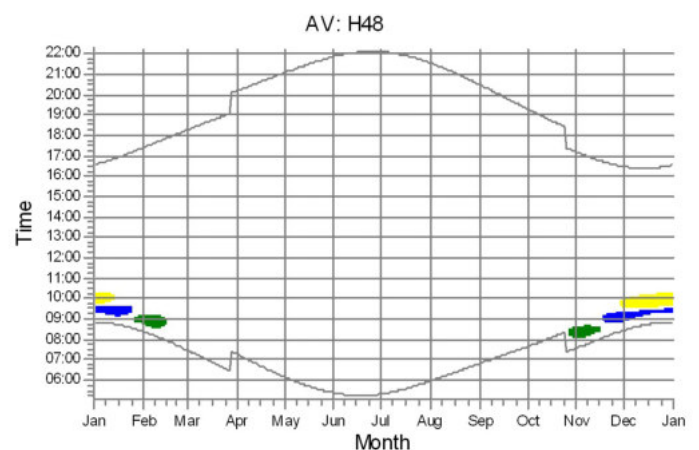
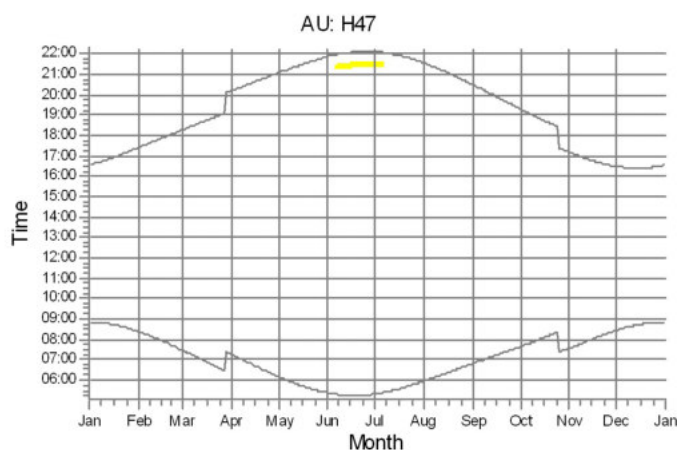
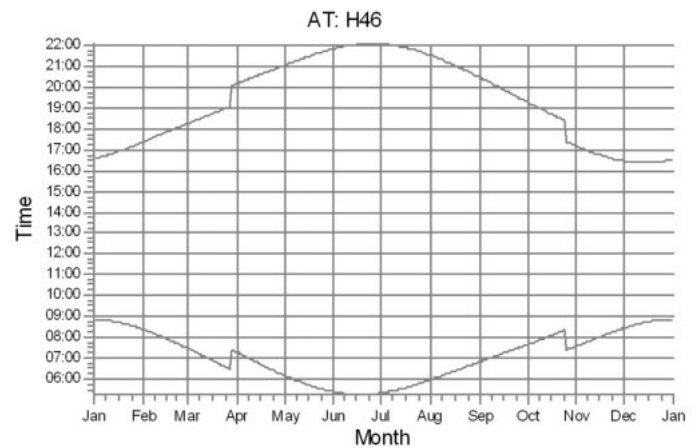
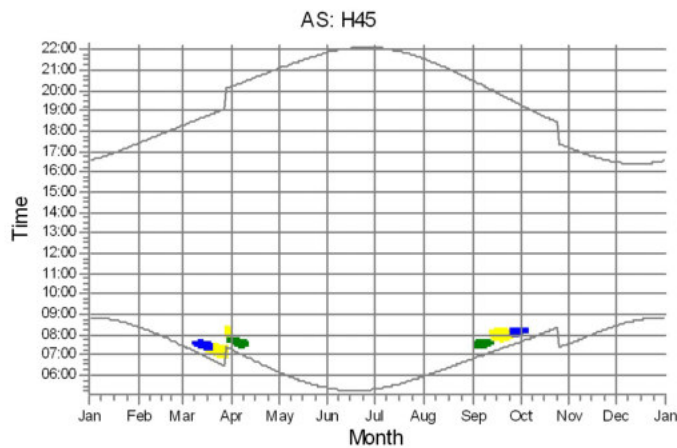
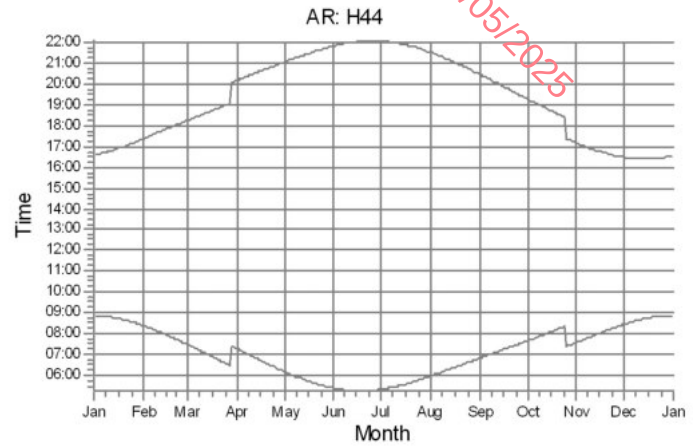
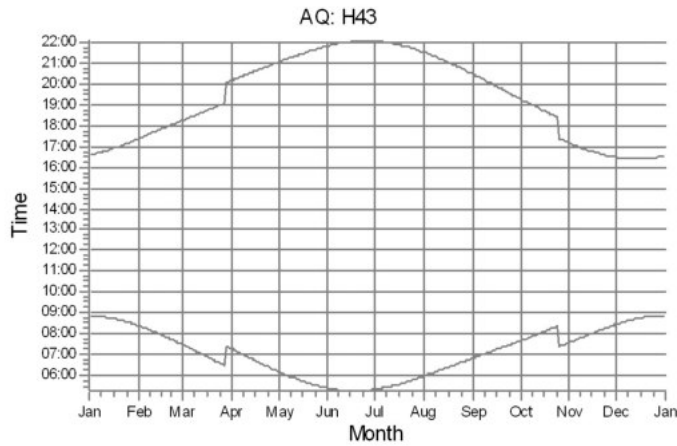
Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar, graphical

Calculation: 6778 Moanmore Lower Worst Case



WTGs

1: Moanmore Lower T1 2: Moanmore Lower T2 3: Moanmore Lower T3

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
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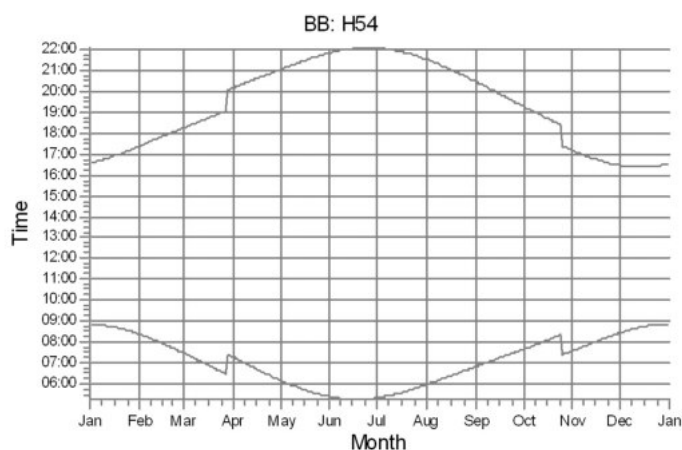
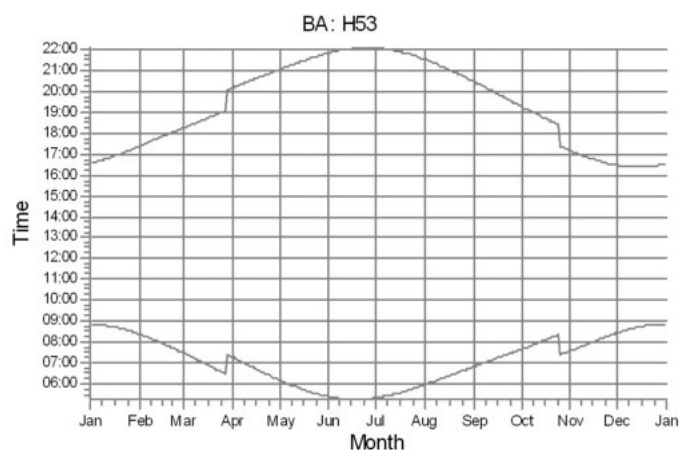
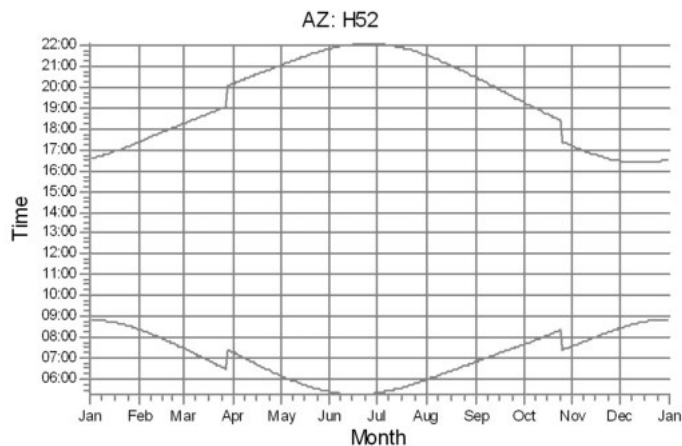
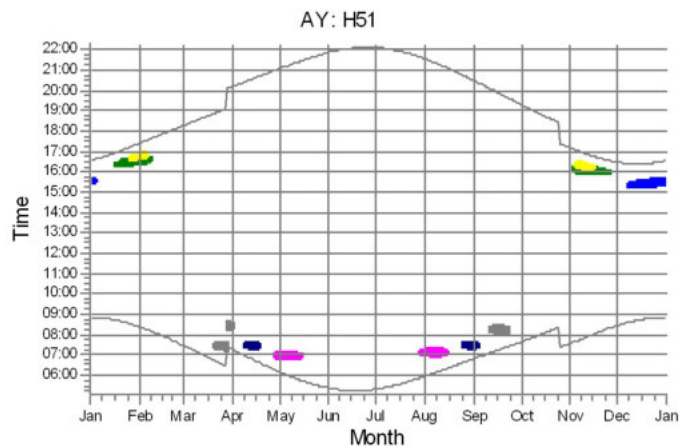
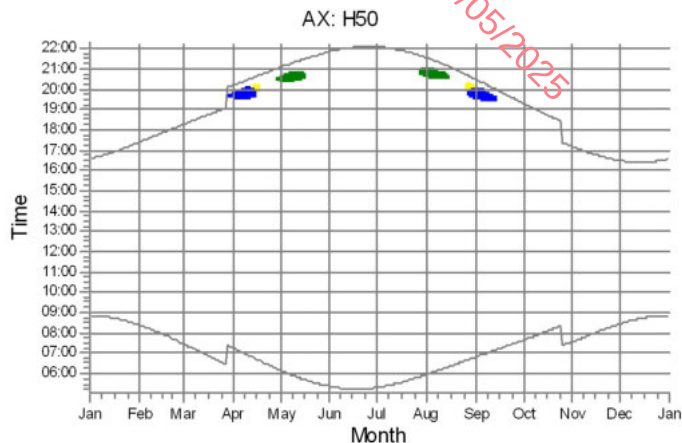
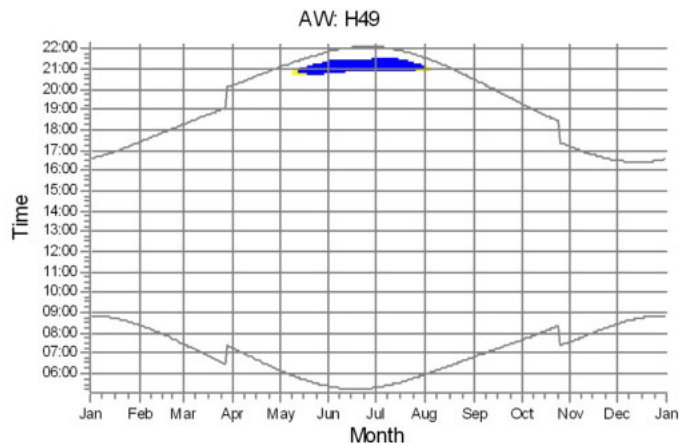
Kathryn Feeney / kfeeney@jodireland.com

Calculated:

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SHADOW - Calendar, graphical

Calculation: 6778 Moanmore Lower Worst Case



WTGs



1: Moanmore Lower T1

2: Moanmore Lower T2



3: Moanmore Lower T3

4: Moanmore T1



5: Moanmore T2

7: Moanmore T4

Project:

6778 Moanmore Lower WF

Description:

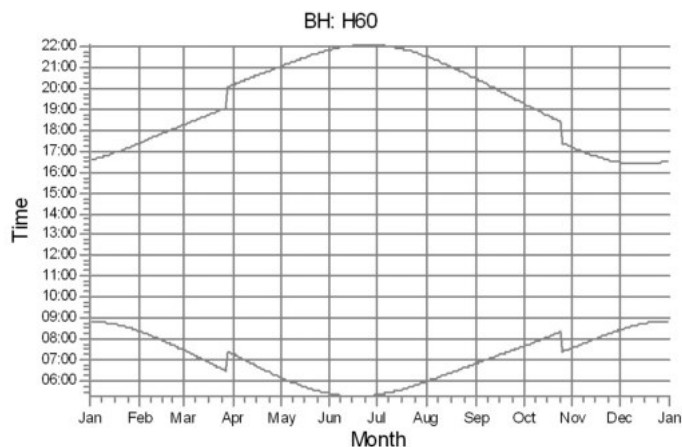
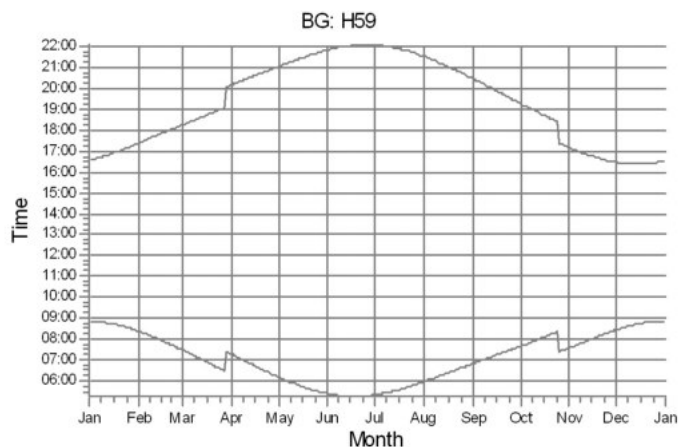
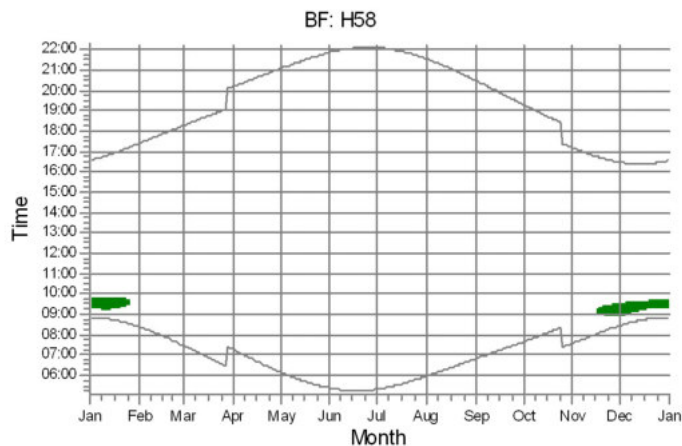
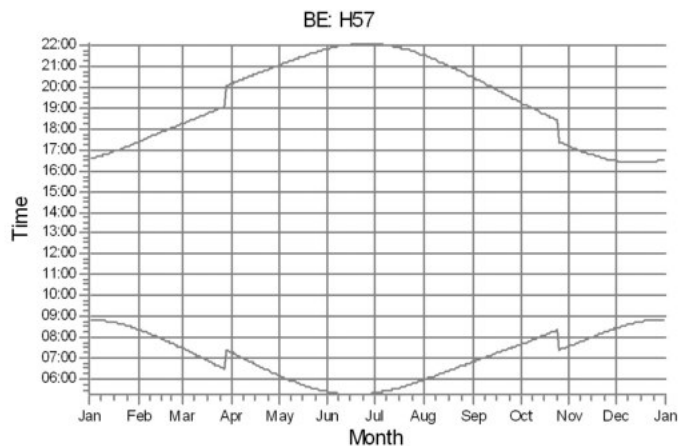
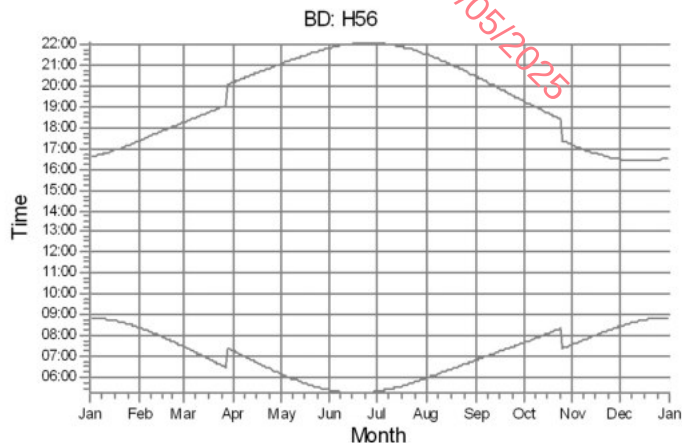
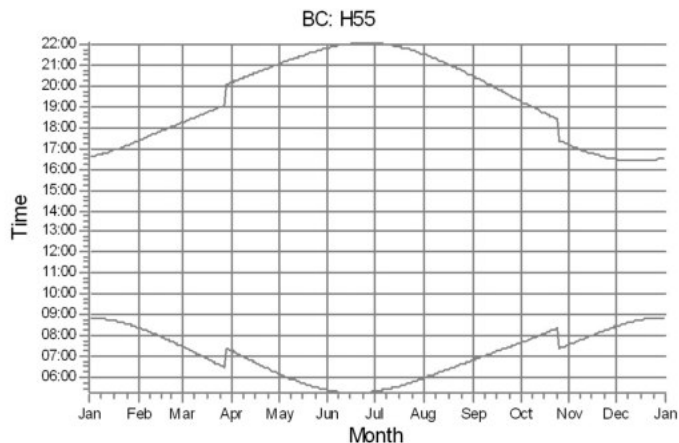
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SHADOW - Calendar, graphical

Calculation: 6778 Moanmore Lower Worst Case



WTGs

1: Moanmore Lower T1

Project:

6778 Moanmore Lower WF

Description:

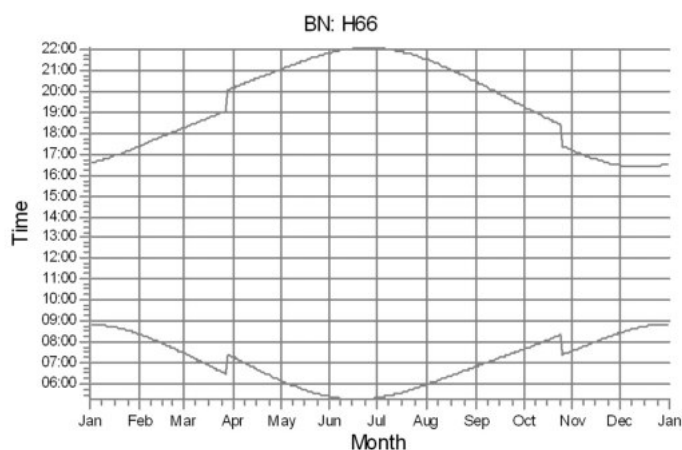
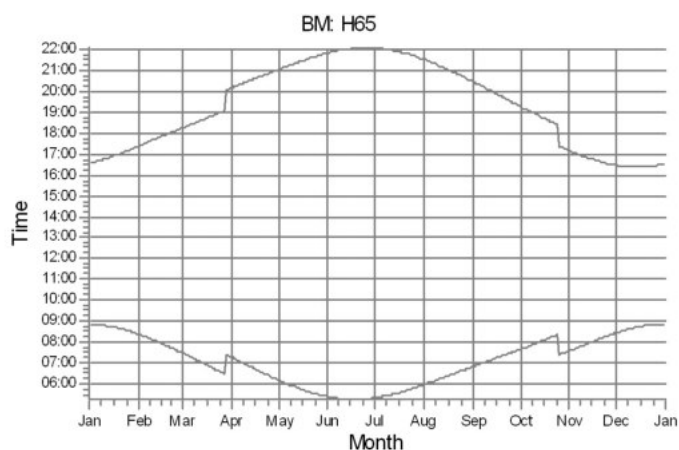
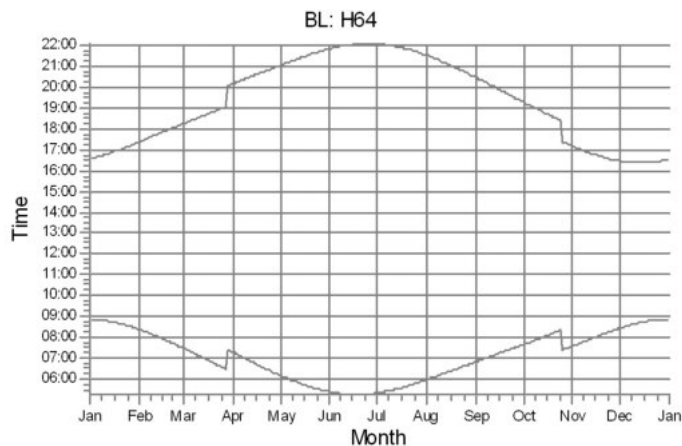
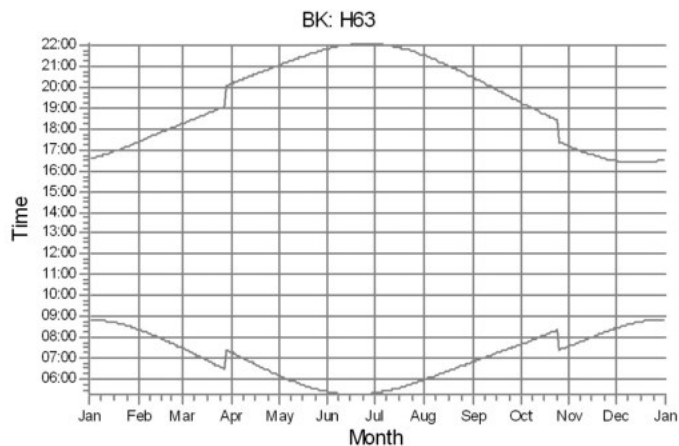
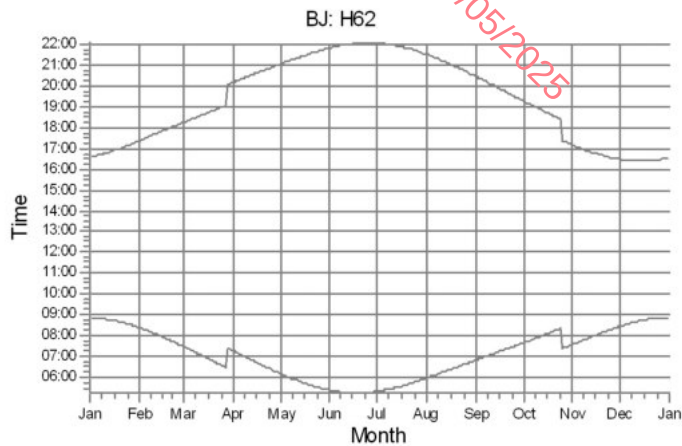
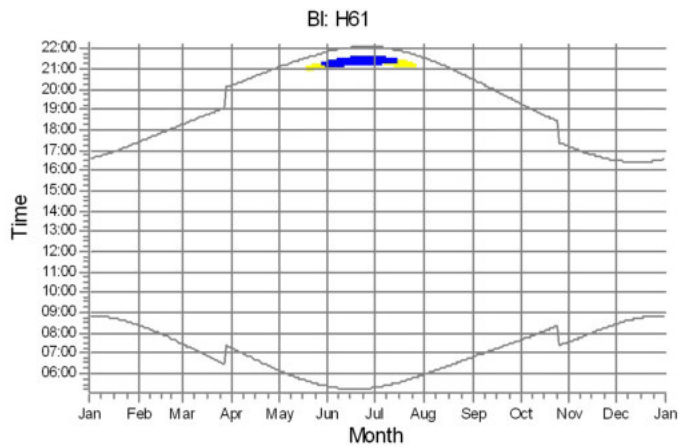
3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
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SHADOW - Calendar, graphical

Calculation: 6778 Moanmore Lower Worst Case



WTGs

2: Moanmore Lower T2 3: Moanmore Lower T3

Project:

6778 Moanmore Lower WF

Description:

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Cumulative Assessment: the proposed Moanmore Lower WF
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Licensed user:

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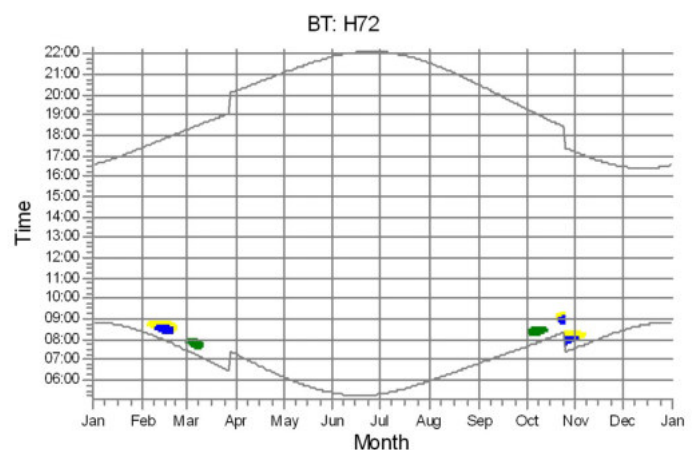
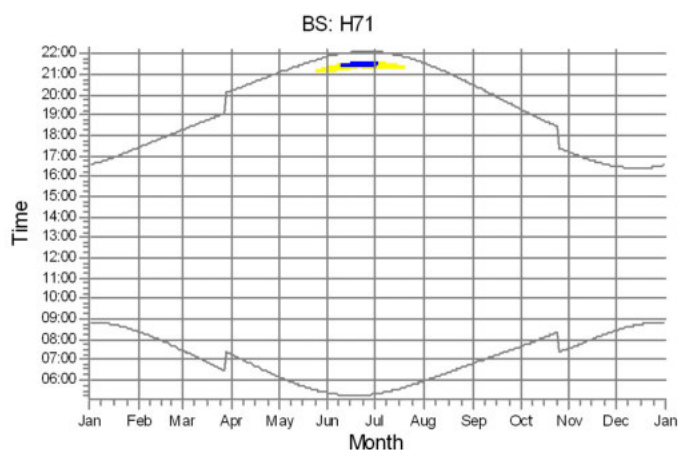
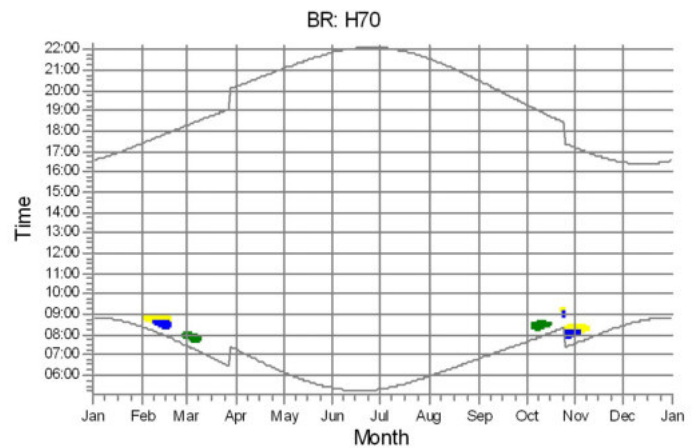
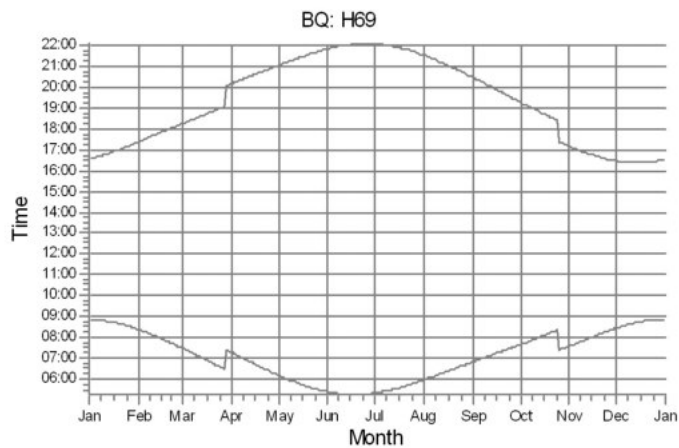
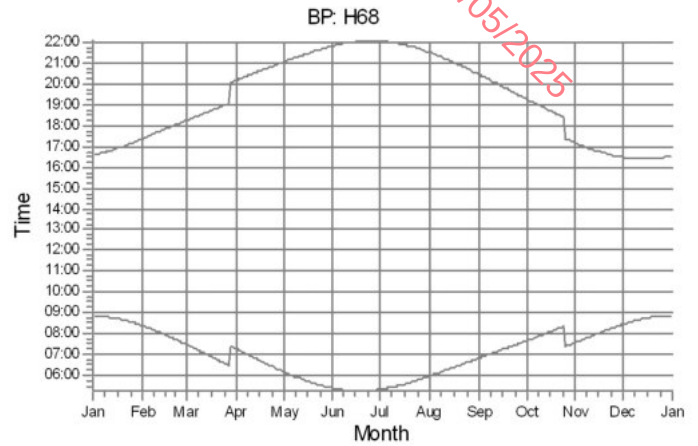
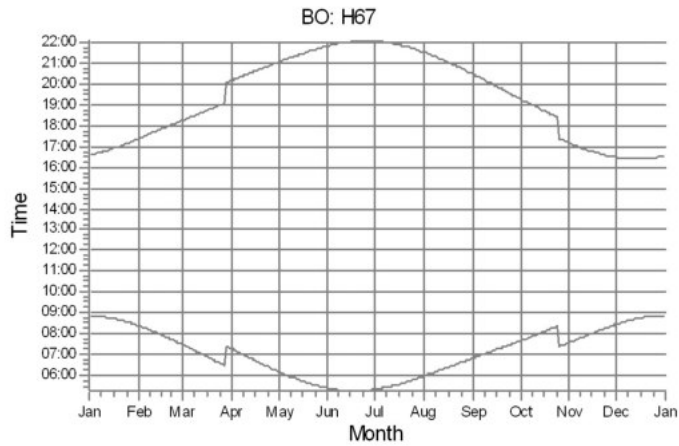
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SHADOW - Calendar, graphical

Calculation: 6778 Moanmore Lower Worst Case



WTGs

1: Moanmore Lower T1 2: Moanmore Lower T2 3: Moanmore Lower T3

Project:

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Description:

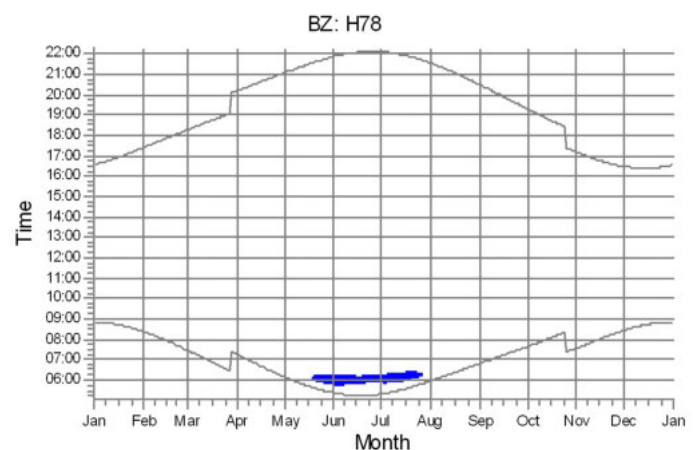
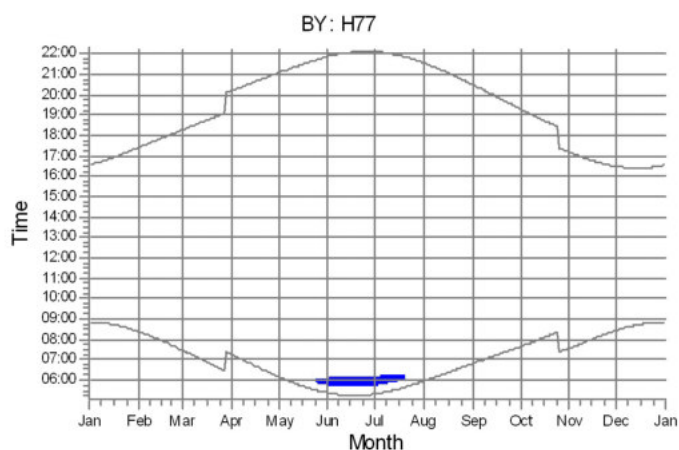
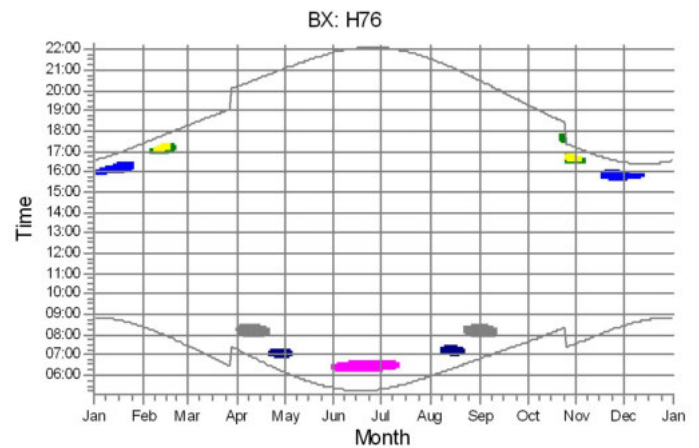
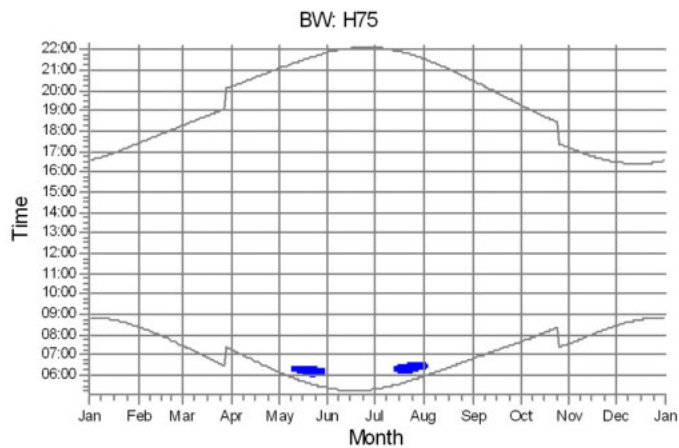
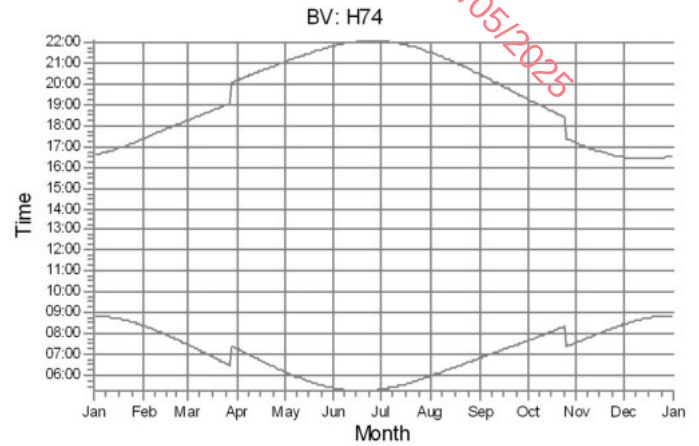
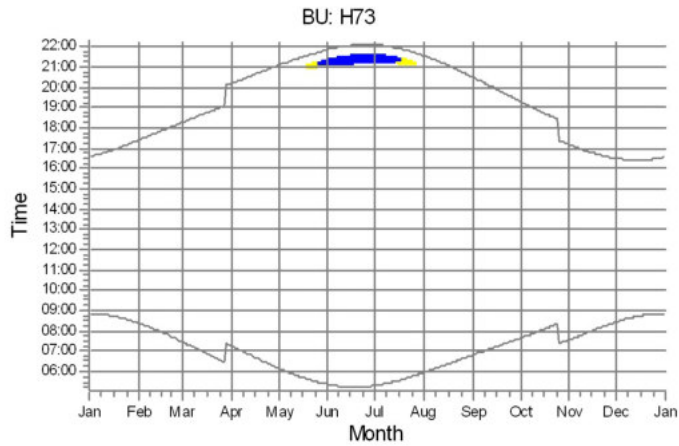
3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
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SHADOW - Calendar, graphical

Calculation: 6778 Moanmore Lower Worst Case



WTGs

	1: Moanmore Lower T1		3: Moanmore Lower T3		5: Moanmore T2
	2: Moanmore Lower T2		4: Moanmore T1		7: Moanmore T4

Project:

6778 Moanmore Lower WF

Description:

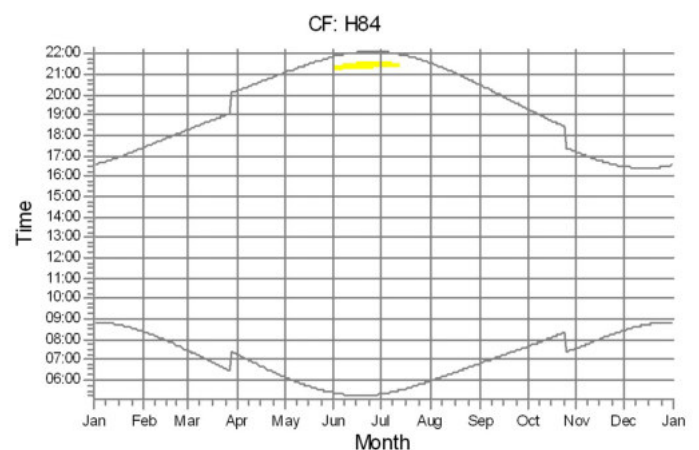
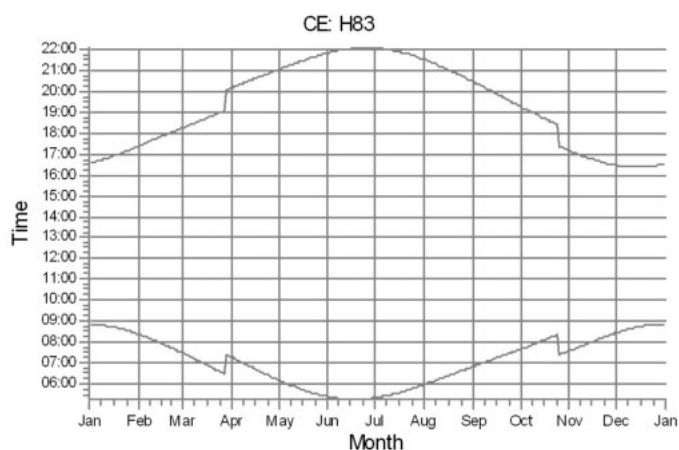
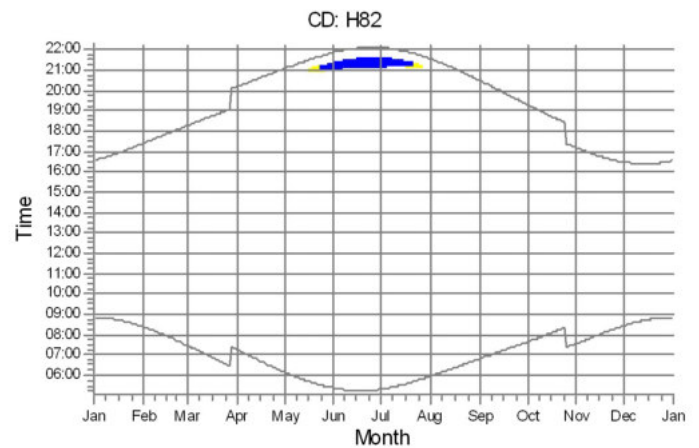
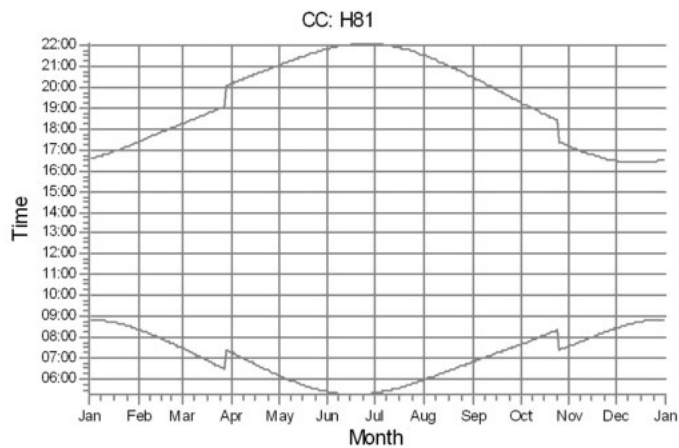
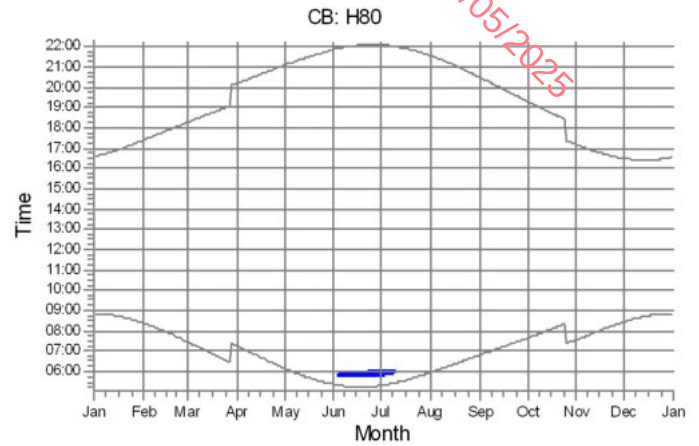
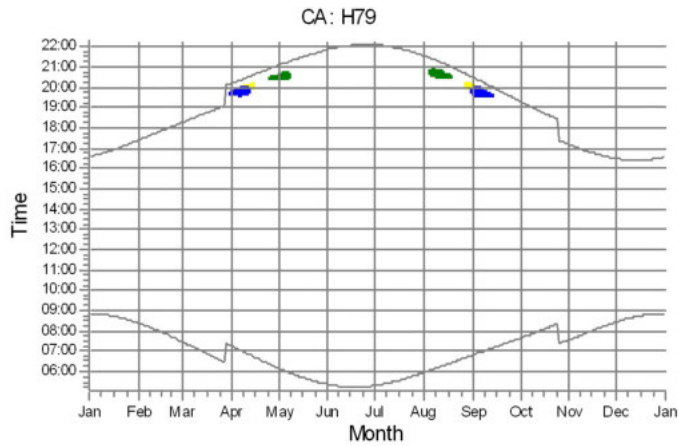
3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
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SHADOW - Calendar, graphical

Calculation: 6778 Moanmore Lower Worst Case



WTGs

1: Moanmore Lower T1 2: Moanmore Lower T2 3: Moanmore Lower T3

Project:

6778 Moanmore Lower WF

Description:

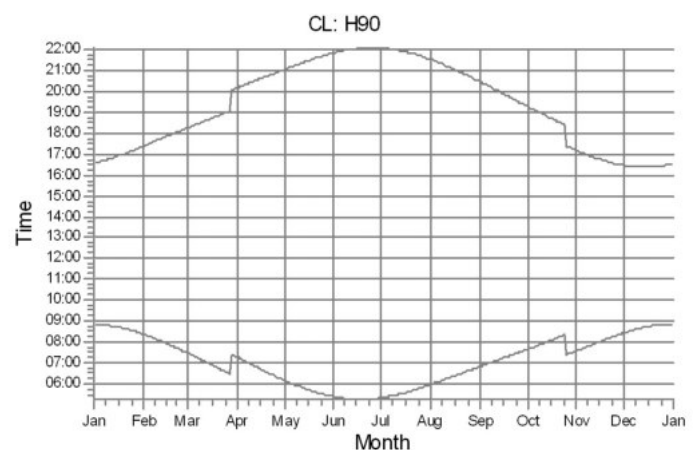
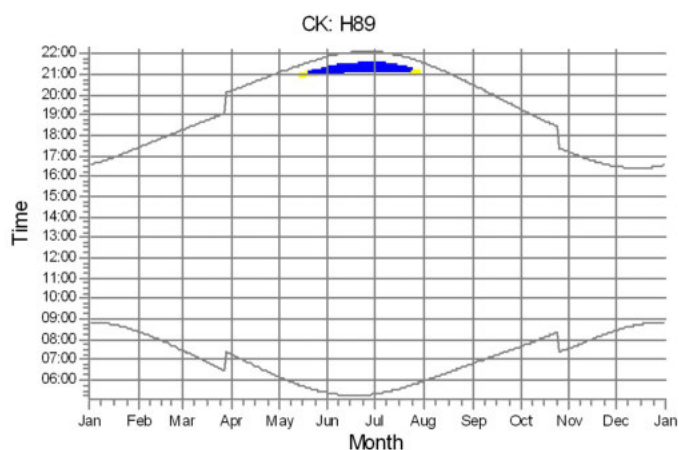
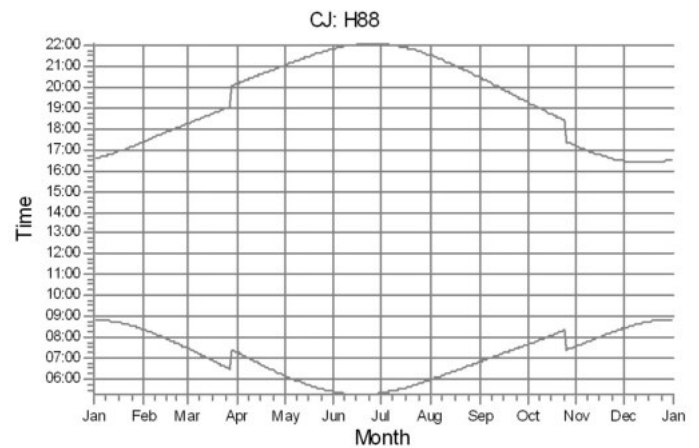
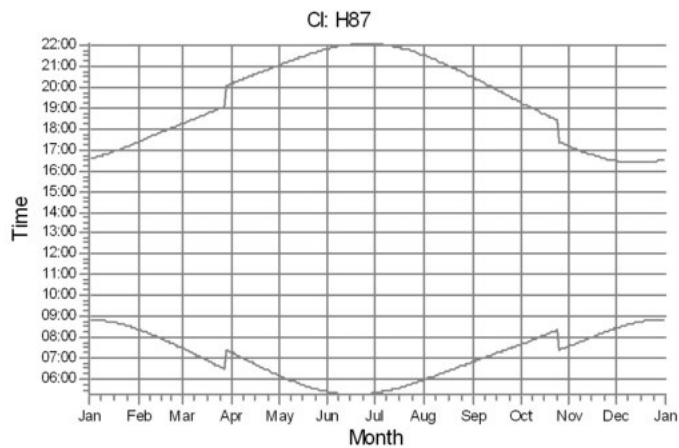
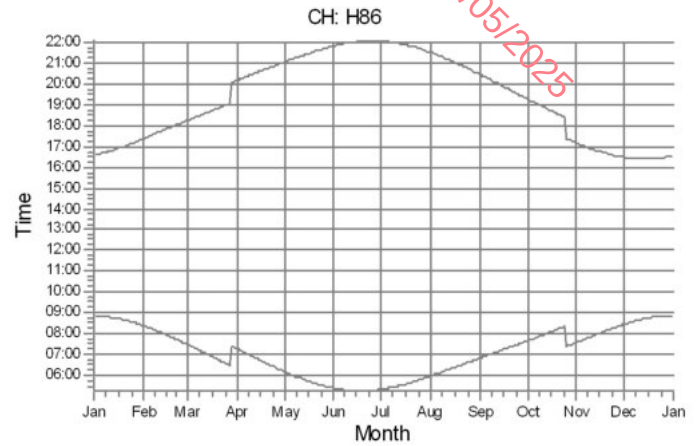
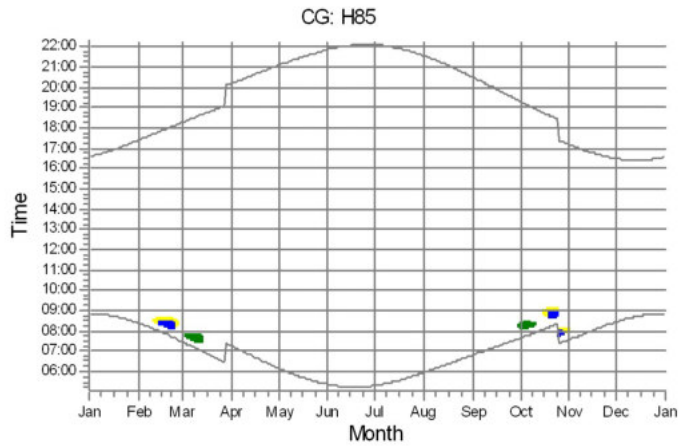
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SHADOW - Calendar, graphical

Calculation: 6778 Moanmore Lower Worst Case



WTGs

1: Moanmore Lower T1 2: Moanmore Lower T2 3: Moanmore Lower T3

Project:

6778 Moanmore Lower WF

Description:

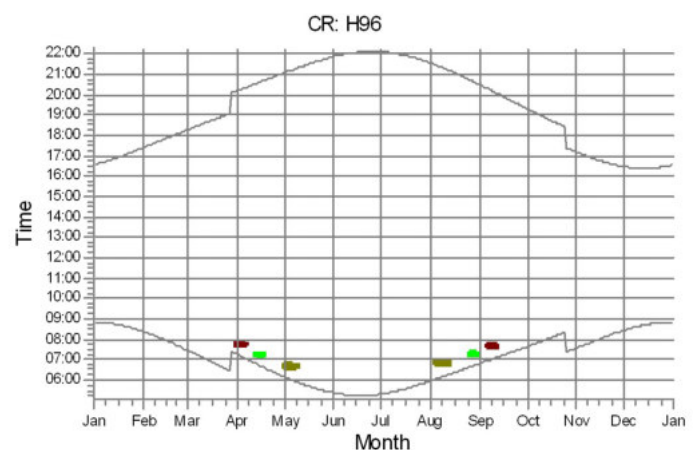
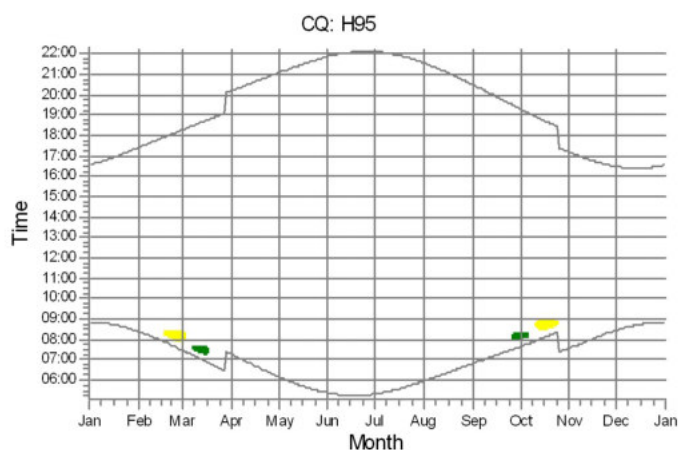
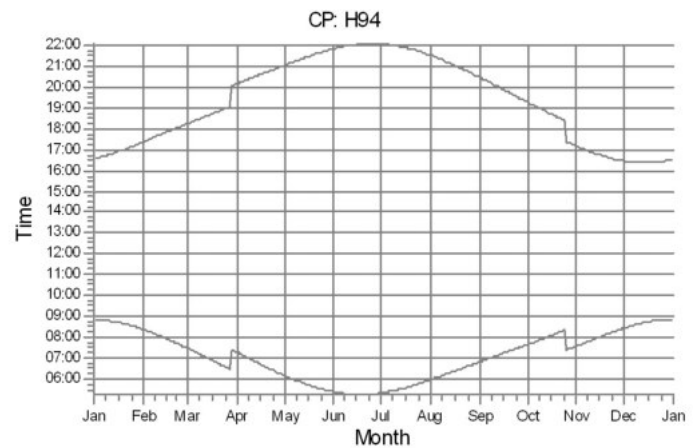
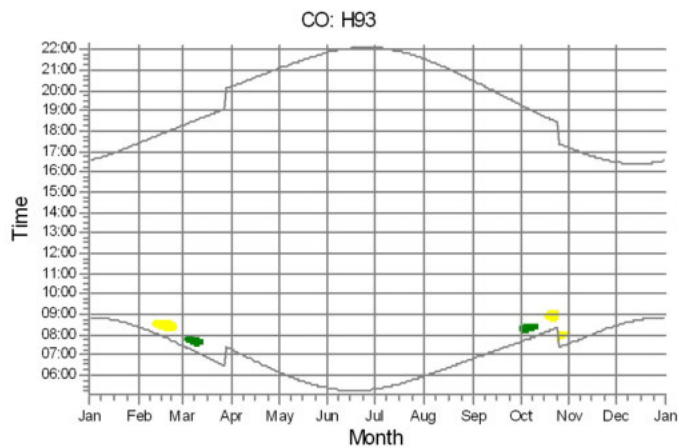
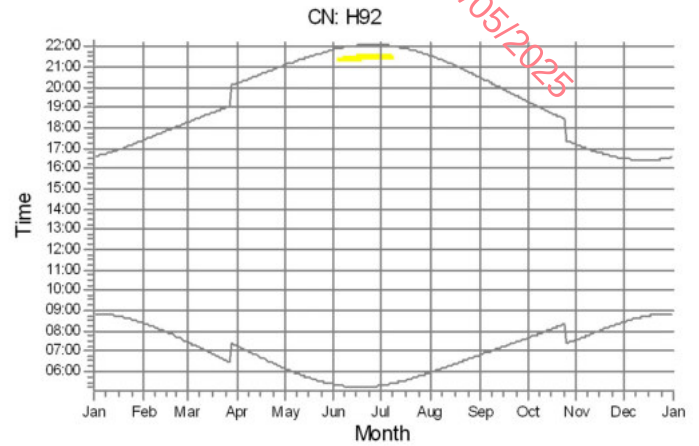
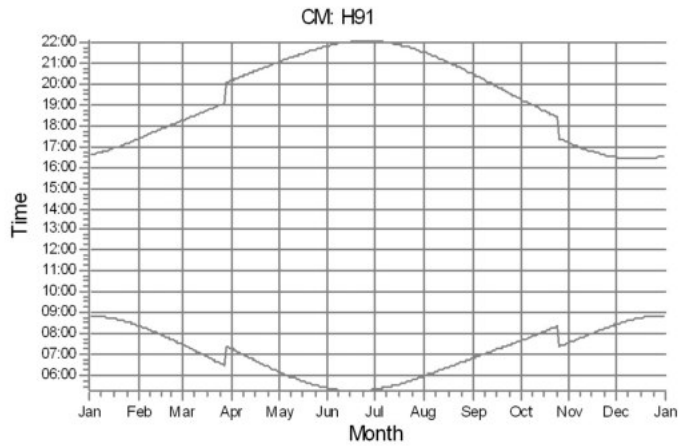
3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

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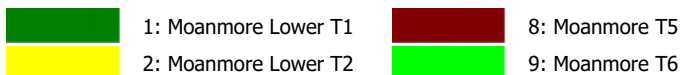
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SHADOW - Calendar, graphical

Calculation: 6778 Moanmore Lower Worst Case



WTGs



Project:

6778 Moanmore Lower WF

Description:

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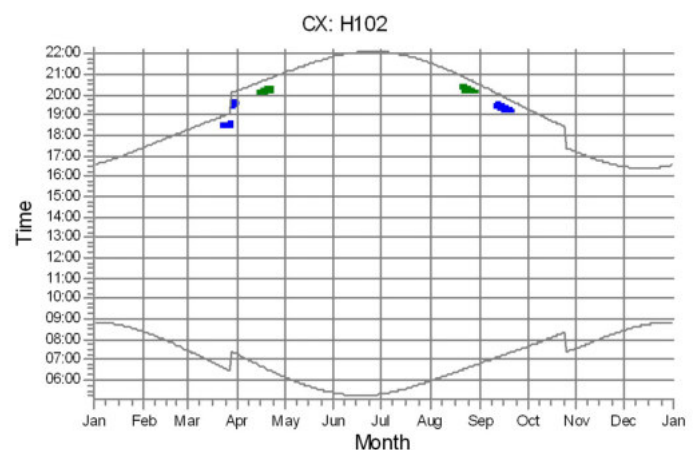
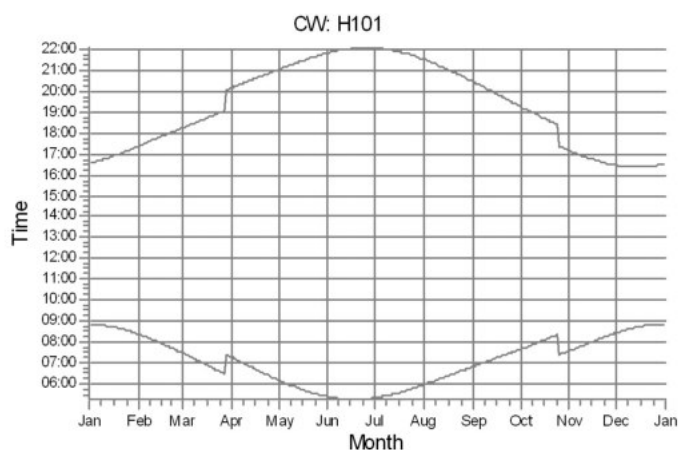
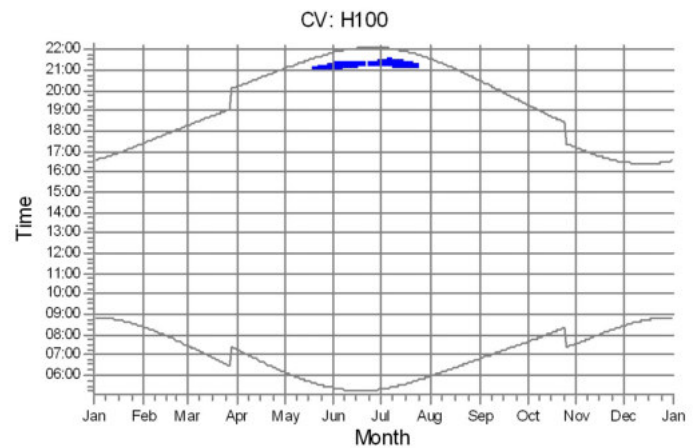
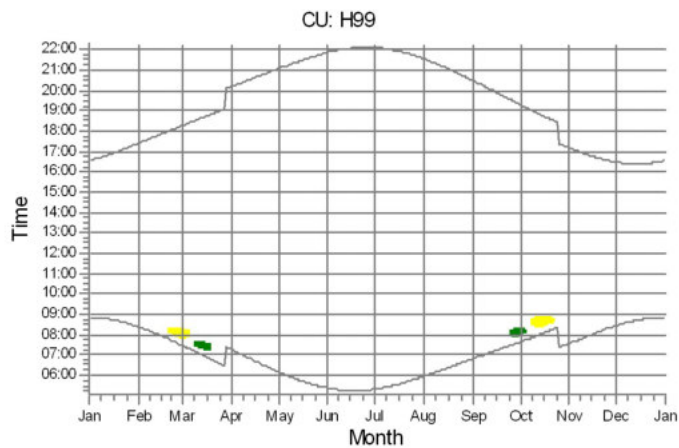
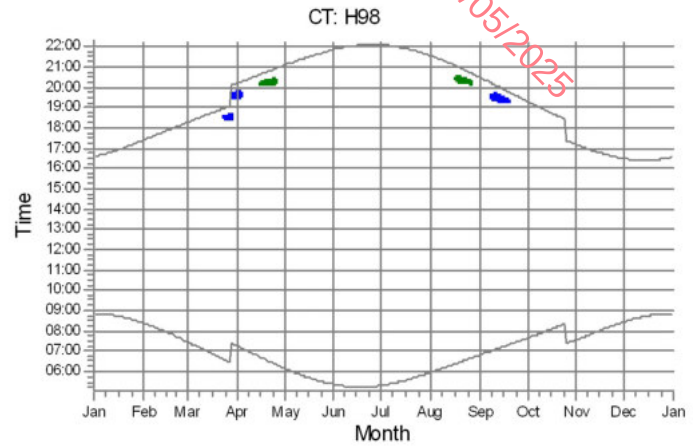
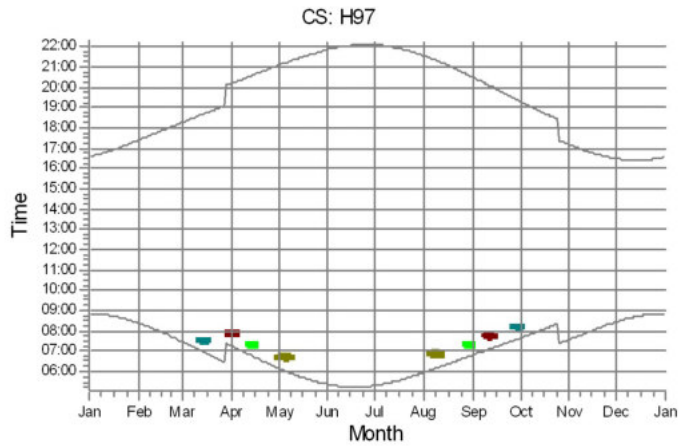
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Calculated:

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SHADOW - Calendar, graphical

Calculation: 6778 Moanmore Lower Worst Case



WTGs

 1: Moanmore Lower T1	 6: Moanmore T3
 2: Moanmore Lower T2	 8: Moanmore T5
 3: Moanmore Lower T3	 9: Moanmore T6

10: Moanmore T7

Project:

6778 Moanmore Lower WF

Description:

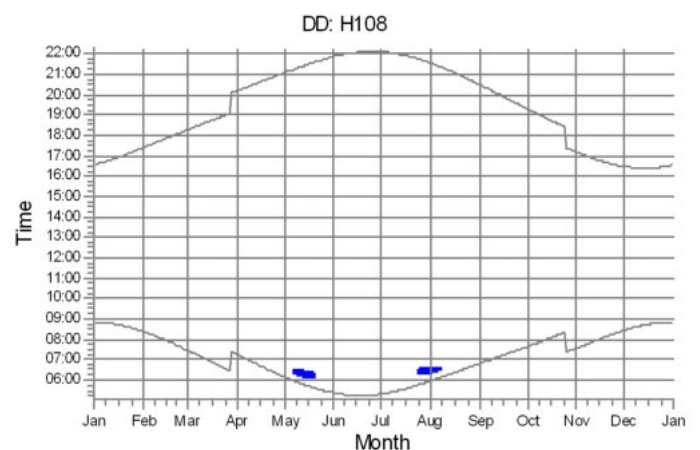
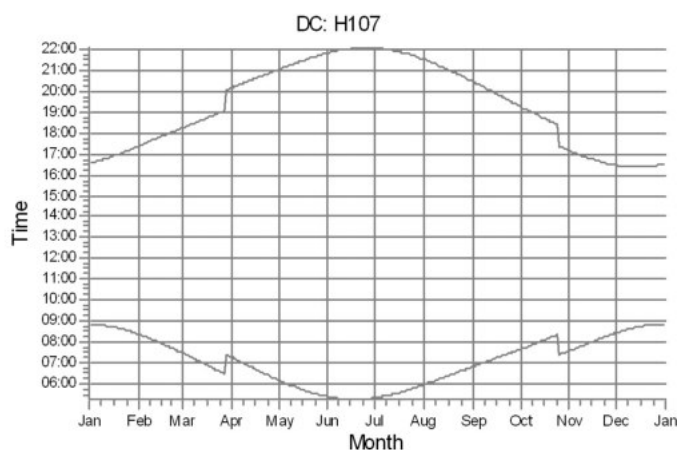
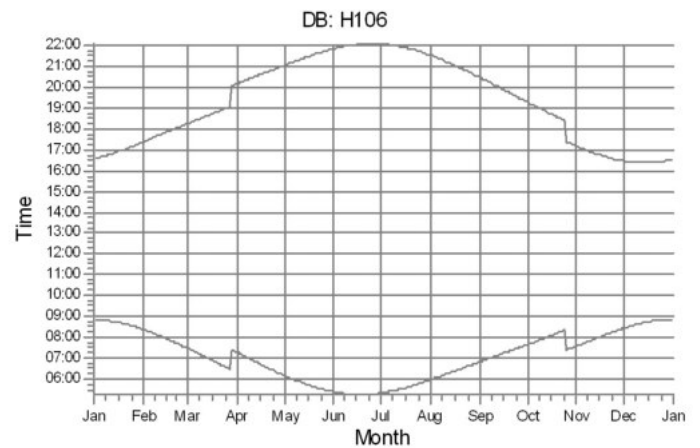
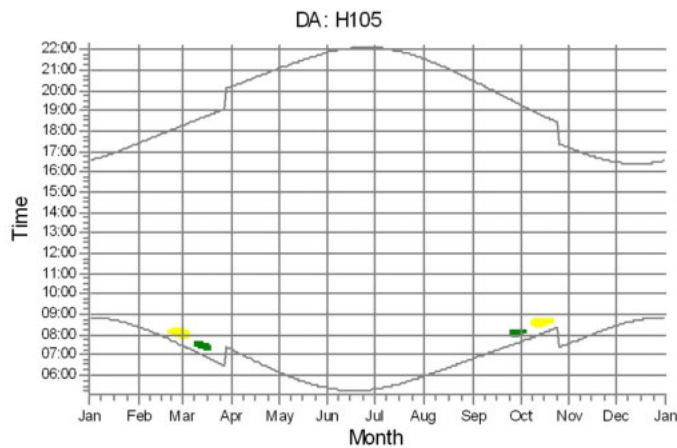
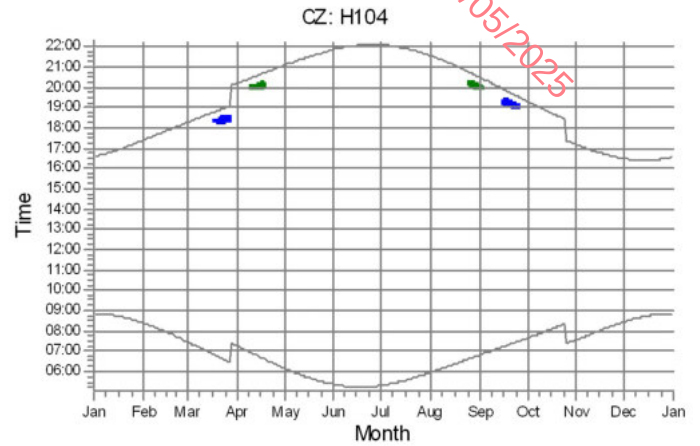
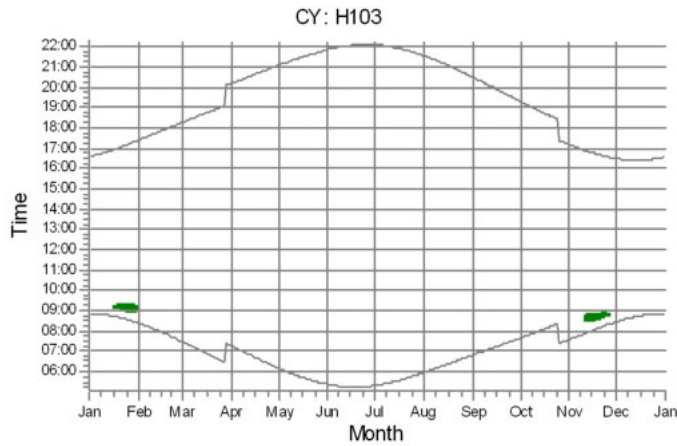
3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
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SHADOW - Calendar, graphical

Calculation: 6778 Moanmore Lower Worst Case



WTGs

1: Moanmore Lower T1 2: Moanmore Lower T2 3: Moanmore Lower T3

Project:

6778 Moanmore Lower WF

Description:

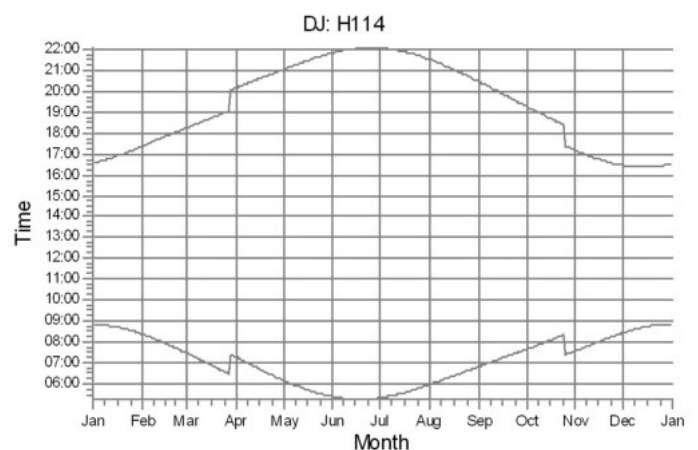
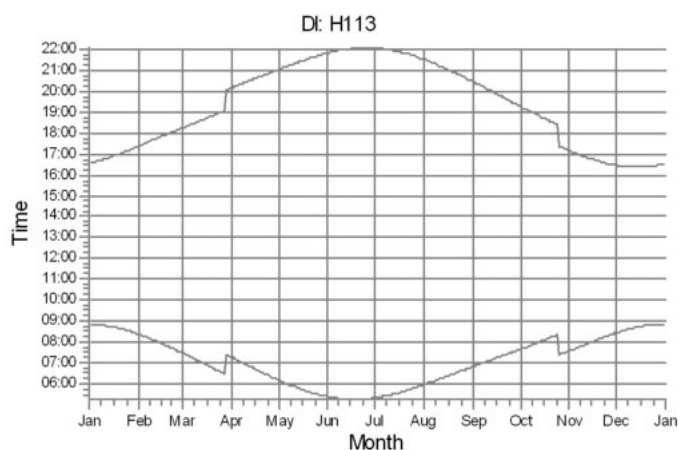
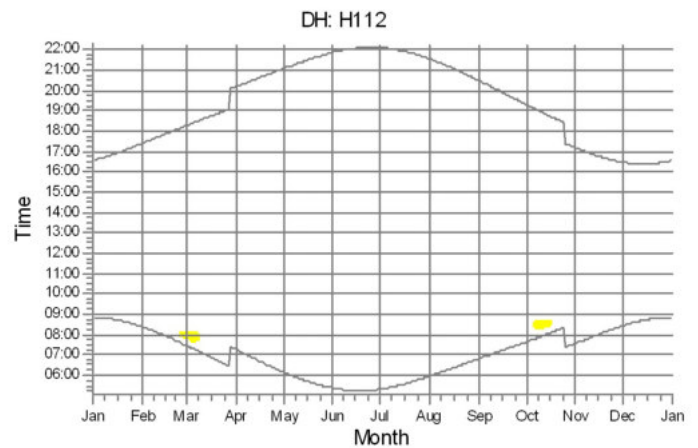
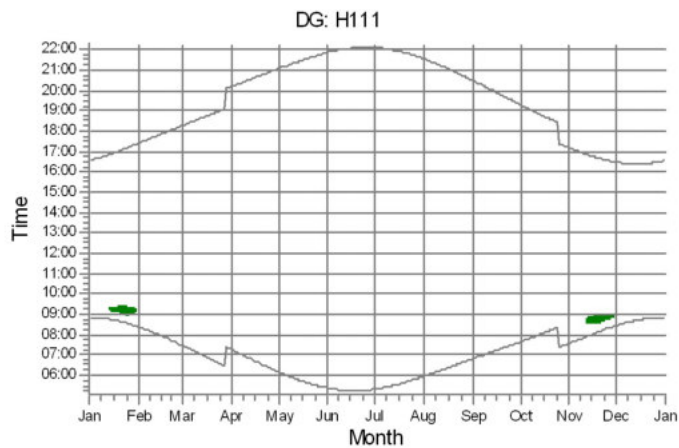
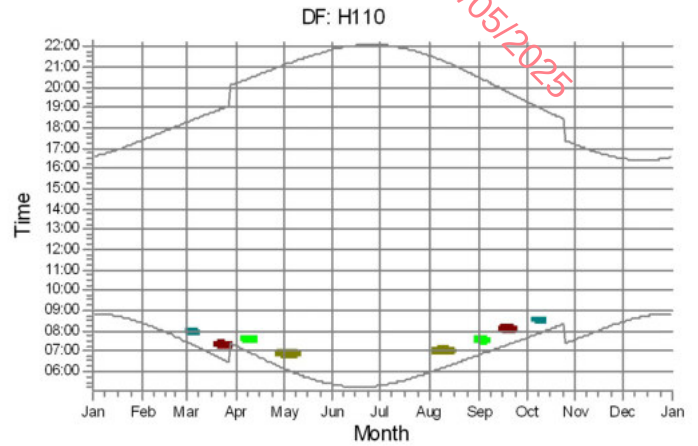
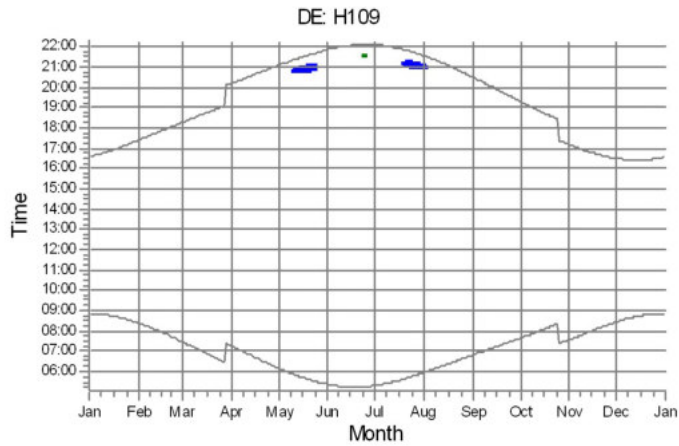
3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
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SHADOW - Calendar, graphical

Calculation: 6778 Moanmore Lower Worst Case



WTGs

1: Moanmore Lower T1	6: Moanmore T3
2: Moanmore Lower T2	8: Moanmore T5
3: Moanmore Lower T3	9: Moanmore T6

10: Moanmore T7

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
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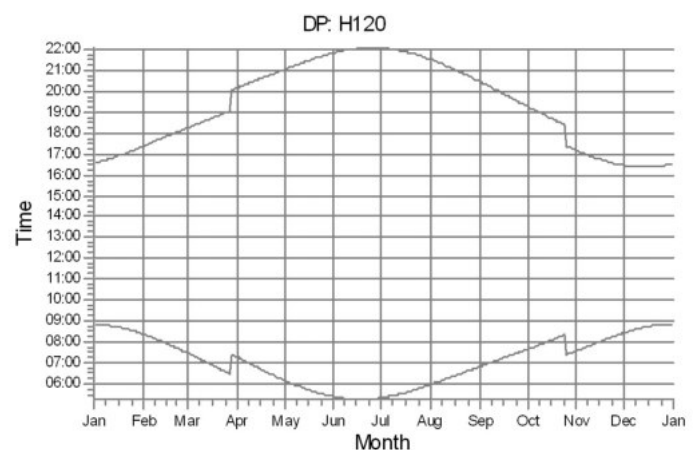
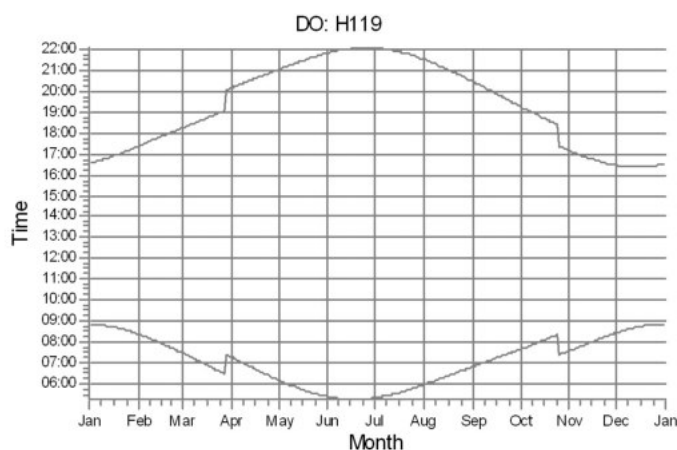
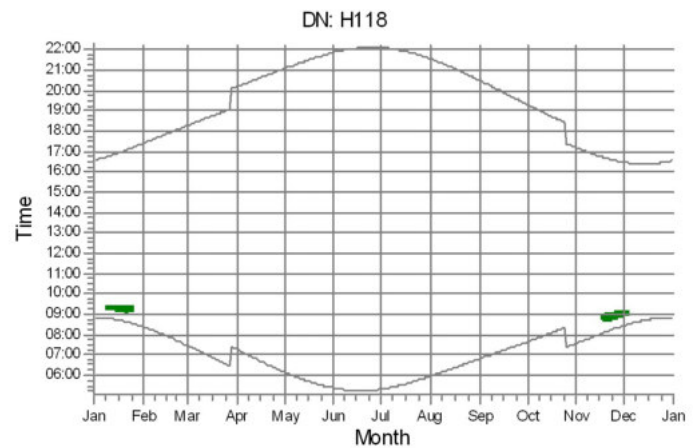
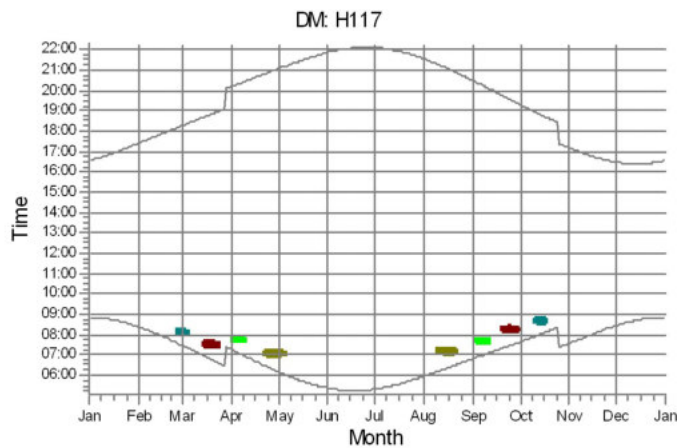
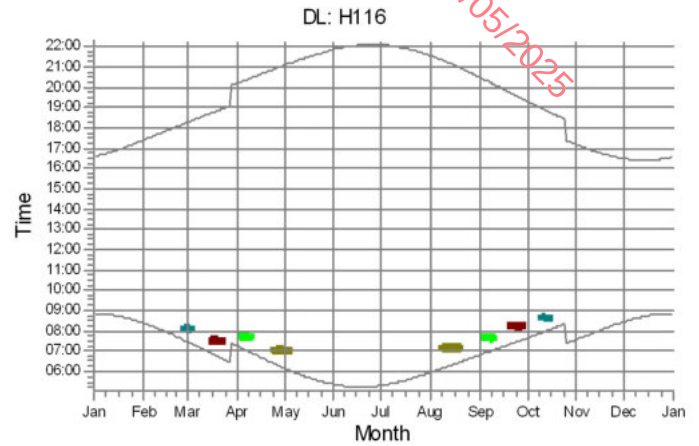
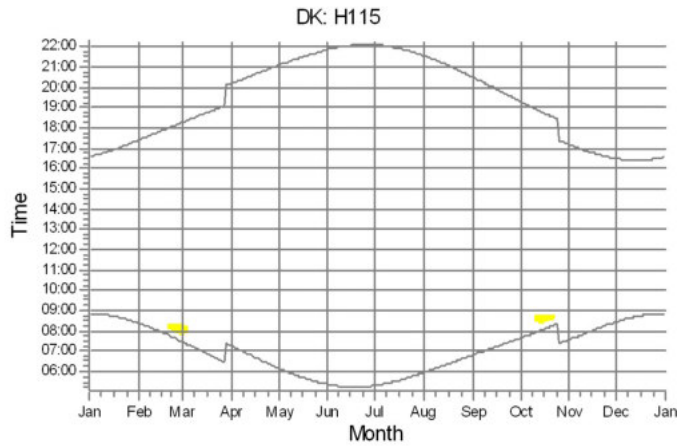
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SHADOW - Calendar, graphical

Calculation: 6778 Moanmore Lower Worst Case



WTGs



1: Moanmore Lower T1

2: Moanmore Lower T2

6: Moanmore T3

8: Moanmore T5

9: Moanmore T6

10: Moanmore T7

Project:

6778 Moanmore Lower WF

Description:

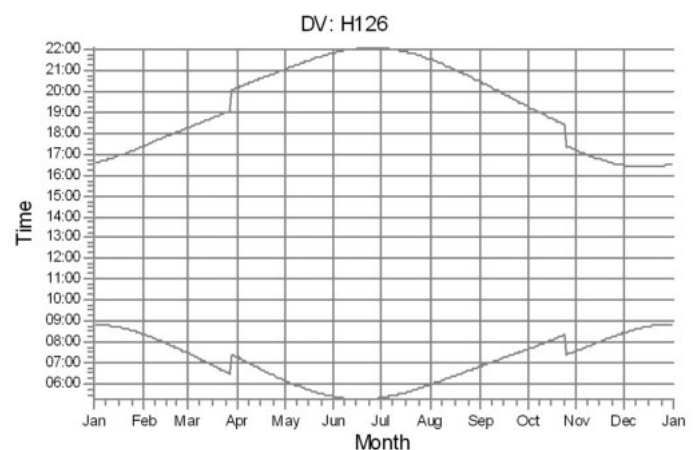
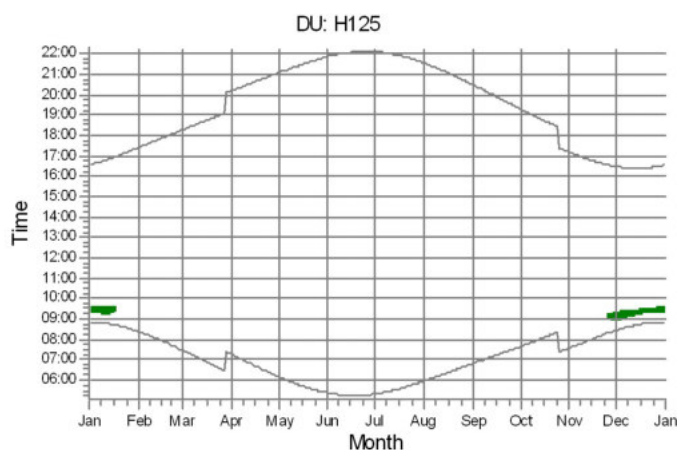
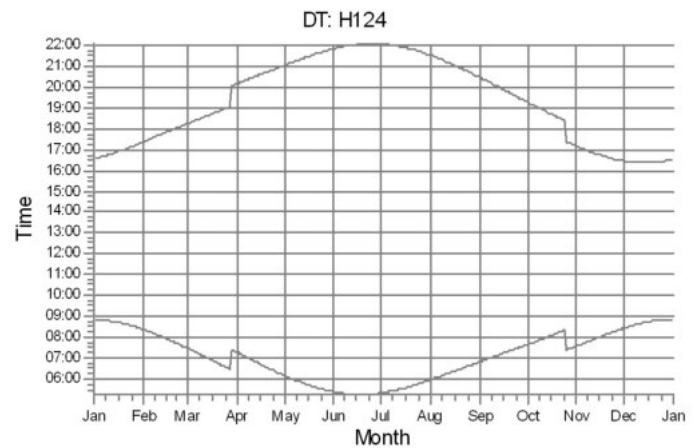
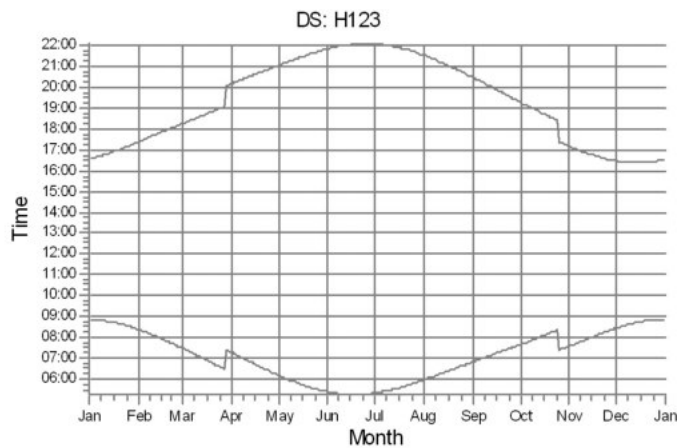
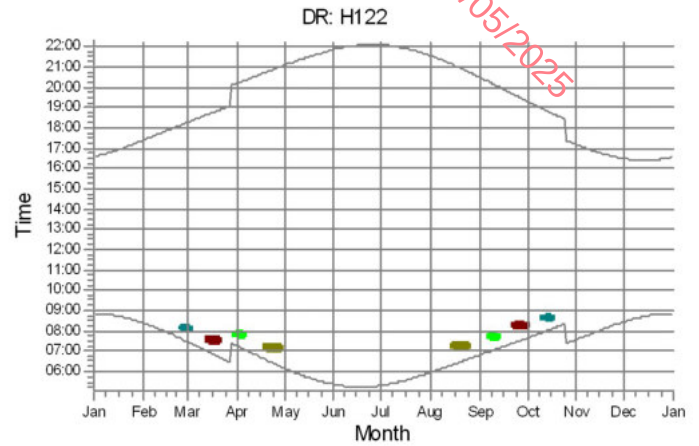
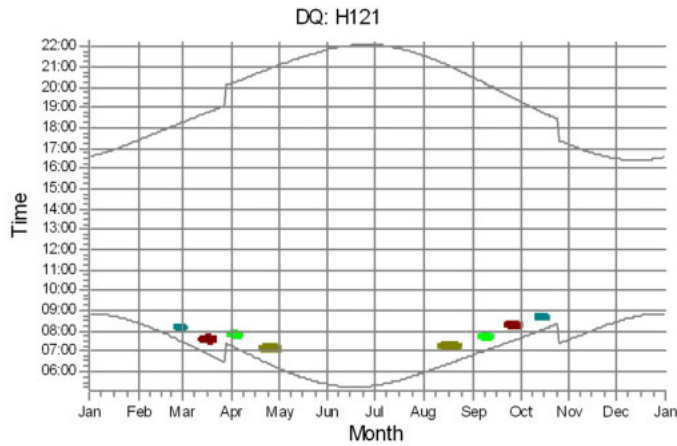
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SHADOW - Calendar, graphical

Calculation: 6778 Moanmore Lower Worst Case



WTGs



1: Moanmore Lower T1

6: Moanmore T3



8: Moanmore T5

9: Moanmore T6



10: Moanmore T7

Project:

6778 Moanmore Lower WF

Description:

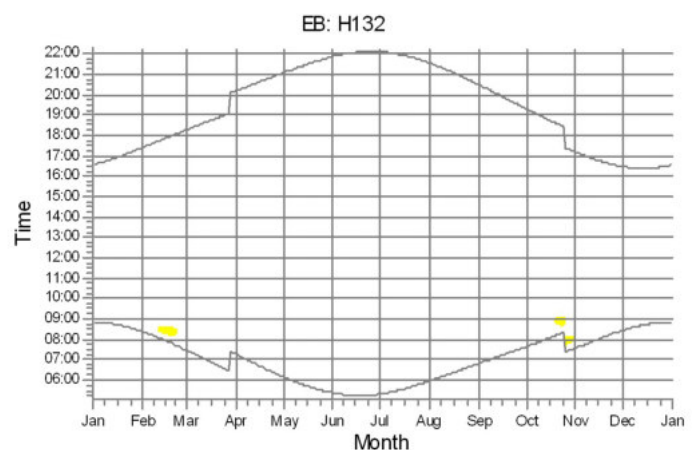
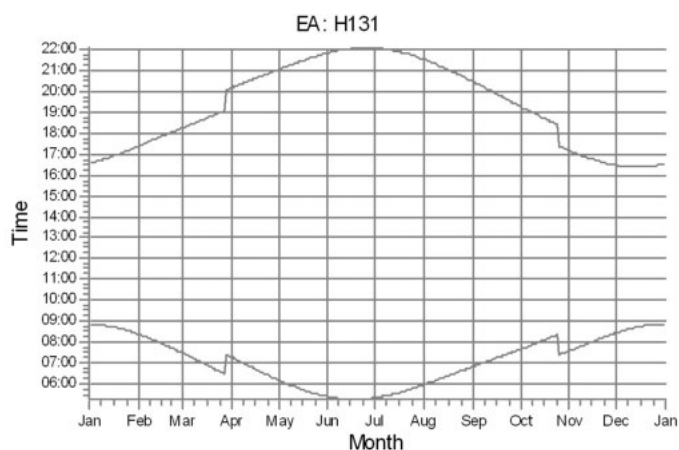
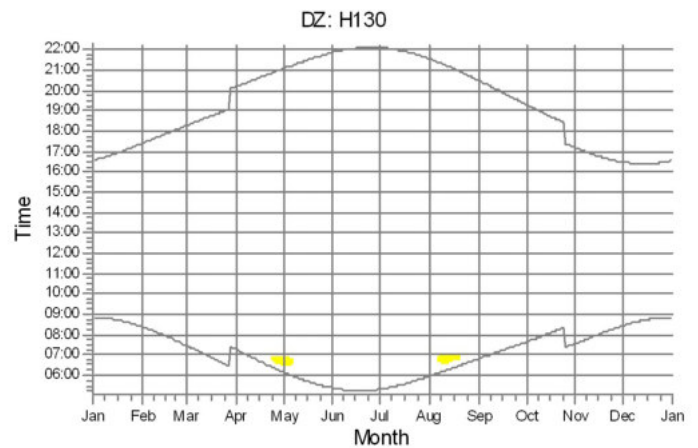
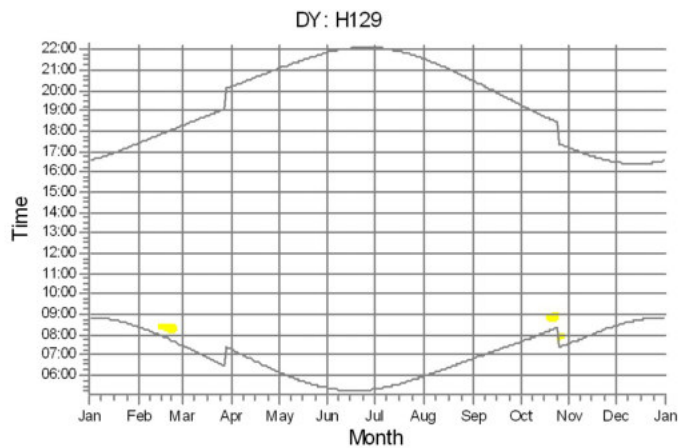
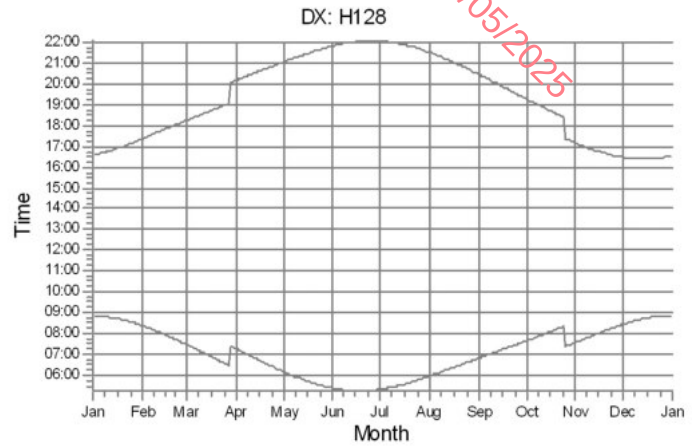
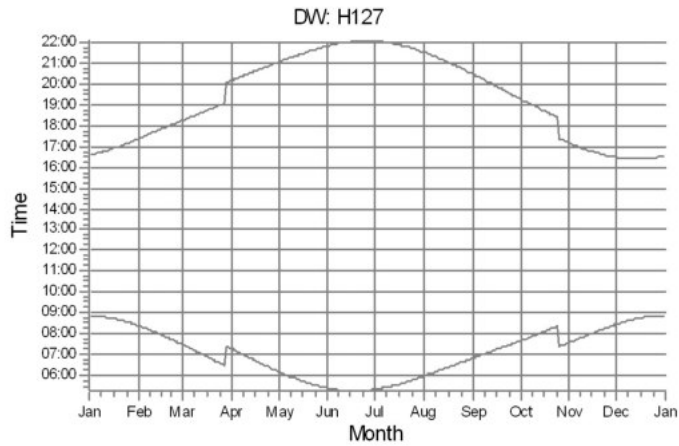
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SHADOW - Calendar, graphical

Calculation: 6778 Moanmore Lower Worst Case



WTGs



2: Moanmore Lower T2

Project:

6778 Moanmore Lower WF

Description:

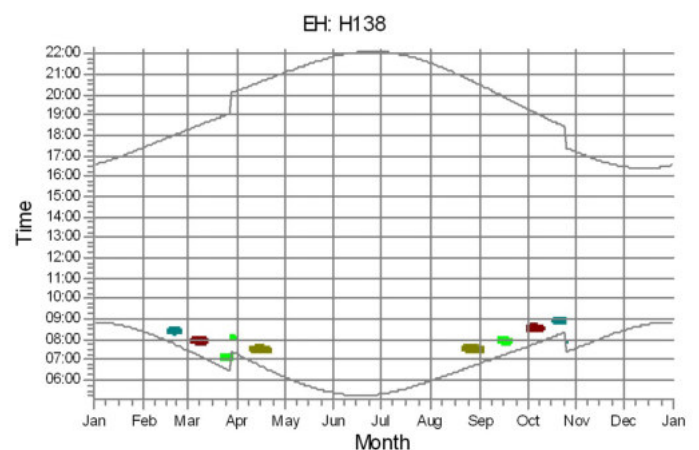
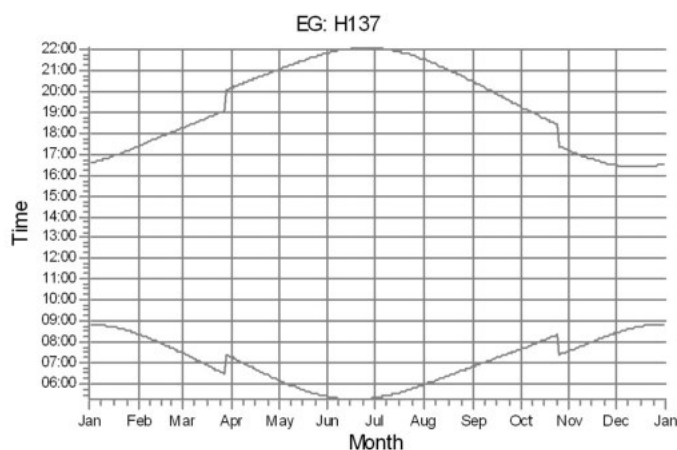
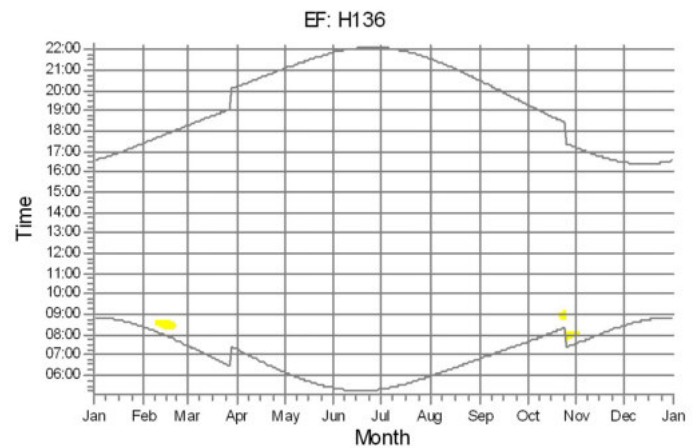
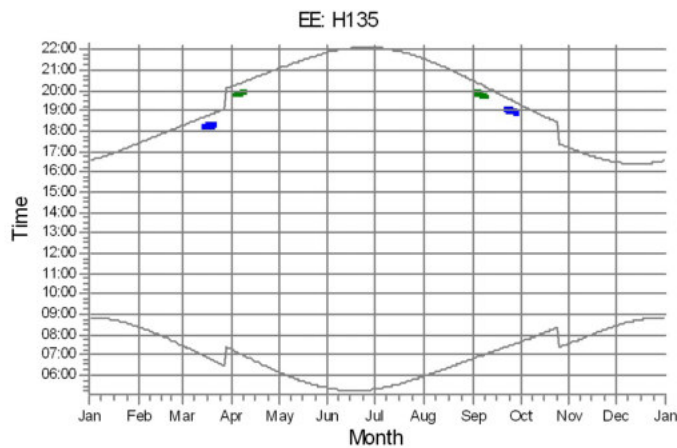
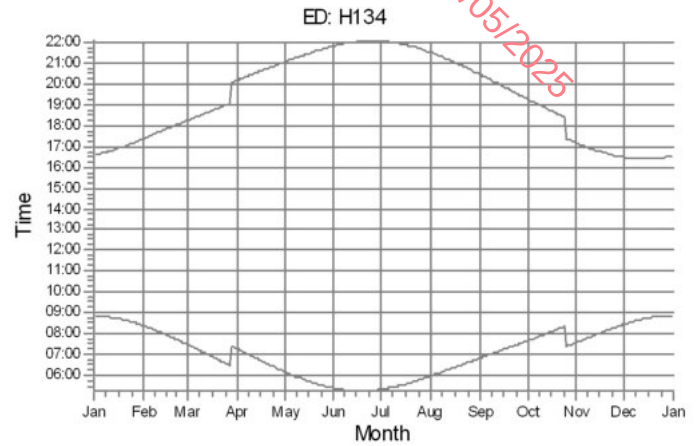
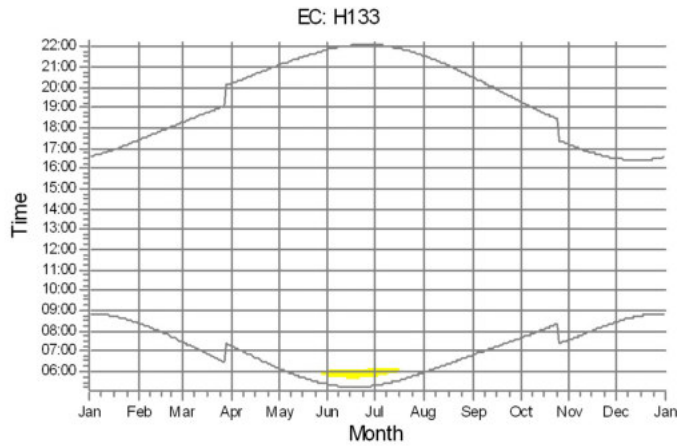
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SHADOW - Calendar, graphical

Calculation: 6778 Moanmore Lower Worst Case



WTGs

1: Moanmore Lower T1	6: Moanmore T3
2: Moanmore Lower T2	8: Moanmore T5
3: Moanmore Lower T3	9: Moanmore T6

10: Moanmore T7

Project:

6778 Moanmore Lower WF

Description:

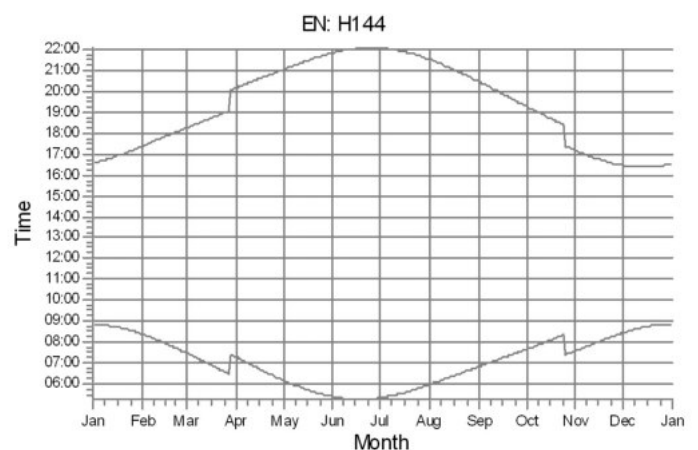
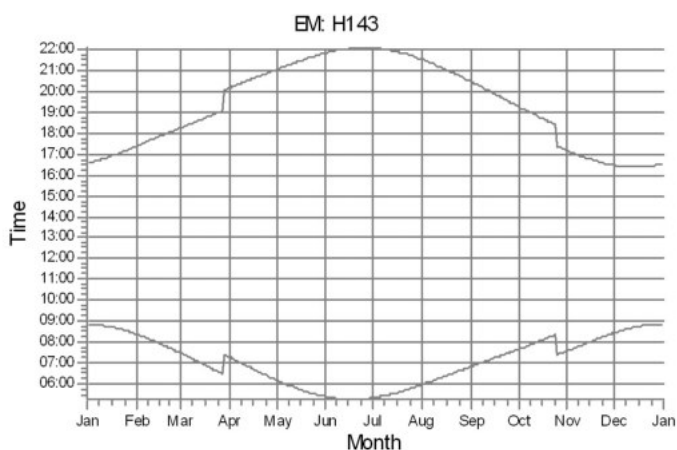
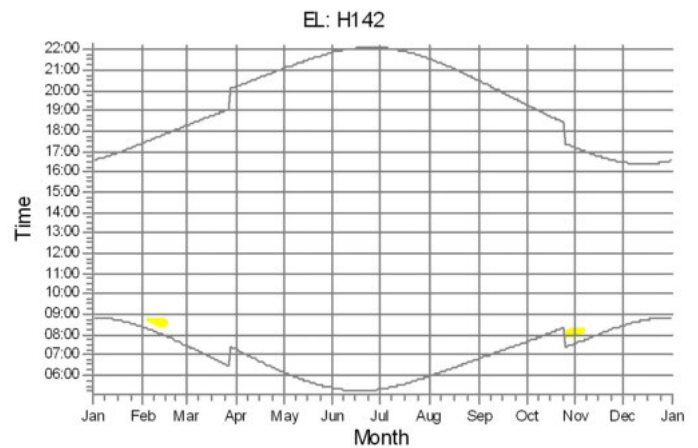
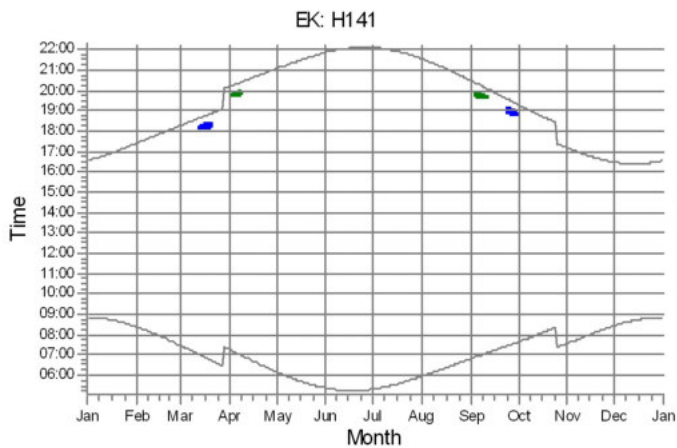
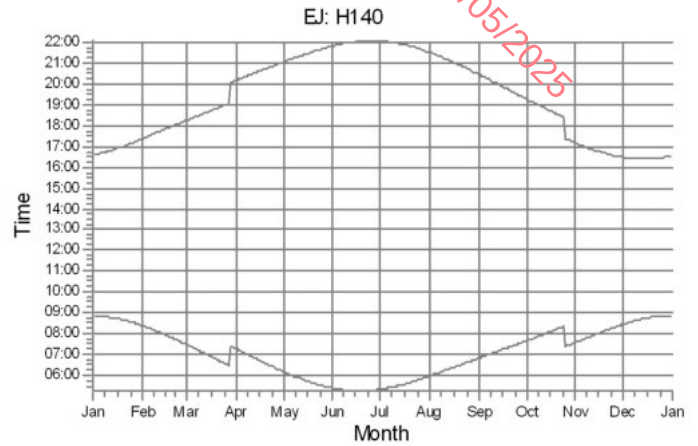
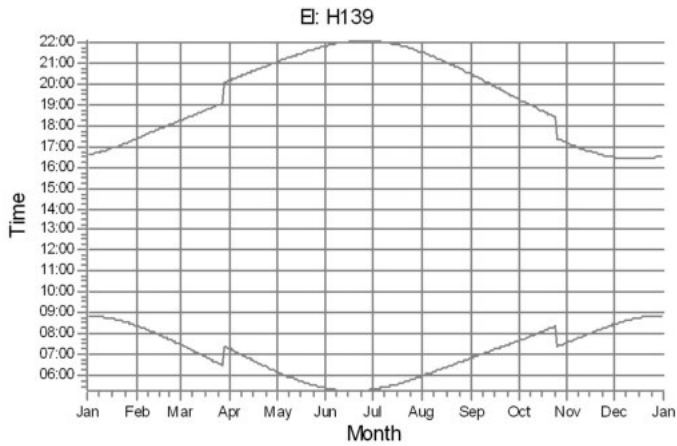
3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
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Kathryn.Feeney / kfeeney@jodireland.com
Calculated:
16/12/2024 15:13/4.0.552

SHADOW - Calendar, graphical

Calculation: 6778 Moanmore Lower Worst Case



WTGs

1: Moanmore Lower T1 2: Moanmore Lower T2 3: Moanmore Lower T3

Project:

6778 Moanmore Lower WF

Description:

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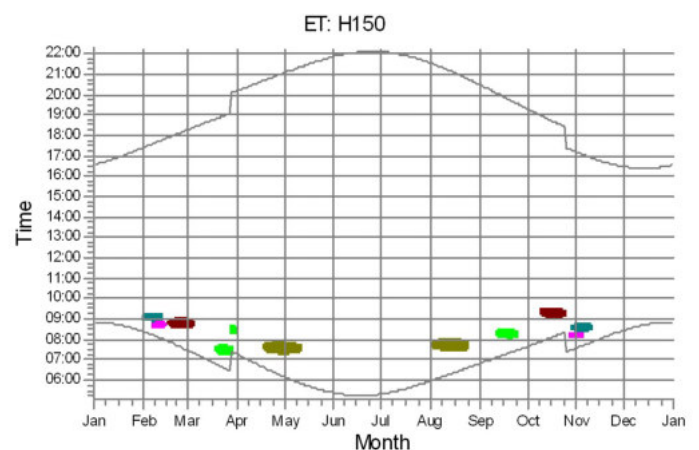
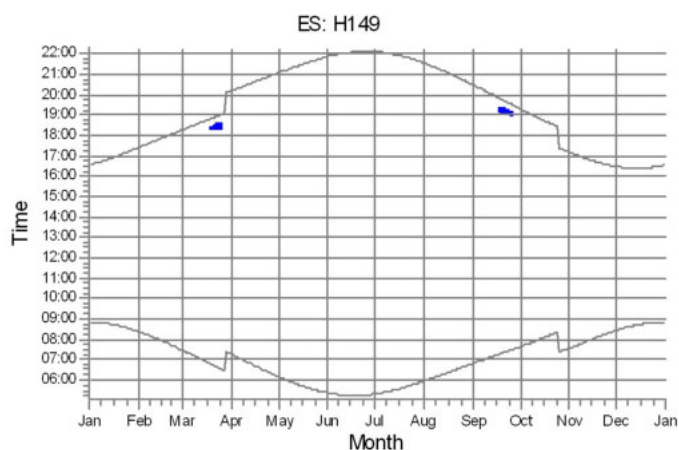
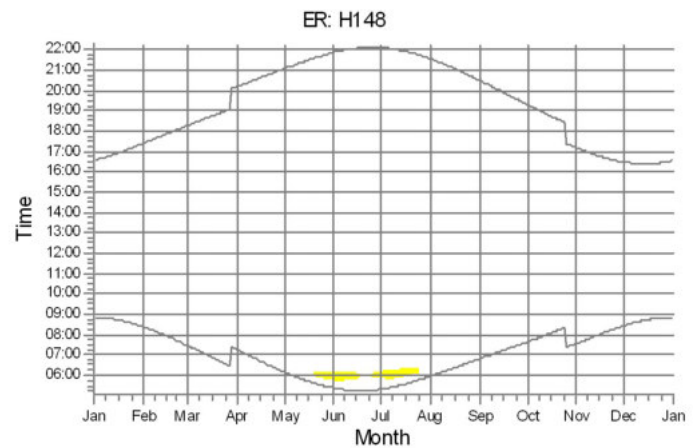
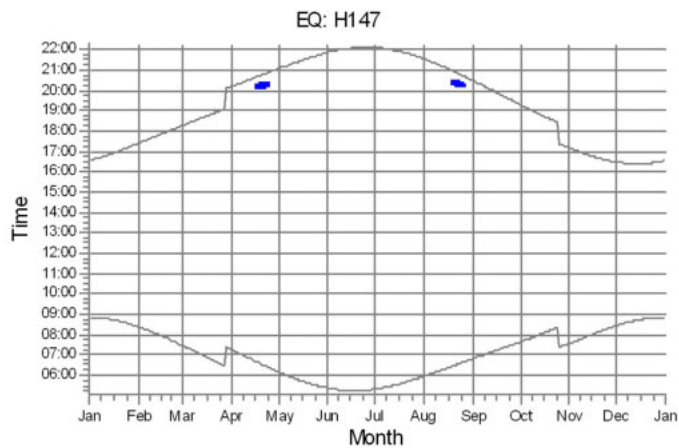
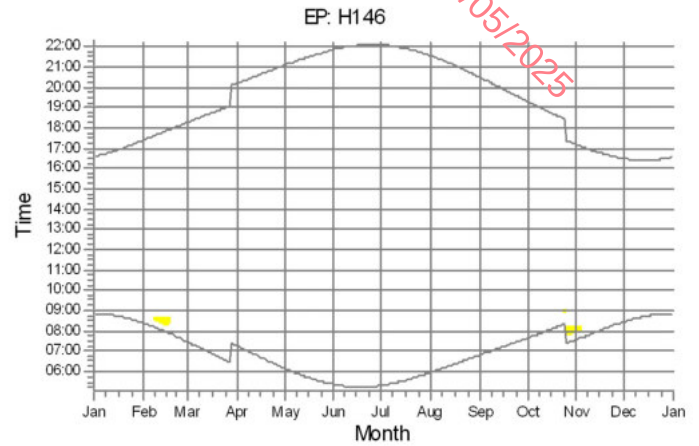
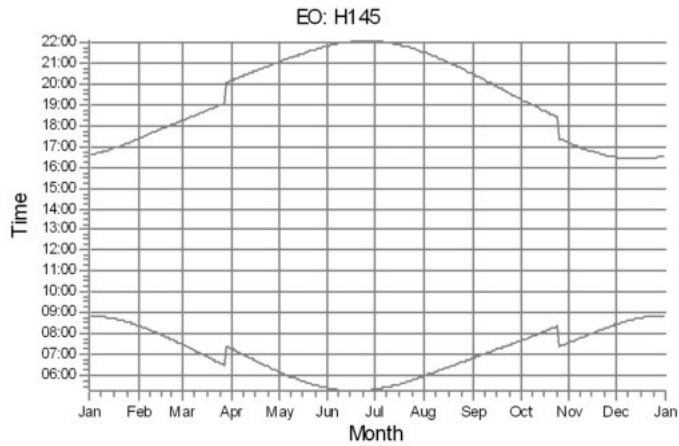
Kathryn Feeney / kfeeney@jodireland.com

Calculated:

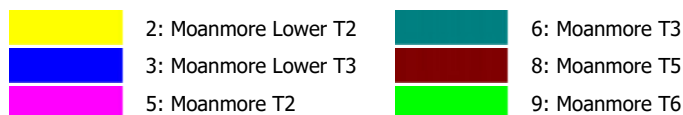
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SHADOW - Calendar, graphical

Calculation: 6778 Moanmore Lower Worst Case



WTGs



10: Moanmore T7

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
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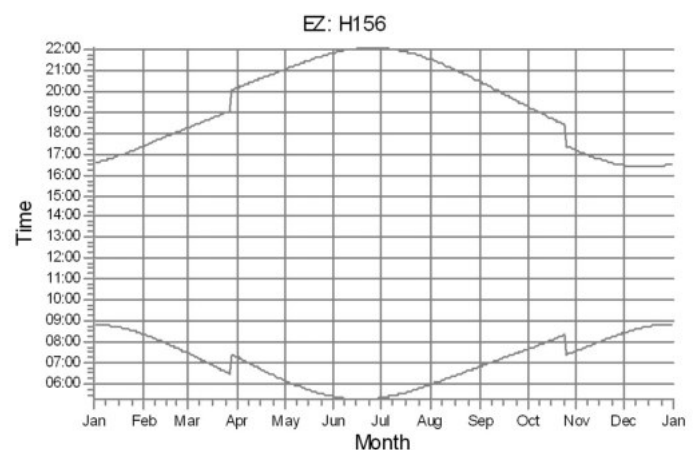
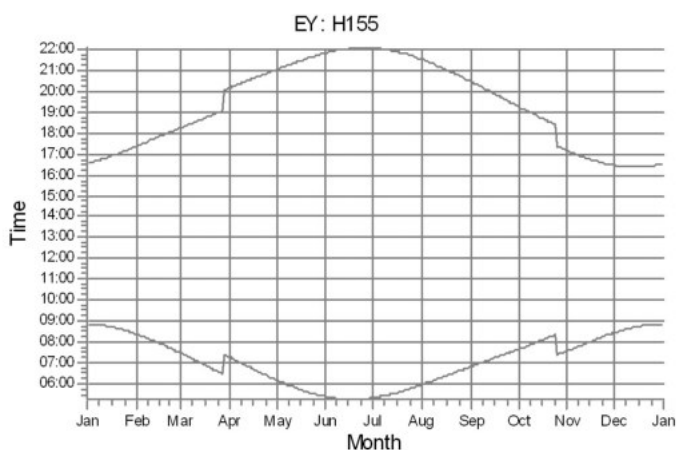
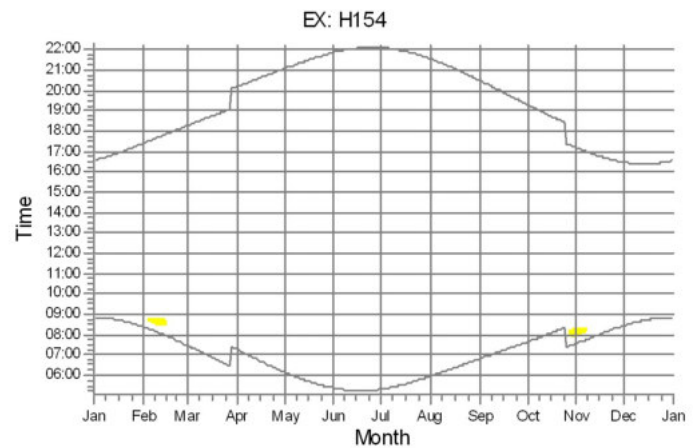
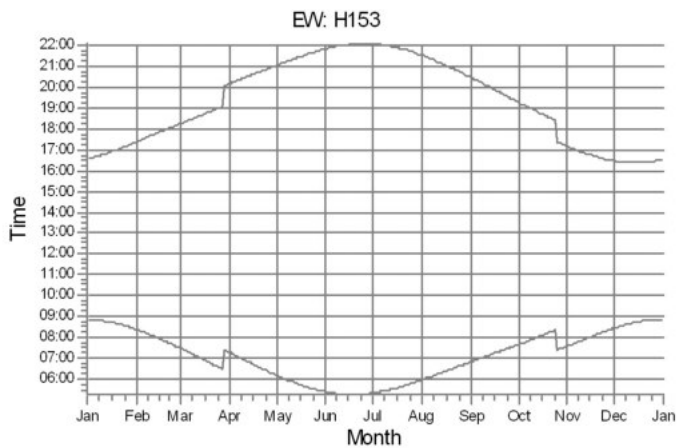
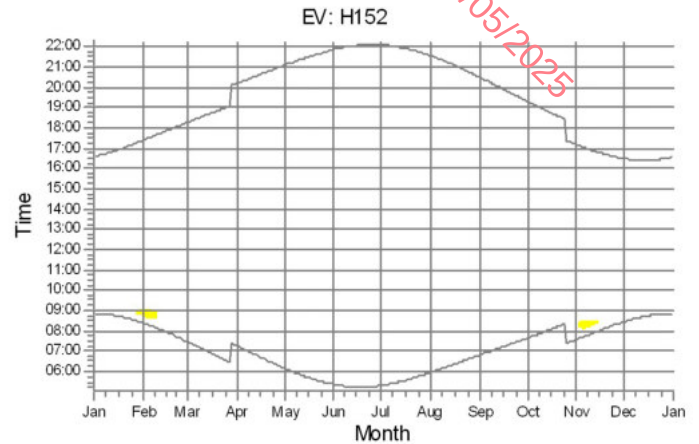
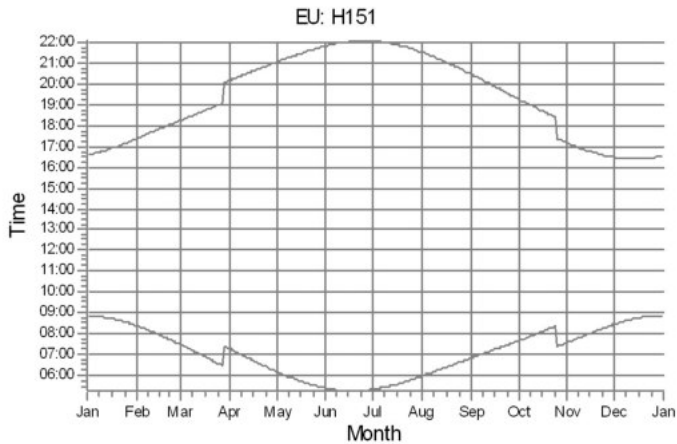
Kathryn Feeney / kfeeney@jodireland.com

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16/12/2024 15:13/4.0.552

SHADOW - Calendar, graphical

Calculation: 6778 Moanmore Lower Worst Case



WTGs



2: Moanmore Lower T2

Project:

6778 Moanmore Lower WF

Description:

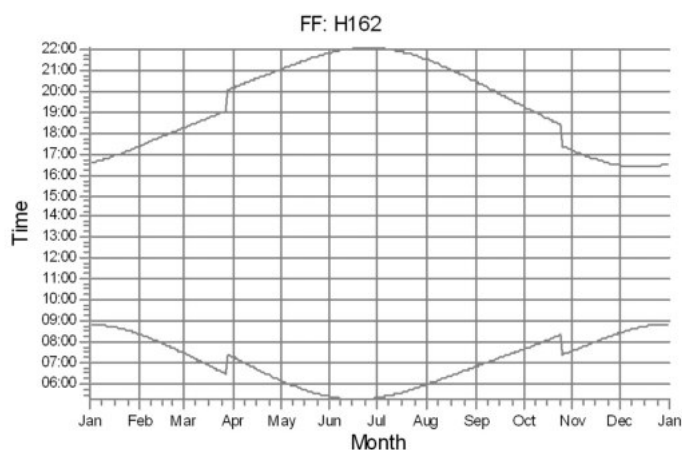
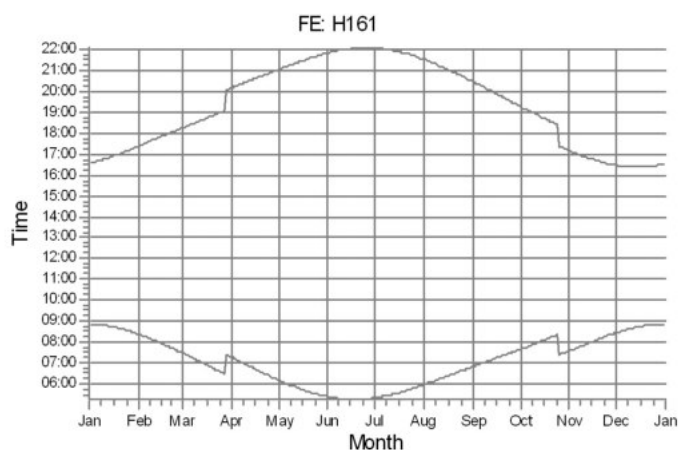
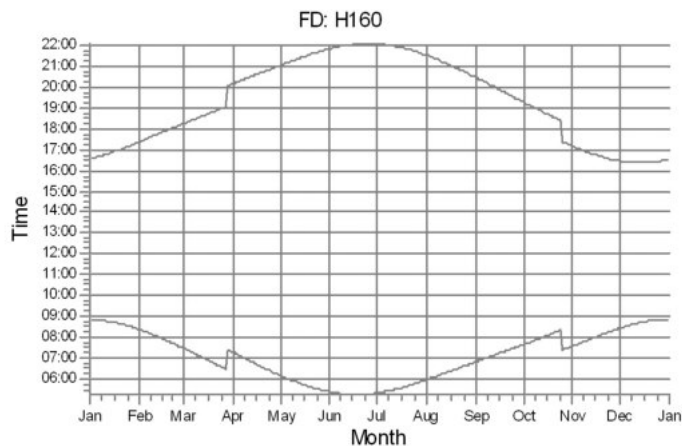
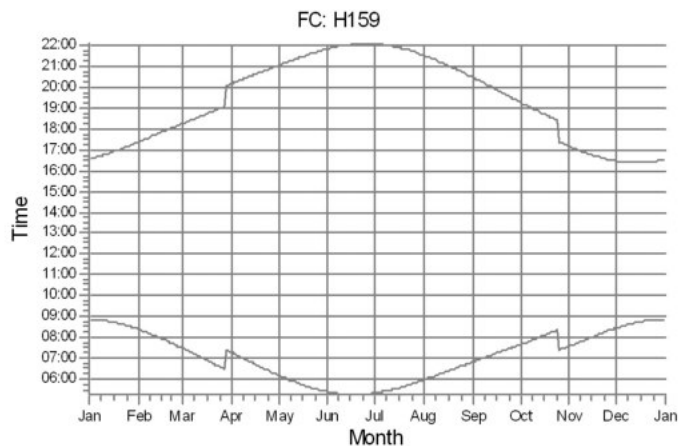
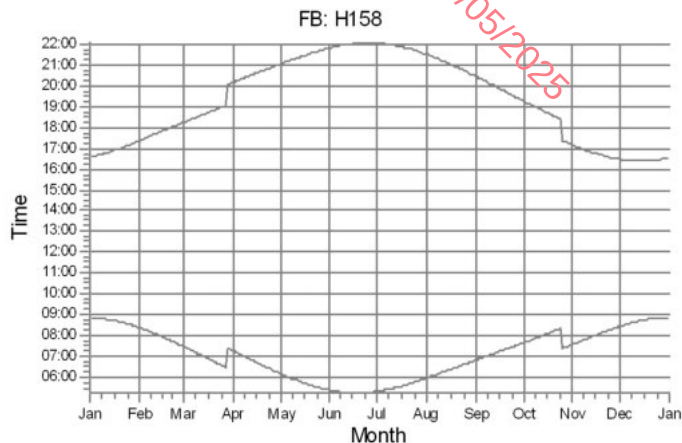
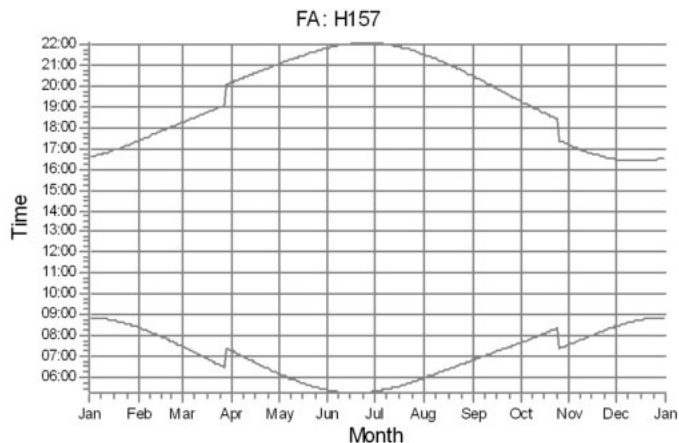
3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
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SHADOW - Calendar, graphical

Calculation: 6778 Moanmore Lower Worst Case



WTGs

Project:

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Description:

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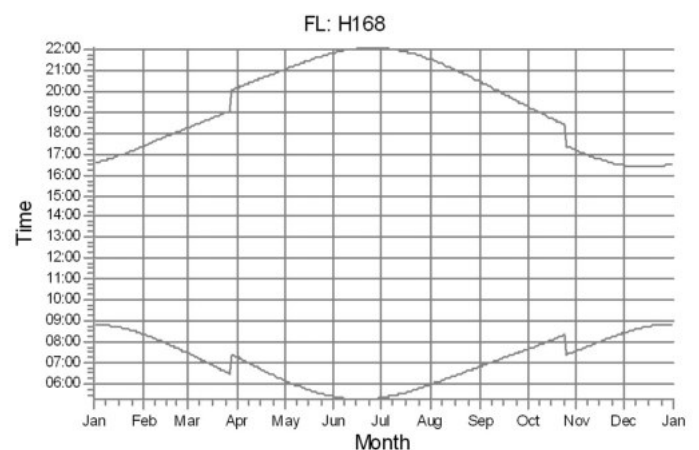
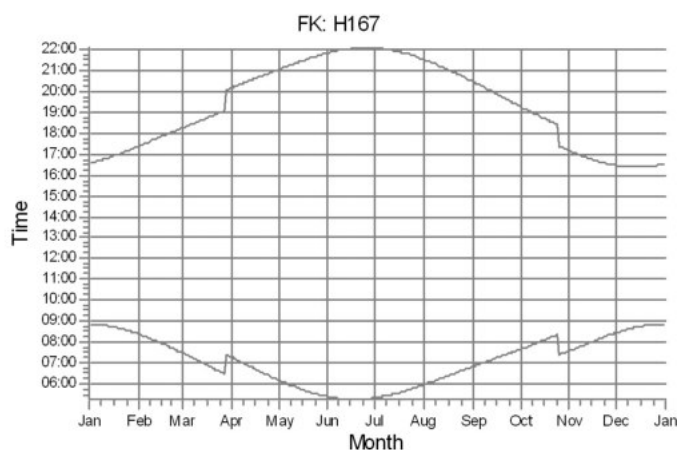
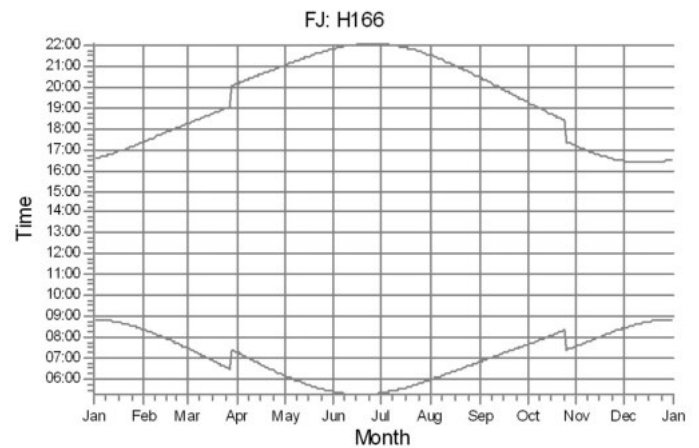
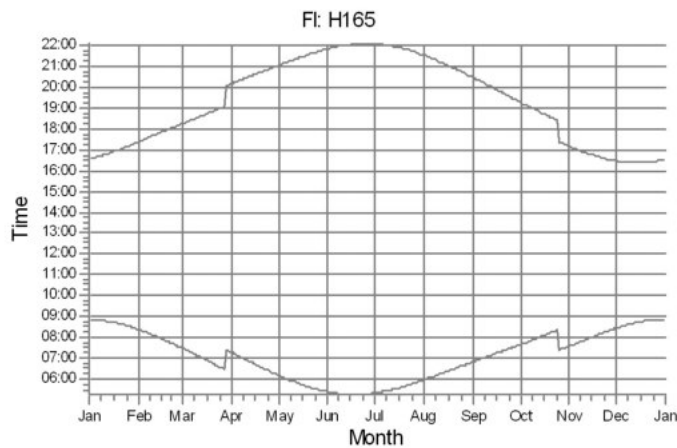
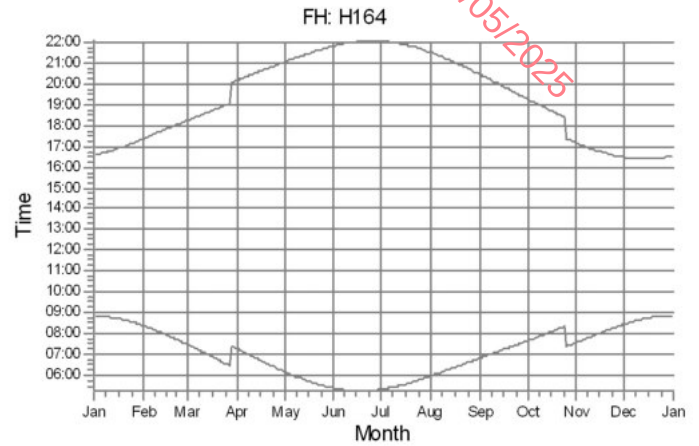
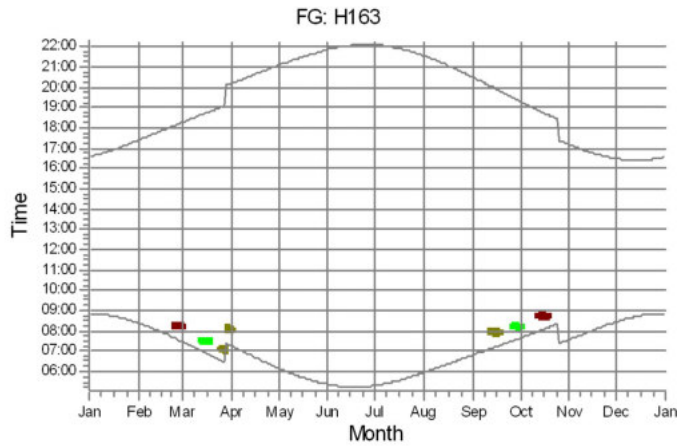
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Calculated:

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SHADOW - Calendar, graphical

Calculation: 6778 Moanmore Lower Worst Case



WTGs



8: Moanmore T5



9: Moanmore T6



10: Moanmore T7

Project:

6778 Moanmore Lower WF

Description:

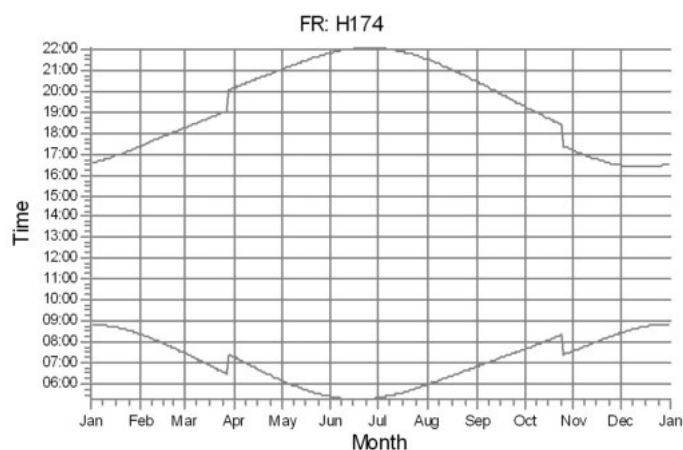
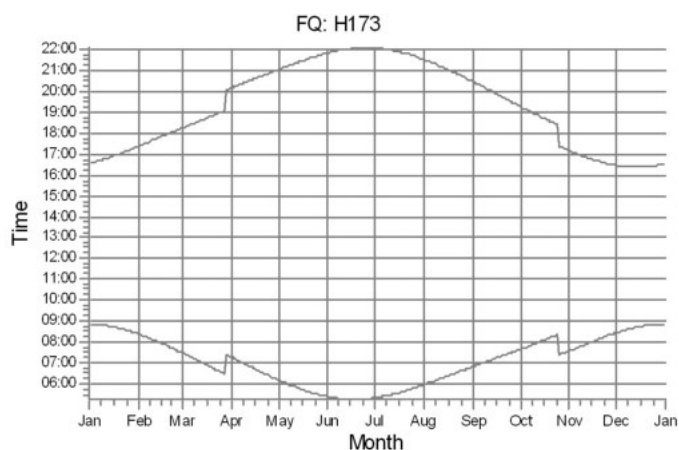
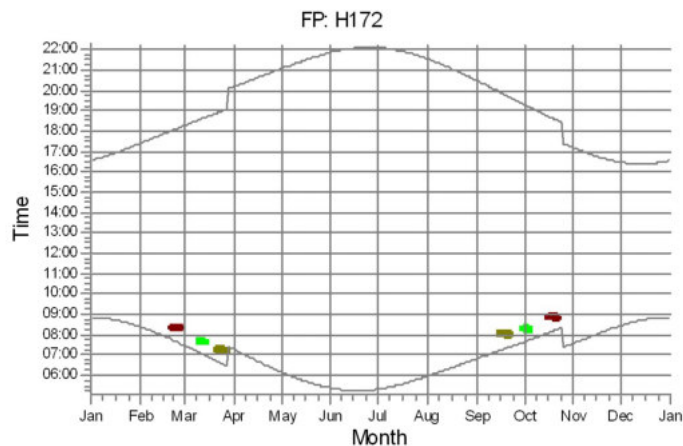
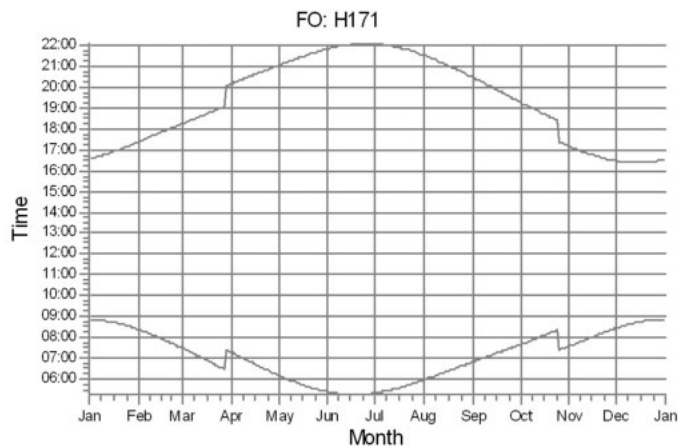
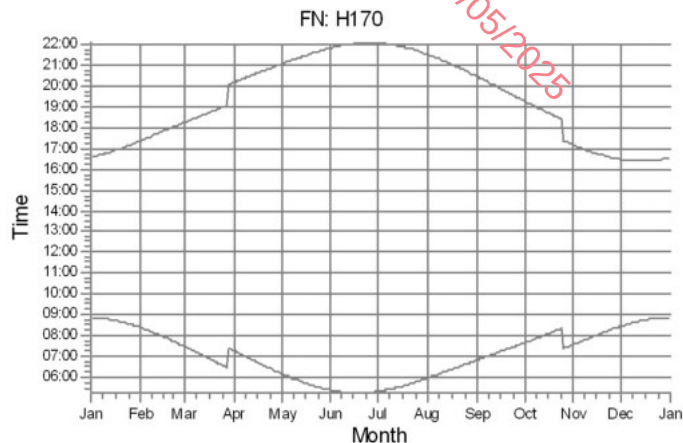
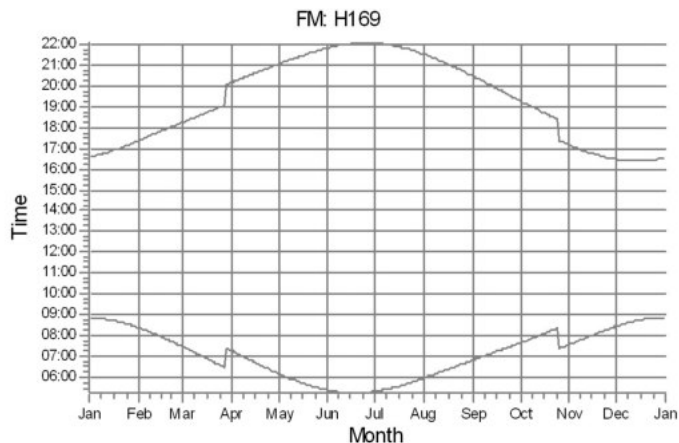
3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
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SHADOW - Calendar, graphical

Calculation: 6778 Moanmore Lower Worst Case



WTGs



8: Moanmore T5



9: Moanmore T6



10: Moanmore T7

Project:

6778 Moanmore Lower WF

Description:

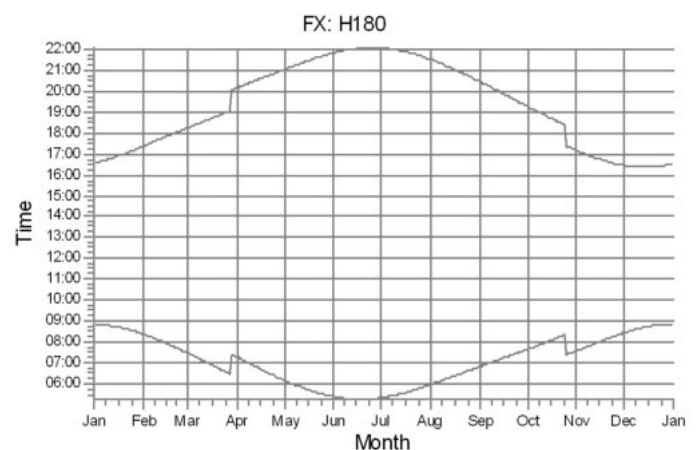
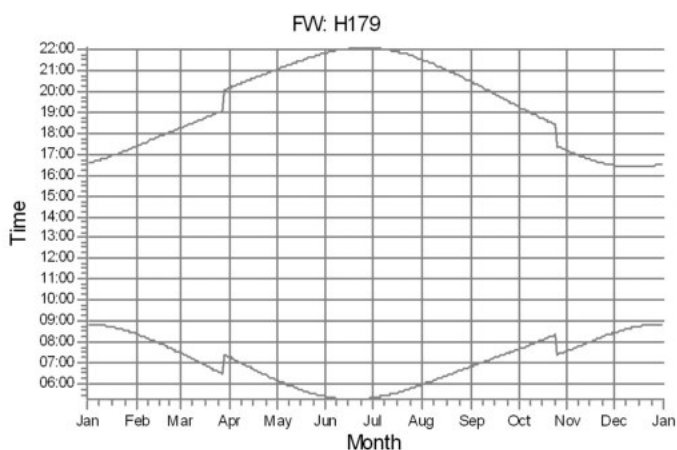
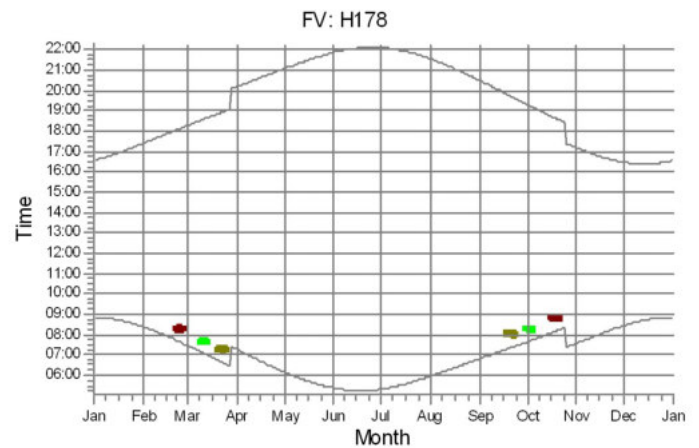
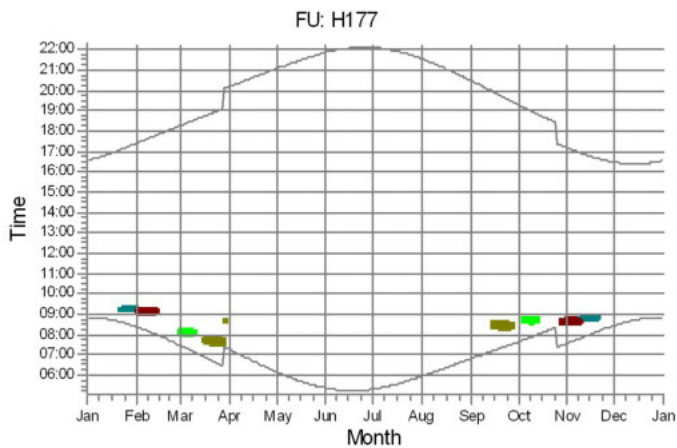
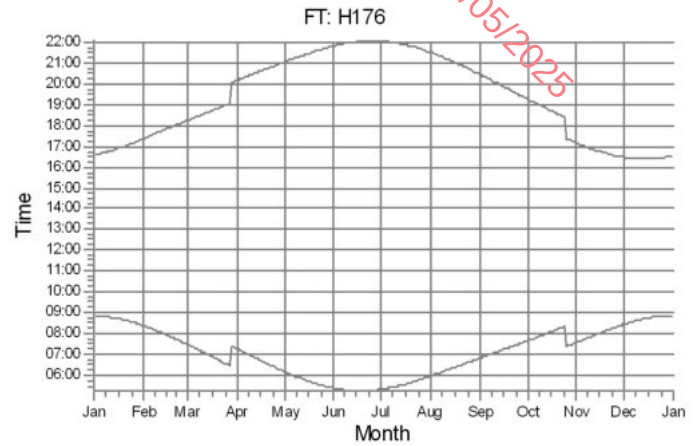
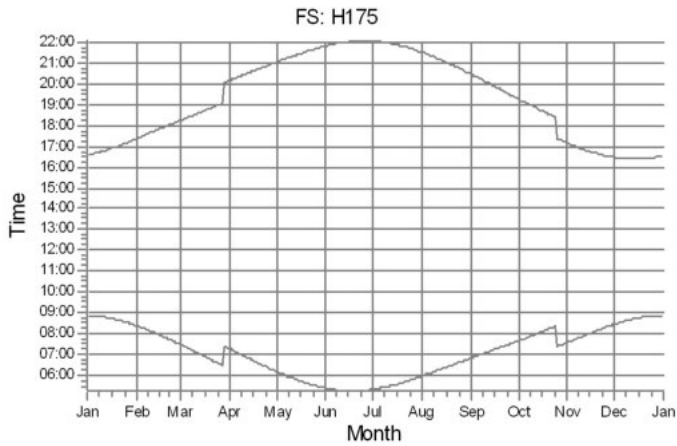
3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
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SHADOW - Calendar, graphical

Calculation: 6778 Moanmore Lower Worst Case



WTGs

6: Moanmore T3	9: Moanmore T6
8: Moanmore T5	10: Moanmore T7

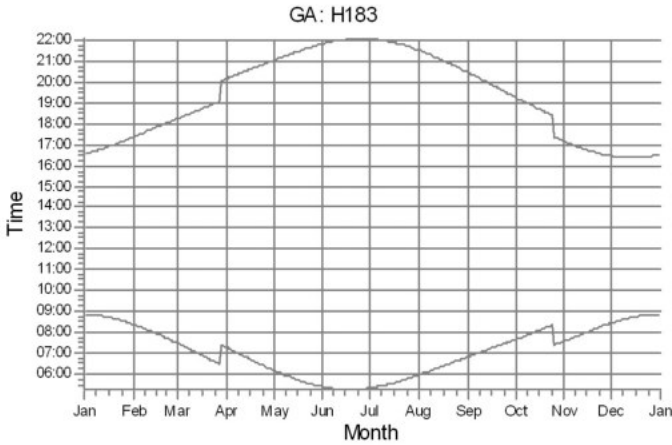
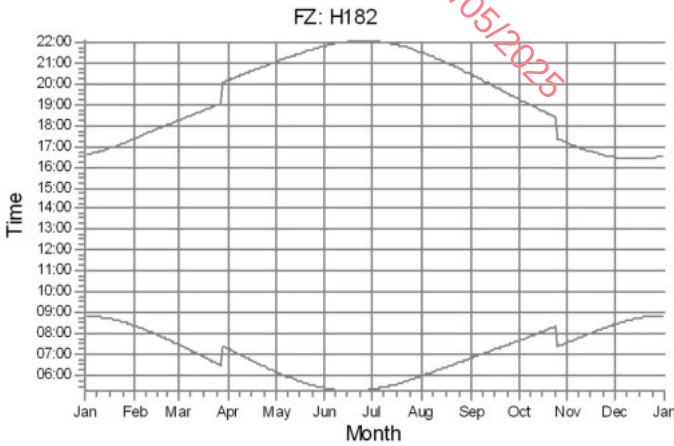
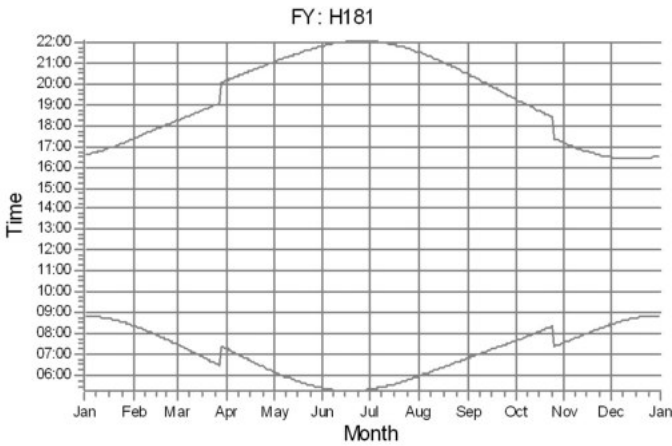
Project:
6778 Moanmore Lower WF

Description:
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SHADOW - Calendar, graphical

Calculation: 6778 Moanmore Lower Worst Case



WTGs

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Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar per WTG

Calculation: 6778 Moanmore Lower Worst Case **WTG:** 1 - Moanmore Lower T1**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January			February			March			April			May			June		
1	08:50	09:23-10:16/53	10:26-11:11/45	08:22	15:59-16:52/53	09:51-10:12/21	07:27	07:51-08:00/9	07:15	07:38-07:46/8	06:08	19:42-20:35/53	05:22	05:51-06:08/17				
	16:34	14:43-15:58/75		17:23	08:49-09:29/40	15:32-15:58/26	18:16	16:40-17:27/47	20:12	19:00-19:03/3	21:04		21:52	20:22-21:18/56				
2	08:50	09:23-10:17/54	10:27-11:11/44	08:21	15:59-16:54/55	09:54-10:08/14	07:25	07:49-08:00/11	07:13	19:45-19:47/2	06:07	19:43-20:37/54	05:21	05:50-06:08/18				
	16:35	14:43-15:58/75		17:25	08:47-09:29/42	15:35-15:56/21	18:18	16:41-17:27/46	20:13	07:36-07:46/10	21:06		21:53	20:23-21:19/56				
3	08:50	09:22-10:17/55	10:27-11:11/44	08:19	16:00-16:56/56	15:39-15:54/15	07:23	07:47-08:00/13	07:10	19:44-19:48/4	06:05	19:43-20:39/56	05:20	05:50-06:08/18				
	16:36	14:45-16:00/75		17:27	08:46-09:30/44		18:20	16:43-17:26/43	20:15	07:33-07:45/12	21:08		21:54	20:25-21:21/56				
4	08:50	09:22-10:18/56	10:28-11:11/43	08:17	16:00-16:58/58		07:20	07:44-07:59/15	07:08	19:45-19:51/6	06:03	19:43-20:40/57	05:19	05:49-06:08/19				
	16:37	14:47-16:01/74		17:28	08:44-09:29/45		18:21	16:43-17:24/41	20:17	07:31-07:45/14	21:09		21:55	20:25-21:21/56				
5	08:50	09:21-10:18/57	10:29-11:11/42	08:16	16:01-17:00/59		07:18	07:42-07:59/17	07:06	19:45-19:53/8	06:01	19:43-20:41/58	05:19	05:49-06:09/20				
	16:38	14:48-16:01/73		17:30	08:42-09:29/47		18:23	16:45-17:23/38	20:19	07:29-07:45/16	21:11		21:56	20:26-21:22/56				
6	08:49	09:21-10:19/58	10:30-11:11/41	08:14	16:01-17:02/61		07:16	07:40-07:58/18	07:03	19:46-19:54/8	05:59	19:43-20:43/60	05:18	05:48-06:08/20				
	16:39	14:51-16:02/71		17:32	08:40-09:28/48		18:25	16:46-17:21/35	20:20	07:26-07:43/17	21:13		21:57	20:28-21:23/55				
7	08:49	09:20-10:19/59	16:04-16:05/1	08:12	16:01-17:04/63		07:14	07:37-07:56/19	07:01	19:47-19:56/9	05:57	19:45-20:45/60	05:17	05:47-06:08/21				
	16:41	14:53-16:02/69	10:31-11:11/40	17:34	08:38-09:27/49		18:27	17:57-18:00/3	20:22	07:24-07:42/18	21:14		21:58	20:29-21:24/55				
8	08:48	09:20-10:20/60	16:04-16:07/3	08:10	16:02-17:06/64		07:11	07:35-07:54/19	06:59	19:49-19:57/8	05:55	19:45-20:46/61	05:17	05:47-06:08/21				
	16:42	14:55-16:03/68	10:32-11:11/39	17:36	08:36-09:26/50		18:29	17:55-18:03/8	20:24	07:25-07:41/16	21:16		21:59	20:30-21:25/55				
9	08:48	09:19-10:20/61	10:33-11:10/37	08:08	16:03-17:08/65		07:09	07:33-07:51/18	06:56	19:50-19:58/8	05:53	19:45-20:47/62	05:16	05:47-06:09/22				
	16:44	14:56-16:09/73		17:38	08:34-09:25/51		18:31	17:54-18:05/11	20:26	07:27-07:39/12	21:18		22:00	20:32-21:26/54				
10	08:47	09:18-10:20/62	10:34-11:10/36	08:07	16:03-17:10/67		07:07	07:30-07:48/18	06:54	19:58-20:00/2	05:52	19:47-20:50/63	05:16	05:46-06:08/22				
	16:45	14:57-16:10/73		17:40	08:32-09:24/52		18:32	17:51-18:06/15	20:27	07:29-07:35/6	21:20		22:00	20:32-21:26/54				
11	08:47	09:17-10:20/63	10:35-11:09/34	08:05	16:04-17:13/69		07:04	07:28-07:44/16	06:52	19:57-20:02/5	05:50	19:47-20:51/64	05:15	05:46-21:27/54				
	16:46	14:58-16:11/73		17:42	08:30-09:22/52		18:34	17:50-18:08/18	20:29		21:21		22:01	05:46-06:09/23				
12	08:46	09:16-10:20/64	10:36-11:08/32	08:03	16:05-17:15/70		07:02	07:26-07:42/16	06:49	19:57-20:04/7	05:48	19:48-20:52/64	05:15	05:46-21:28/53				
	16:48	15:00-16:13/73		17:44	08:28-09:19/51		18:36	17:48-18:10/22	20:31		21:23		22:02	05:46-06:09/23				
13	08:45	09:15-10:20/65	10:37-11:08/31	08:01	16:07-17:17/70	09:07-09:15/8	07:00	07:23-07:39/16	06:47	19:56-20:05/9	05:46	19:49-20:54/65	05:15	05:46-21:28/55				
	16:49	15:02-16:14/72		17:46	08:26-09:06/40		18:38	17:48-18:12/24	20:33		21:24		22:03	05:46-06:09/23				
14	08:44	09:15-10:21/66	10:39-11:07/28	07:59	16:08-17:19/71		06:57	07:21-07:35/14	06:45	19:54-20:07/13	05:45	19:50-20:55/65	05:14	05:46-06:09/24				
	16:51	15:05-16:16/71		17:48	08:24-09:06/42		18:40	17:47-18:14/27	20:34		21:26		22:03	05:45-06:09/24				
15	08:44	09:13-10:21/68	10:41-11:05/24	07:57	16:10-17:21/71		06:55	07:18-07:32/14	06:43	19:53-20:09/16	05:43	19:52-20:57/65	05:14	05:44-21:29/55				
	16:53	15:15-16:18/63		17:50	08:22-09:04/42		18:41	17:46-18:15/29	20:36		21:28		22:04	05:45-06:09/24				
16	08:43	09:12-10:21/69	10:43-11:04/21	07:55	16:12-17:23/71		06:53	07:16-07:30/14	06:40	19:51-20:11/20	05:42	19:54-20:59/65	05:14	05:45-21:30/55				
	16:54	15:15-16:20/65		17:51	08:20-09:03/43		18:43	17:45-18:17/32	20:38		21:29		22:04	05:45-06:09/24				
17	08:42	09:11-10:21/70	10:46-11:02/16	07:53	16:14-17:25/71		06:50	07:17-07:27/10	06:38	19:50-20:13/23	05:40	19:55-20:59/64	05:14	05:45-21:30/55				
	16:56	15:16-16:22/66		17:53	08:18-09:01/43		18:45	17:45-18:20/35	20:40		21:31		22:05	05:45-06:09/24				
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19	08:40	09:09-10:22/73		07:49	16:38-17:29/51	16:23-16:28/5	06:46	17:44-18:23/39	06:34	19:47-20:15/28	05:37	20:01-21:03/62	05:14	05:46-21:31/55				
	16:59	15:18-16:26/68		17:57	08:14-08:53/39		18:49		20:43		21:34		22:06	05:45-06:09/24				
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	17:03	15:19-16:29/70		18:01	16:38-17:31/53		18:52		20:47		21:37		22:06	05:46-06:10/24				
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	17:06	09:30-10:21/51		18:05	16:39-17:31/52		18:56		20:50		21:40		22:07	05:46-06:10/24				
24	08:34	09:02-09:27/25	15:21-16:35/74	07:38	08:19-08:35/16		06:34	17:45-18:23/38	06:23	19:43-20:24/41	05:30	05:59-06:06/7	05:15	05:47-21:32/55				
	17:08	09:33-09:37/4	09:39-10:21/42	18:07	16:38-17:30/52		18:57		20:52		21:41		22:07	05:47-06:11/24				
25	08:32	09:01-09:28/27	09:41-10:21/40	07:36	08:21-08:30/9		06:31	17:44-18:21/37	06:21	19:43-20:25/42	05:29	05:58-06:07/9	05:15	05:47-21:32/55				
	17:10	15:22-16:37/75		18:08	16:39-17:30/51		18:59		20:54		21:43		22:07	05:47-06:11/24				
26	08:31	08:59-09:28/29	09:41-10:20/39	07:34	16:39-17:30/51		06:29	17:45-18:21/36	06:19	19:43-20:27/44	05:28	05:56-06:06/10	05:16	05:47-21:32/55				
	17:12	15:23-16:40/77		18:10			19:01		20:56		21:44		22:07	05:47-06:11/24				
27	08:30	08:57-09:28/31	09:42-10:19/37	07:32	07:56-07:59/3		06:27	17:47-18:19/32	06:17	19:42-20:29/47	05:27	05:55-06:06/11	05:16	05:47-21:32/55				
	17:13	15:24-16:41/77		18:12	16:40-17:29/49		19:03		20:57		21:45		22:07	05:48-06:12/24				
28	08:28	08:56-09:29/33	09:44-10:18/34	07:24	07:54-08:00/5		06:26	17:47-18:17/30	06:15	19:42-20:30/48	05:26	05:55-06:08/13	05:17	05:47-21:32/55				
	17:15	15:26-16:44/78		18:14	16:40-17:28/48		19:05		20:59		21:47		22:06	05:48-06:12/24				
29	08:27	08:54-09:29/35	09:45-10:17/32	07:22	18:49-19:16/27		07:22	18:49-19:16/27	06:12	19:42-20:32/50	05:25	05:54-06:08/14	05:17	05:47-21:32/55				
	17:17	15:27-16:45/78		20:06			21:01		21:01		21:48		22:06	05:49-06:12/23				
30	08:25	08:53-09:30/37	09:47-10:16/29	07:20	07:43-07:45/2		20:08	18:51-19:13/22	06:10	19:42-20:33/51	05:24	05:53-06:08/15	05:18	05:47-21:31/54				
	17:19	15:29-16:47/78		20:08			21:02		21:02		21:49		22:06	05:49-06:12/23				
31	08:24	08:51-09:30/39	09:49-10:14/25	07:17	07:40-07:45/5		20:10	18:53-19:10/17			05:23	05:52-06:08/16						
	17:21	15:30-16:50/80									21:50	20:21-21:17/56						
Potential sun hours	256			276			367		418		48							

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar per WTG

Calculation: 6778 Moanmore Lower Worst Case **WTG:** 1 - Moanmore Lower T1**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	July		August		September		October		November		December				
1	05:18	20:37-21:32/55	05:56	19:59-21:03/64	06:48	19:56-20:01/5	07:38	08:04-08:20/16	07:34	15:33-16:40/67	08:26	08:59-10:02/63	10:17-10:51/34		
	22:06	05:50-06:13/23	21:33		20:29		19:18	18:28-18:50/22	17:10	08:02-08:53/51	16:28	14:40-15:54/74			
2	05:19	20:37-21:32/55	05:58	19:57-21:00/63	06:49	19:57-19:59/2	07:40	08:06-08:22/16	07:36	15:32-16:38/66	08:28	09:01-10:03/62	10:17-10:53/36		
	22:05	05:51-06:13/22	21:31		20:27	07:28-07:34/6	19:15	18:28-18:47/19	17:08	08:04-08:55/51	16:27	14:40-15:53/73			
3	05:20	05:51-06:13/22	05:59	19:56-20:58/62	06:51	19:48-19:56/8	07:42	08:07-08:24/17	07:37	15:32-16:36/64	08:29	09:02-10:03/61	10:16-10:53/37		
	22:05	20:36-21:31/55	21:29		20:24	07:24-07:36/12	19:13	18:29-18:45/16	17:06	08:06-08:56/50	16:27	14:39-15:52/73			
4	05:21	05:52-06:14/22	06:01	19:55-20:57/62	06:53	19:46-19:55/9	07:43	08:09-08:27/18	7:32-17:48/16	07:39	15:31-16:34/63	08:30	09:04-10:04/60	15:48-15:52/4	
	22:05	20:36-21:30/54	21:27		20:22	07:22-07:38/16	19:11	18:30-18:43/13	17:04	08:08-08:57/49	16:26	14:39-15:47/68	10:16-10:55/39		
5	05:21	05:53-06:14/21	06:03	19:54-20:56/62	06:54	19:43-19:52/9	07:45	08:11-08:30/19	17:28-17:52/24	07:41	15:31-16:32/61	08:32	09:05-10:04/59	15:49-15:50/1	
	22:04	20:35-21:30/55	21:26		20:20	07:21-07:39/18	19:08	18:31-18:41/10	17:03	08:10-08:58/48	16:26	14:38-15:47/69	10:16-10:56/40		
6	05:22	05:54-06:15/21	06:04	19:54-20:54/60	06:56	19:42-19:50/8	07:47	08:13-08:32/19	17:26-17:54/28	07:43	15:30-16:30/60	08:33	09:07-10:05/58	10:16-10:57/41	
	22:04	20:35-21:30/55	21:24		20:17	07:22-07:39/17	19:06	18:33-18:38/5	17:01	08:12-08:58/46	16:25	14:38-15:48/70			
7	05:23	05:55-06:15/20	06:06	19:54-20:53/59	06:58	19:41-19:48/7	07:49	08:14-08:32/18	07:45	15:30-16:28/58	15:14-15:18/4	08:34	09:08-10:05/57	10:16-10:58/42	
	22:03	20:34-21:29/55	21:22		20:15	07:24-07:40/16	19:04	17:22-17:53/33	16:59	08:14-08:59/45	16:25	14:36-15:48/72			
8	05:24	05:56-06:15/19	06:07	19:53-20:50/57	06:59	19:39-19:45/6	07:50	08:16-08:33/17	07:47	15:30-16:26/56	09:30-09:33/3	08:36	09:09-10:05/56	10:15-10:58/43	
	22:02	20:33-21:29/56	21:20		20:13	07:25-07:39/14	19:01	17:20-17:57/37	16:57	08:16-09:00/44	15:08-15:24/16	16:24	14:34-15:48/74		
9	05:25	05:57-06:16/19	06:09	19:52-20:49/57	07:01	19:39-19:43/4	07:52	08:18-08:34/16	07:49	15:30-16:24/54	09:24-09:40/16	08:37	09:11-10:06/55	10:16-11:00/44	
	22:02	20:31-21:27/56	21:18		20:10	07:27-07:39/12	18:59	17:19-17:58/39	16:56	08:18-09:00/42	15:05-15:27/22	16:24	14:34-15:49/75		
10	05:26	05:58-06:16/18	06:11	19:51-20:47/56	07:03	19:38-19:41/3	07:54	08:20-08:34/14	07:50	15:30-16:22/52	09:21-09:43/22	08:38	09:12-10:06/54	10:16-11:00/44	
	22:01	20:31-21:27/56	21:16		20:08	07:29-07:39/10	18:57	17:17-17:59/42	16:54	08:20-09:00/40	15:03-15:29/26	16:24	14:34-15:48/74		
11	05:27	05:59-06:16/17	06:12	19:51-20:45/54	07:04	07:30-07:38/8	07:56	08:22-08:34/12	07:52	08:22-09:01/39	09:19-09:45/26	08:39	09:13-10:06/53	10:16-11:01/45	
	22:00	20:30-21:26/56	21:14		20:05		18:54	17:16-18:00/44	16:52	15:01-16:21/80		16:24	14:33-15:48/75		
12	05:28	06:00-06:16/16	06:14	19:50-20:43/53	07:06	07:32-07:37/5	07:57	08:24-08:34/10	07:54	08:24-09:01/37	09:18-09:47/29	08:40	09:14-10:07/53	10:16-11:01/45	
	21:59	20:29-21:25/56	21:12		20:03	18:46-19:01/15	18:52	17:14-18:00/46	16:51	15:00-16:19/79		16:24	14:33-15:48/75		
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	21:44		20:45		19:32		17:24	07:48-08:31/43	16:33	14:54-16:00/66		16:27	14:37-15:51/74		
26	05:47	20:07-21:11/64	06:38	19:52-20:14/22	07:30	08:00-08:08/8	07:23	15:41-16:52/71	08:18	08:51-10:00/69	10:22-10:43/21	08:50	09:23-10:13/50	10:22-11:09/47	
	21:42		20:42		19:30	18:27-19:02/35	17:22	07:50-08:33/43	16:32	14:55-15:59/64		16:28	14:37-15:52/75		
27	05:48	20:05-21:09/64	06:39	19:53-20:12/19	07:31	07:58-08:10/12	07:24	15:39-16:50/71	08:20	08:53-10:01/68	10:21-10:45/24	08:50	09:23-10:13/50	10:22-11:09/47	
	21:41		20:40		19:27	18:27-19:00/33	17:20	07:52-08:34/42	16:32	14:55-15:58/63		16:29	14:38-15:52/76		
28	05:50	20:04-21:08/64	06:43	19:55-20:11/16	07:33	07:59-08:13/14	07:21	07:59-08:13/14	08:22	08:52-10:01/67	10:19-10:47/28	08:50	09:23-10:13/51	10:23-11:09/46	
	21:39		20:38		19:25	18:27-18:58/31	17:18	07:54-08:35/41	16:31	14:46-15:56/70		16:30	14:38-15:53/75		
29	05:51	20:02-21:06/64	06:43	19:55-20:08/13	07:35	08:00-08:14/14	07:28	15:36-16:46/70	08:23	08:56-10:02/66	10:18-10:49/31	08:50	09:23-10:14/51	10:23-11:10/47	
	21:38		20:36		19:22	18:27-18:55/28	17:16	07:56-08:46/50	16:30	14:43-15:56/73		16:30	14:39-15:54/75		
30	05:53	20:01-21:06/65	06:44	19:57-20:06/9	07:37	08:02-08:16/14	07:30	15:35-16:44/69	08:25	08:58-10:02/64	10:18-10:50/32	08:50	09:23-10:15/52	10:24-11:10/46	
	21:36		20:33		19:20	18:27-18:52/25	17:14	07:58-08:49/51	16:29	14:42-15:55/73		16:31	14:40-15:55/75		
31	05:55	19:59-21:04/65	06:46	19:56-20:03/7			07:32	15:34-16:42/68				08:50	09:23-10:15/52	10:25-11:10/45	
	21:34		20:31				17:12	08:00-08:52/52				16:32	14:41-15:56/75		
Potential sun hours	506		456		381		330		263		240				
Sum of minutes with flicker	2146		1303		885		2293		4169		5320				

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
Kathryn Feeney / kfeeney@jodireland.com
Calculated:
16/12/2024 15:13/4.0.552

SHADOW - Calendar per WTG

Calculation: 6778 Moanmore Lower Worst Case
Assumptions for shadow calculations

WTG: 2 - Moanmore Lower T2

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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

January		February		March		April		May		June	
1	08:50 09:23-10:40/77	08:22 08:49-08:57/8		07:27 07:51-08:15/24		07:15 19:13-19:45/32		06:09 06:34-06:49/15	20:13-20:21/8	05:22 05:51-06:05/14	20:46-20:57/11
	16:34 15:24-15:58/34	17:23 16:14-16:52/38		18:16 17:38-17:49/11	20:12	21:04 20:31-20:35/4		21:04 20:31-20:35/4		21:52 21:06-21:18/12	
2	08:50 09:23-10:40/77	08:21 08:47-08:57/10	16:16-16:30/14	07:25 07:49-08:13/24	07:13	19:14-19:47/33		06:07 06:32-06:48/16		05:21 05:50-06:06/16	20:47-20:55/8
	16:35 15:24-15:58/34	17:25 16:31-16:54/23		18:18 17:38-17:51/13	20:13			21:06 20:32-20:37/5		21:53 21:07-21:19/12	
3	08:50 09:22-10:40/78	08:19 08:46-08:57/11	16:20-16:28/8	07:23 07:47-08:10/23	07:10	19:15-19:48/33		06:05 06:31-06:47/16		05:20 05:50-06:07/17	
	16:36 15:25-16:00/35	17:27 16:32-16:56/24		18:20 17:38-17:54/16	20:15			21:08 20:31-20:39/8		21:54 21:09-21:21/12	
4	08:50 09:22-10:40/78	08:17 08:44-08:57/13		07:21 07:44-08:07/23	07:08	19:18-19:51/33		06:03 06:32-06:45/13		05:19 05:49-06:07/18	
	16:37 15:27-16:02/35	17:28 16:32-16:58/26		18:21 17:37-17:55/18	20:17			21:09 20:31-20:40/9		21:55 21:09-21:21/12	
5	08:50 09:21-10:39/78	08:16 08:42-08:56/14		07:18 07:43-08:01/18	07:06	19:22-19:53/31		06:01 06:33-06:44/11		05:19 05:49-06:08/19	
	16:38 15:27-16:02/35	17:30 16:32-17:00/28		18:23 17:37-17:57/20	20:19			21:11 20:31-20:41/10		21:56 21:10-21:22/12	
6	08:49 09:21-10:39/78	08:14 08:40-08:55/15		07:16 07:44-08:00/16	07:03	19:22-19:54/32		05:59 06:36-06:42/6		05:18 05:48-06:08/20	
	16:40 15:29-16:04/35	17:32 16:33-17:02/29		18:25 17:37-17:59/22	20:20			21:13 20:31-20:43/12		21:57 21:14-21:23/9	
7	08:49 09:20-10:38/78	08:12 08:38-08:54/16		07:14 07:45-07:57/12	07:01	19:25-19:56/31		05:57 20:32-20:45/13		05:17 05:47-06:08/21	
	16:41 15:31-16:05/34	17:34 16:33-17:04/31		18:27 17:37-18:00/23	20:22			21:14 20:31-20:41/10		21:58 21:14-21:24/10	
8	08:48 09:21-10:37/76	08:10 08:36-08:55/19		07:11 07:48-07:55/23	06:59	19:28-19:57/29		05:55 20:33-20:46/13		05:17 05:47-06:09/22	
	16:42 15:33-16:07/34	17:36 16:34-17:06/32		18:29 17:38-18:02/24	20:24			21:16 20:31-20:41/10		21:59 21:15-21:25/10	
9	08:48 09:21-10:35/74	08:08 08:34-08:55/21		07:09 17:39-18:01/22	06:56	19:28-19:58/30		05:53 20:33-20:47/14		05:16 05:47-06:10/23	
	16:44 15:34-16:09/35	17:38 16:35-17:08/33		18:31 17:39-17:59/20	20:26			21:18 20:31-20:41/10		22:00 21:16-21:26/10	
10	08:47 09:22-10:27/65	15:35-16:10/35		07:07 17:39-17:59/20	06:54	19:30-20:00/30		05:52 20:35-20:50/15		05:16 05:46-06:10/24	
	16:45 10:29-10:32/3	17:40 16:36-17:10/34		18:32 17:41-17:58/17	20:27			21:20 20:34-20:51/17		22:00 21:16-21:26/10	
11	08:47 09:22-10:27/65	15:35-16:10/35		07:04 17:41-17:58/17	06:52	19:33-20:02/29		05:50 20:34-20:51/17		05:15 05:46-06:10/24	
	16:46 15:36-16:11/35	17:42 16:37-17:13/36		18:34 17:41-17:58/17	20:29			21:21 20:34-20:51/17		22:01 21:17-21:27/10	
12	08:46 09:22-10:26/64	15:35-16:10/35		07:02 17:43-17:54/11	06:49	19:35-20:04/29		05:48 20:34-20:53/19		05:15 05:46-06:11/25	
	16:48 15:38-16:13/35	17:44 16:40-17:15/35		18:36 17:43-17:54/11	20:31			21:23 20:34-20:53/19		22:02 21:18-21:28/10	
13	08:45 09:24-10:26/62	15:35-16:10/35		07:00 17:43-17:54/11	06:47	19:36-20:05/29		05:47 20:34-20:54/20		05:15 05:46-06:11/25	
	16:49 15:39-16:14/35	17:46 16:43-17:17/34		18:38 17:43-17:54/11	20:33			21:24 20:34-20:54/20		22:03 21:18-21:28/10	
14	08:44 09:24-10:24/60	15:35-16:10/35		06:57 17:43-17:54/11	06:45	19:38-20:07/29		05:45 20:33-20:55/22		05:14 05:45-06:11/26	
	16:51 15:41-16:16/35	17:48 16:52-17:19/27		18:40 17:43-17:54/11	20:35			21:26 20:33-20:55/22		22:03 21:19-21:29/10	
15	08:44 09:24-10:21/57	15:35-16:10/35		06:55 07:18-07:22/4	06:43	19:40-20:09/29		05:43 20:34-20:57/23		05:14 05:45-06:11/26	
	16:53 15:43-16:18/35	17:50 16:55-17:21/26		18:41 17:43-17:54/11	20:36			21:28 20:34-20:57/23		22:04 21:20-21:29/9	
16	08:43 09:25-10:18/53	15:35-16:10/35		06:53 07:16-07:24/8	06:40	19:41-20:11/30		05:42 20:34-20:58/24		05:14 05:45-06:11/26	
	16:54 15:45-16:20/35	17:51 16:56-17:23/27		18:43 17:43-17:54/11	20:38			21:29 20:34-20:58/24		22:04 21:21-21:30/9	
17	08:42 09:25-10:17/52	15:35-16:10/35		06:50 07:14-07:25/11	06:38	19:44-20:13/29		05:40 20:34-20:59/25		05:14 05:45-06:12/27	
	16:56 15:47-16:22/35	17:53 16:56-17:25/29		18:45 17:43-17:54/11	20:40			21:31 20:34-20:59/25		22:05 21:22-21:30/8	
18	08:41 09:26-10:15/49	15:35-16:10/35		06:48 07:11-07:25/14	06:36	19:55-20:14/19		05:39 20:35-21:01/26		05:14 05:45-06:12/27	
	16:58 15:49-16:24/35	17:55 16:57-17:26/29		18:47 17:43-17:54/11	20:42			21:32 20:35-21:01/26		22:05 21:23-21:30/7	
19	08:40 09:27-10:11/44	15:35-16:10/35		06:46 07:09-07:26/17	06:34	19:54-20:15/21		05:37 20:35-21:03/28		05:14 05:45-06:12/27	
	16:59 15:51-16:26/35	17:57 16:56-17:25/29		18:49 18:19-18:23/4	20:43			21:34 20:35-21:03/28		22:06 21:23-21:31/8	
20	08:39 09:28-10:09/41	16:05-16:28/23		06:43 07:07-07:27/20	06:32	19:54-20:17/23		05:36 20:35-21:03/28		05:14 05:45-06:12/27	
	17:01 15:54-16:04/10	17:59 16:57-17:24/27		18:50 18:17-18:24/7	20:45			21:35 20:35-21:03/28		22:06 21:23-21:31/8	
21	08:37 09:29-10:07/38	16:04-16:29/25		06:41 07:04-07:26/22	06:29	19:55-20:19/24		05:34 06:02-06:03/1		05:14 05:46-06:13/27	
	17:03 15:58-15:59/1	18:01 16:58-17:23/25		18:52 18:16-18:26/10	20:47			21:37 20:36-21:05/29		22:06 21:25-21:32/7	
22	08:36 09:30-10:06/36	15:35-16:10/35		06:39 07:02-07:27/25	06:27	19:56-20:20/24		05:33 06:01-06:04/3		05:14 05:46-06:13/27	
	17:04 16:05-16:32/27	18:03 17:00-17:22/22		18:54 18:15-18:28/13	20:49			21:38 20:36-21:07/31		22:06 21:25-21:32/7	
23	08:35 09:32-10:02/30	15:35-16:10/35		06:36 06:59-07:26/27	06:25	19:57-20:22/25		05:32 06:00-06:04/4		05:15 05:46-06:13/27	
	17:06 16:05-16:32/28	18:05 17:01-17:21/20		18:56 18:13-18:30/17	20:50			21:40 20:37-21:08/31		22:07 21:24-21:32/8	
24	08:34 09:32-09:55/23	15:35-16:10/35		06:34 06:57-07:25/28	06:23	06:47-06:48/1		05:30 05:59-06:05/6		05:15 05:47-06:14/27	
	17:08 16:06-16:35/29	18:07 17:03-17:18/15		18:58 18:13-18:32/19	20:52	19:59-20:24/25		21:41 20:38-21:09/31		22:07 21:24-21:32/8	
25	08:32 09:34-09:55/21	15:35-16:10/35		06:31 06:57-07:25/28	06:21	06:45-06:49/4		05:29 05:58-06:05/7		05:15 05:47-06:14/27	
	17:10 16:06-16:37/31	18:08 17:07-17:14/7		18:59 18:12-18:33/21	20:54	20:02-20:25/23		21:43 20:38-21:10/32		22:07 21:24-21:32/8	
26	08:31 16:07-16:40/33	15:35-16:10/35		06:29 06:56-07:24/28	06:19	06:43-06:49/6		05:28 05:56-06:05/9		05:16 05:47-06:14/27	
	17:12 16:06-16:37/31	18:10 17:42-17:43/1		19:01 18:12-18:35/23	20:56	20:07-20:27/20		21:44 20:38-21:11/33		22:07 21:23-21:32/9	
27	08:30 16:07-16:41/34	15:35-16:10/35		06:27 06:57-07:23/26	06:17	06:41-06:49/8		05:27 05:55-06:05/10	20:39-21:01/22	05:16 05:48-06:14/26	
	17:13 16:08-16:38/30	18:12 17:41-17:46/5		19:03 18:12-18:37/25	20:57	20:07-20:29/22		21:45 21:03-21:12/9		22:07 21:23-21:32/9	
28	08:28 16:09-16:44/35	15:35-16:10/35		06:24 06:57-07:21/24	06:15	06:39-06:49/10		05:26 05:55-06:05/10	20:40-21:00/20	05:17 05:48-06:14/26	
	17:15 16:12-16:50/38	18:14 17:39-17:47/8		19:05 18:11-18:38/27	20:59	20:08-20:27/19		21:47 21:03-21:13/10		22:06 21:22-21:32/10	
29	08:27 08:54-08:55/1	15:35-16:10/35		07:22 07:58-08:19/21	06:13	06:37-06:49/12		05:25 05:54-06:05/11	20:42-21:00/18	05:17 05:49-06:14/25	
	17:17 16:09-16:45/36			20:06 19:11-19:40/29	21:01	20:09-20:26/17		21:48 21:05-21:15/10		22:06 21:23-21:32/9	
30	08:25 08:53-08:56/3	15:35-16:10/35		07:20 08:00-08:18/18	06:11	06:35-06:48/13	20:10-20:24/14	05:24 05:53-06:05/12	20:43-20:59/16	05:18 05:49-06:14/25	
	17:19 16:11-16:47/36			20:08 19:12-19:42/30	21:02	20:32-20:33/1		21:49 21:05-21:16/11		22:06 21:22-21:31/9	
31	08:24 08:51-08:57/6	15:35-16:10/35		07:17 08:02-08:14/12				05:23 05:52-06:05/13	20:44-20:58/14		
	17:21 16:12-16:50/38			20:10 19:12-19:43/31				21:50 21:06-21:17/11			
Potential sun hours	256	276	367	418	849	834	503	1019			
Sum of minutes with flicker	2542	1370	953	849	834	503	1019				

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

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
Kathryn Feeney / kfeeney@jodireland.com
Calculated:
16/12/2024 15:13/4.0.552

SHADOW - Calendar per WTG

Calculation: 6778 Moanmore Lower Worst Case **WTG:** 2 - Moanmore Lower T2

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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	July	August	September	October	November	December
1	05:18 05:50-06:14/24	05:56 20:45-21:03/18	06:48 19:32-20:01/29	07:38 18:24-18:32/8	07:34 08:02-08:24/22	08:26 09:04-10:09/65
2	22:06 21:22-21:31/9	21:33	20:29	19:18	17:10 16:05-16:40/35	16:28 15:19-15:54/35
3	05:19 05:51-06:15/24	05:58 20:45-21:00/15	06:49 19:29-19:59/30	07:40 18:20-18:34/14	07:36 08:04-08:24/20	08:28 09:05-10:11/66
4	22:05 21:22-21:31/9	21:31	20:27	19:15	17:08 16:04-16:38/34	16:27 15:18-15:53/35
5	05:20 05:51-06:14/23	05:59 20:44-20:59/15	06:51 19:26-19:56/30	07:42 18:18-18:36/18	07:37 08:06-08:24/18	08:29 09:04-10:18/74
6	22:05 21:21-21:30/9	21:29	20:24	19:13	17:06 16:03-16:36/33	16:25 15:17-15:52/35
7	05:21 05:52-06:14/22	06:01 20:43-20:57/14	06:53 19:25-19:55/30	07:43 18:16-18:38/22	07:39 08:08-08:24/16	08:30 09:05-10:21/76
8	22:05 21:21-21:30/9	21:27	20:22	19:11	17:04 16:03-16:34/31	16:26 15:17-15:52/35
9	05:21 05:53-06:15/22	06:03 20:42-20:56/14	06:54 19:22-19:53/31	07:45 18:15-18:39/24	07:41 08:10-08:25/15	08:32 09:05-10:23/78
10	22:04 21:21-21:30/9	21:26	20:20	19:08	17:03 16:02-16:32/30	16:26 15:16-15:50/34
11	05:22 05:54-06:15/21	06:04 20:42-20:54/12	06:56 19:19-19:50/31	07:47 08:23-08:33/10	07:43 08:12-08:26/14	08:33 09:07-10:25/78
12	22:04 21:21-21:30/9	21:24	20:17	19:06	17:01 16:02-16:30/28	16:25 15:16-15:50/34
13	05:23 05:55-06:15/20	06:06 06:44-06:52/8	06:58 19:17-19:48/31	07:49 08:20-08:34/14	07:45 08:14-08:27/13	08:34 09:08-10:26/78
14	22:03 21:19-21:29/10	21:22 20:42-20:53/11	20:15	19:04	16:59 16:02-16:28/26	16:25 15:15-15:49/34
15	05:24 05:56-06:15/19	06:07 06:42-06:54/12	06:59 19:12-19:45/33	07:50 08:18-08:36/18	07:47 08:16-08:27/11	08:36 09:09-10:27/78
16	22:02 21:17-21:29/12	21:20 20:41-20:50/9	20:13	19:01	16:57 16:02-16:26/24	16:24 15:14-15:49/35
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61	05:55 20:44-21:04/20	06:46 19:34-20:03/29		07:32 08:00-08:24/24		08:50 09:23-10:40/77
62	21:34	20:31		17:12 16:07-16:42/35		16:32 15:22-15:56/34
63	Potential sun hours	506	381	330	263	240
64	Sum of minutes with flicker	993	725	950	1293	3390

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

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar per WTG**Calculation:** 6778 Moanmore Lower Worst Case**WTG:** 3 - Moanmore Lower T3

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

Assumptions for shadow calculations

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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June
1	08:50 15:57-15:58/1 09:23-09:59/36 16:34 15:00-15:51/51 14:51-14:59/8	08:22 09:02-09:15/13 17:23 16:21-16:52/31	07:27 17:06-17:49/43 18:16	07:15 18:41-19:45/64 20:12	06:08 20:29-20:35/6 19:46-20:19/33 21:04 06:34-07:02/28	05:22 20:30-21:18/48 21:52 05:51-06:09/18
2	08:50 15:56-15:58/2 09:23-10:00/37 16:35 15:00-15:50/50	08:21 09:04-09:13/9 17:25 16:20-16:54/34	07:25 17:06-17:51/45 18:18	07:13 18:44-19:47/63 20:13	06:07 20:29-20:37/8 19:48-20:18/30 21:06 06:35-07:01/26	05:21 20:30-21:19/49 21:53 05:50-06:09/19
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28	08:28 08:58-09:26/28 17:15 16:22-16:44/22	07:29 17:06-17:47/41 18:14	06:24 17:33-18:38/65 19:05	06:15 06:39-07:05/26 20:59 19:45-20:22/37	05:26 20:30-21:13/43 21:47 05:55-06:16/21	05:17 20:35-21:32/57 22:06 05:48-06:10/22
29	08:27 08:58-09:23/25 17:17 16:21-16:45/24		07:22 18:35-19:40/65 20:06	06:12 06:37-07:04/27 21:01 19:45-20:21/36	05:25 20:31-21:15/44 21:48 05:54-06:14/20	05:17 20:35-21:32/57 22:06 05:49-06:11/22
30	08:25 09:00-09:22/22 17:19 16:20-16:47/27		07:20 18:37-19:42/65 20:08	06:10 20:30-20:33/3 19:46-20:20/34 21:02 06:35-07:03/28	05:24 20:31-21:16/45 21:49 05:53-06:09/16	05:18 20:35-21:31/56 22:06 05:49-06:11/22
31	08:24 09:01-09:17/16 17:21 16:21-16:50/29		07:17 18:38-19:43/65 20:10		05:23 20:31-21:17/46 21:50 05:52-06:09/17	
Potential sun hours	256	276	367	418	488	503
Sum of minutes with flicker	2480	1050	2066	1885	1558	2312

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

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
Kathryn.Feeney / kfeeney@jodireland.com
Calculated:
16/12/2024 15:13/4.0.552

SHADOW - Calendar per WTG

Calculation: 6778 Moanmore Lower Worst Case **WTG:** 3 - Moanmore Lower T3

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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	July	August	September	October	November	December
1	05:18 20:36-21:31/55	05:56 20:37-21:03/26	06:48 18:57-20:01/64	07:38 08:04-08:16/12	07:34 08:02-08:08/6	08:26 15:41-15:54/13 14:48-15:33/45
2	22:06 05:50-06:12/22	21:33 06:26-06:35/9	20:29 19:18 17:44-18:50/66	17:10 15:52-16:29/37	17:10 15:52-16:29/37	16:28 08:59-09:41/42
3	05:19 20:36-21:32/56	05:58 20:36-21:00/24	06:49 18:55-19:59/64	07:40 08:06-08:16/10	07:36 08:04-08:08/4	08:28 15:42-15:53/11 14:48-15:35/47
4	22:05 05:51-06:13/22	21:31 06:27-06:35/8	20:27 19:15 17:43-18:47/64	17:08 15:52-16:29/37	17:08 15:52-16:29/37	16:27 09:01-09:42/41
5	05:20 20:36-21:30/54	05:59 20:36-21:06/36	06:51 18:52-19:56/64	07:42 08:07-08:15/8	07:37 08:06-08:07/1	08:29 15:42-15:52/10 14:48-15:35/47
6	22:05 05:51-06:12/21	21:29 20:36-20:59/23	20:24 19:13 17:42-18:45/63	17:06 15:51-16:30/39	17:06 15:51-16:30/39	16:27 09:02-09:43/41
7	05:21 20:36-21:30/54	06:01 20:36-06:35/5	06:53 18:51-19:55/64	07:43 08:09-08:14/5	07:39 15:51-16:30/39	08:30 15:43-15:52/9 14:48-15:36/48
8	22:05 05:52-06:13/21	21:27 20:36-20:57/21	20:22 19:11 17:41-18:43/62	17:04 15:51-16:30/39	17:04 15:51-16:30/39	16:26 09:04-09:44/40
9	05:21 20:37-21:30/53	06:03 20:36-06:35/3 06:53-07:00/7	06:54 18:49-19:53/64	07:45 08:11-08:13/2	07:41 15:51-16:30/39	08:32 15:43-15:50/7 14:48-15:37/49
10	22:04 05:53-06:14/21	21:26 20:35-20:55/20 20:09-20:15/6	20:20 19:08 17:41-18:41/60	17:03 15:51-16:30/39	17:03 15:51-16:30/39	16:26 09:05-09:45/40
11	05:22 20:37-21:30/53	06:04 20:36-06:34/1 06:50-07:03/13	06:56 18:47-19:50/63	07:47 17:41-18:38/57	07:43 15:51-16:30/39	08:33 15:44-15:50/6 14:49-15:38/49
12	22:03 05:54-06:15/21	21:24 20:36-20:54/18 20:05-20:19/14	20:17 19:06 17:41-18:38/57	17:01 15:51-16:28/37	17:01 15:51-16:28/37	16:25 09:07-09:46/39
13	05:23 20:37-21:29/52	06:06 20:36-20:53/17 20:03-20:22/19	06:58 18:44-19:48/64	07:49 17:40-18:35/55	07:45 15:51-16:28/37	08:34 15:44-15:50/6 14:49-15:38/49
14	22:03 05:55-06:15/20	21:22 20:36-20:50/14 20:01-20:24/23	20:15 19:04 17:39-18:33/54	16:59 15:51-16:26/35	16:59 15:51-16:26/35	16:25 09:08-09:46/38
15	05:24 20:38-21:29/51	06:07 20:36-20:50/14 20:01-20:24/23	06:59 18:41-19:45/64	07:50 17:39-18:33/54	07:47 15:51-16:26/35	08:36 15:44-15:49/5 09:09-09:47/38
16	22:02 05:56-06:16/20	21:20 20:36-20:50/14 20:01-20:24/23	20:13 19:01 17:39-18:33/54	16:57 15:51-16:26/35	16:57 15:51-16:26/35	16:24 14:49-15:38/49
17	05:25 20:37-21:27/50	06:09 20:37-20:49/12 19:59-20:25/26	07:01 18:39-19:43/64	07:52 17:39-18:31/52	07:48 08:34-08:44/10	08:37 15:46-15:49/3 09:11-09:48/37
18	22:02 05:57-06:16/19	21:18 20:36-20:47/11	20:10 18:59 17:39-18:31/52	16:56 15:51-16:24/33	16:56 15:51-16:24/33	16:24 14:50-15:40/50
19	05:26 20:37-21:27/50	06:11 20:37-20:47/10 19:57-20:26/29	07:03 18:37-19:41/64	07:54 17:40-18:29/49	07:50 08:32-08:46/14	08:38 15:46-15:48/2 09:12-09:49/37
20	22:01 05:58-06:17/19	21:16 20:37-20:47/10 19:57-20:26/29	20:08 18:57 17:40-18:29/49	16:54 15:51-16:22/31	16:54 15:51-16:22/31	16:24 14:50-15:40/50
21	05:27 20:38-21:26/48	06:12 20:38-20:45/7 19:56-20:27/31	07:04 18:33-19:38/65	07:56 17:40-18:27/47	07:52 08:31-08:49/18	08:39 15:47-15:48/1 09:13-09:49/36
22	22:00 05:59-06:17/18	21:14 20:38-20:45/7 19:56-20:27/31	20:05 18:54 17:40-18:27/47	16:52 15:52-16:21/29	16:52 15:52-16:21/29	16:24 14:50-15:41/51 14:41-14:48/7
23	05:28 20:39-21:26/47	06:14 20:38-20:43/5 19:55-20:28/33	07:06 18:31-19:36/65	07:57 17:39-18:23/44	07:54 08:30-08:53/23	08:40 15:47-15:48/1 09:14-09:50/36
24	21:59 06:00-06:18/18	21:12 20:42-07:11/29	20:03 18:52 17:39-18:23/44	16:51 15:52-16:19/27	16:51 15:52-16:19/27	16:24 14:50-15:41/61
25	05:30 20:39-21:25/46	06:16 20:39-20:41/2 19:54-20:29/35	07:08 18:27-19:33/66	07:59 17:39-18:21/42	07:56 08:30-08:55/25	08:41 14:40-15:42/62
26	21:58 06:01-06:18/17	21:10 20:44-07:12/28	20:01 18:50 17:39-18:21/42	16:49 15:53-16:17/24	16:49 15:53-16:17/24	16:23 09:15-09:50/35
27	05:31 20:39-21:24/45	06:17 20:44-07:12/27	07:09 18:25-19:31/66	08:01 17:40-18:19/39	07:58 08:29-08:58/29	08:42 14:39-15:42/63
28	21:57 06:02-06:22/20	21:08 19:53-20:29/36	19:58 18:48 17:40-18:19/39	16:48 15:54-16:16/22	16:48 15:54-16:16/22	16:23 09:16-09:51/35
29	05:32 20:40-21:23/43	06:19 19:47-07:13/26	07:11 18:24-19:29/65	08:03 17:41-18:17/36	07:59 08:30-09:01/31	08:43 14:39-15:43/64
30	21:56 06:03-06:24/21	21:06 19:52-20:29/37	19:56 18:45 17:40-18:17/36	16:46 15:54-16:14/20	16:46 15:54-16:14/20	16:24 09:17-09:52/35
31	05:33 20:40-21:22/42	06:21 20:40-21:22/42	07:13 18:21-19:26/65	08:04 17:41-18:15/34	08:01 08:32-09:04/32	08:44 14:39-15:43/64
32	21:55 06:04-06:25/21	21:04 19:46-20:30/44	19:53 18:43 17:40-18:15/34	16:45 15:55-16:12/17	16:45 15:55-16:12/17	16:24 09:18-09:52/34
33	05:34 20:40-21:21/41	06:22 20:40-21:21/41	07:14 18:17-19:24/67	08:06 17:42-18:13/31	08:03 15:47-15:52/5 15:56-16:11/15	08:45 14:39-15:44/65
34	21:54 06:05-06:26/21	21:02 19:41-20:30/49	19:51 18:41 17:40-18:13/31	16:43 15:55-16:12/17	16:43 15:55-16:12/17	16:24 09:19-09:53/34
35	05:36 20:40-21:20/40	06:24 20:40-21:20/40	07:16 18:15-19:22/67	08:08 17:43-18:10/27	08:05 15:44-15:55/11 15:57-16:09/12	08:46 14:39-15:44/65
36	21:53 06:07-06:28/21	21:00 19:38-20:30/52	19:49 18:39 17:40-18:10/27	16:42 15:55-16:12/17	16:42 15:55-16:12/17	16:24 09:19-09:53/34
37	05:37 20:42-21:20/38	06:26 19:36-20:29/53	07:18 18:12-19:19/67	08:10 08:43-08:52/9	08:07 15:43-15:57/14 15:58-16:08/10	08:46 14:39-15:45/66
38	21:52 06:08-06:28/20	20:58 20:44-07:13/20	19:46 18:37 17:43-18:07/24	16:41 15:53-16:17/24	16:41 15:53-16:17/24	16:24 09:20-09:54/34
39	05:38 20:42-21:18/36	06:27 19:34-20:27/53	07:20 18:10-19:17/67	08:12 08:41-08:54/13	08:08 15:42-15:59/17 16:00-16:07/7	08:47 14:40-15:45/65
40	21:50 06:09-06:29/20	20:56 20:44-07:14/19	19:44 18:34 17:45-18:05/20	16:39 15:40-15:53/14 15:56-16:12/16	16:39 15:40-15:53/14 15:56-16:12/16	16:25 09:21-09:54/33
41	05:40 20:42-21:17/35	06:29 19:32-20:25/53	07:21 18:09-19:14/65	08:13 08:40-08:54/14	08:10 15:42-16:00/18 16:01-16:05/4	08:48 14:40-15:45/65
42	21:49 06:10-06:29/19	20:53 20:44-07:14/17	19:42 18:32 17:46-18:03/17	16:38 15:42-16:00/18 16:01-16:05/4	16:38 15:42-16:00/18 16:01-16:05/4	16:25 09:21-09:54/33
43	05:41 20:42-21:15/33	06:31 19:31-20:23/52	07:23 18:03-19:11/68	08:15 08:42-08:57/15	08:12 15:41-16:01/20 16:03-16:04/1	08:48 14:41-15:46/65
44	21:48 06:12-06:30/18	20:51 20:44-07:13/15	19:39 18:30 17:48-18:01/13	16:37 15:41-16:01/20 16:03-16:04/1	16:37 15:41-16:01/20 16:03-16:04/1	16:26 09:22-09:55/33
45	05:43 20:42-21:15/33	06:32 19:30-20:21/51	07:25 17:59-19:09/70	08:17 08:44-09:00/16	08:13 15:40-16:01/21 14:51-15:17/26	08:49 14:41-15:46/65
46	21:46 06:13-06:30/17	20:49 20:44-07:12/12	19:37 18:28 17:51-17:59/8	16:36 15:45-16:02/35	16:36 15:45-16:02/35	16:26 09:22-09:55/33
47	05:44 20:41-21:13/32	06:34 19:28-20:19/51	07:26 17:56-19:07/71	08:19 08:46-09:02/16 17:54-17:56/2	08:15 15:40-16:01/21 14:50-15:22/32	08:49 14:41-15:47/66
48	21:45 06:14-06:30/16	20:47 07:01-07:11/10	19:34 18:26 17:04-17:18/14	16:35 15:47-16:04/34	16:35 15:47-16:04/34	16:27 09:23-09:56/33
49	05:45 20:41-21:13/32	06:36 19:28-20:17/49	07:28 17:53-19:04/71	08:21 08:48-08:57/17	08:17 15:40-16:00/20 14:50-15:25/35	08:49 14:43-15:48/65
50	21:44 06:16-06:31/15	20:45 20:44-07:13/15	19:32 18:05-08:12/7	17:24 16:01-16:21/20	16:33 15:48-16:05/33	16:27 09:23-09:57/34
51	05:47 20:40-21:11/31	06:38 19:26-20:14/48	07:30 17:51-19:02/71	07:23 17:50-08:06/16	08:18 15:40-15:59/19 14:49-15:28/39	08:50 14:43-15:48/65
52	21:42 06:17-06:31/14	20:42 20:44-07:13/15	19:30 18:01-08:14/13	17:22 15:59-16:23/24	16:32 15:41-15:58/17 14:49-15:29/40	16:28 09:23-09:57/34
53	05:48 20:38-21:09/31	06:39 20:44-07:13/15	07:31 17:50-19:00/70	07:24 17:52-08:07/15	08:20 15:41-15:58/17 14:49-15:29/40	08:50 14:44-15:48/64
54	21:41 06:18-06:32/14	20:40 20:44-07:13/15	19:27 17:59-08:15/16	17:20 15:57-16:24/27	16:32 15:41-15:58/17 14:49-15:29/40	16:29 09:23-09:57/34
55	05:50 20:38-21:08/30	06:41 19:25-20:11/46	07:33 17:48-18:58/70	07:26 17:54-08:08/14	08:22 15:40-15:56/16 14:48-15:30/42	08:50 14:45-15:49/64
56	21:39 06:20-06:33/13	20:38 19:25-20:11/46	19:25 17:59-08:16/17	17:18 15:56-16:26/30	16:31 15:40-15:56/16 14:48-15:30/42	16:30 09:23-09:57/34
57	05:52 20:38-21:06/28	06:43 19:24-20:08/44	07:35 17:46-18:55/69	07:28 17:56-08:08/12	08:23 15:41-15:56/15 14:48-15:32/44	08:50 14:46-15:49/63
58	21:38 06:21-06:34/13	20:36 19:24-20:08/44	19:22 18:00-08:16/16	17:16 15:55-16:27/32	16:30 15:40-15:56/16 14:48-15:30/42	16:30 09:23-09:58/35
59	05:53 20:38-21:05/27	06:44 19:24-20:06/42	07:37 17:45-18:52/67	07:30 17:58-08:08/10	08:25 15:41-15:55/14 14:48-15:33/45	08:50 14:47-15:49/62
60	21:36 06:23-06:35/12	20:33 19:05-19:23/18	19:20 18:02-08:16/14	17:14 15:54-16:27/33	16:29 15:40-15:56/16 14:48-15:30/42	16:31 09:23-09:58/35
61	05:55 20:37-21:04/27	06:46 19:00-20:03/63	19:20 18:02-08:16/14	17:14 15:54-16:27/33	16:29 15:40-15:56/16 14:48-15:30/42	08:50 14:49-15:50/61
62	21:34 06:24-06:35/11	20:31 19:00-20:03/63	19:20 18:02-08:16/14	17:12 15:53-16:28/35	16:29 15:40-15:56/16 14:48-15:30/42	16:32 09:23-09:59/36
Potential sun hours	506	456	381	330	263	240
Sum of minutes with flicker	1858	1748	2074	1393	1839	3008

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

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar per WTG

Calculation: 6778 Moanmore Lower Worst Case **WTG:** 4 - Moanmore T1**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January			February			March			April			May			June		
1	08:50	08:22	07:27							07:15	08:14-08:15/1	07:42-07:49/7	06:08	06:58-07:04/6		05:22	06:16-06:30/14	
	16:33	17:23	18:16							20:12	08:19-08:28/9		21:04			21:51		
2	08:50	08:20	07:25							07:12	08:08-08:21/13		06:06			05:21	06:16-06:30/14	
	16:35	17:25	18:18							20:13	07:41-07:51/10		21:06			21:53		
3	08:50	08:19	07:23							07:10	08:04-08:22/18		06:04			05:20	06:17-06:30/13	
	16:36	17:26	18:20							20:15	07:39-07:51/12		21:08			21:54		
4	08:50	08:17	07:20							07:08	08:03-08:24/21		06:03			05:19	06:17-06:29/12	
	16:37	17:28	18:21							20:17	07:38-07:51/13		21:09			21:55		
5	08:49	08:15	07:18							07:05	08:01-08:25/24		06:01			05:18	06:18-06:29/11	
	16:38	17:30	18:23							20:19	07:38-07:52/14		21:11			21:56		
6	08:49	08:14	07:16							07:03	07:59-08:25/26		05:59			05:18	06:19-06:29/10	
	16:39	17:32	18:25							20:20	07:37-07:50/13		21:13			21:57		
7	08:49	08:12	07:14							07:01	07:59-08:26/27		05:57			05:17	06:19-06:28/9	
	16:41	17:34	18:27							20:22	07:38-07:50/12		21:14			21:58		
8	08:48	08:10	07:11							06:58	07:58-08:26/28		05:55			05:17	06:21-06:27/6	
	16:42	17:36	18:29							20:24	07:39-07:49/10		21:16			21:59		
9	08:48	08:08	07:09							06:56	07:57-08:25/28	07:25-07:31/6	05:53			05:16	06:21-06:26/5	
	16:43	17:38	18:31							20:26	07:40-07:45/5		21:18			22:00		
10	08:47	08:06	07:07							06:54	07:57-08:26/29		05:51			05:16		
	16:45	17:40	18:32							20:27	07:23-07:38/15		21:19			22:00		
11	08:47	08:05	07:04							06:52	07:56-08:25/29		05:50			05:15		
	16:46	17:42	18:34							20:29	07:22-07:39/17		21:21			22:01		
12	08:46	08:03	07:02							06:49	07:57-08:25/28		05:48			05:15		
	16:48	17:44	18:36							20:31	07:21-07:41/20		21:23			22:02		
13	08:45	08:01	07:00	07:26-07:30/4						06:47	07:56-08:24/28		05:46			05:14		
	16:49	17:46	18:38							20:33	07:20-07:40/20		21:24			22:03		
14	08:44	07:59	06:57	07:23-07:32/9						06:45	07:56-08:23/27		05:45			05:14		
	16:51	17:47	18:40							20:34	07:20-07:41/21		21:26			22:03		
15	08:43	07:57	06:55	07:21-07:33/12						06:42	07:57-08:22/25		05:43			05:14		
	16:52	17:49	18:41							20:36	07:20-07:41/21		21:28			22:04		
16	08:43	07:55	06:53	07:19-07:33/14						06:40	07:58-08:21/23		05:42	06:19-06:25/6		05:14		
	16:54	17:51	18:43							20:38	07:20-07:41/21		21:29			22:04		
17	08:42	07:53	06:50	07:17-07:34/17						06:38	07:59-08:20/21		05:40	06:17-06:26/9		05:14		
	16:56	17:53	18:45							20:40	07:22-07:41/19		21:31			22:05		
18	08:41	07:51	06:48	07:14-07:33/19						06:36	08:00-08:18/18		05:38	06:16-06:28/12		05:14		
	16:57	17:55	18:47							20:41	07:23-07:40/17		21:32			22:05		
19	08:40	07:49	06:46	07:12-07:32/20						06:34	08:01-08:15/14		05:37	06:14-06:28/14		05:14		
	16:59	17:57	18:49							20:43	07:23-07:39/16		21:34			22:06		
20	08:39	07:47	06:43	07:10-07:31/21						06:31	08:03-08:12/9		05:36	06:14-06:29/15		05:14		
	17:01	17:59	18:50							20:45	07:23-07:37/14		21:35			22:06		
21	08:37	07:45	06:41	07:07-07:34/27						06:29	07:25-07:36/11		05:34	06:14-06:30/16		05:14		
	17:02	18:01	18:52							20:47	07:00-07:06/6		21:37			22:06		
22	08:36	07:42	06:38	07:05-07:35/30						06:27	07:27-07:33/6		05:33	06:14-06:30/16		05:14		
	17:04	18:03	18:54							20:48	06:58-07:08/10		21:38			22:06		
23	08:35	07:40	06:36	07:04-07:35/31						06:25	06:56-07:09/13		05:31	06:14-06:31/17		05:14		
	17:06	18:05	18:56							20:50			21:40			22:06		
24	08:34	07:38	06:34	07:03-07:36/33						06:23	06:56-07:09/13		05:30	06:13-06:30/17		05:15		
	17:08	18:06	18:57							20:52			21:41			22:07		
25	08:32	07:36	06:31	07:03-07:36/33						06:21	06:55-07:10/15		05:29	06:13-06:30/17		05:15		
	17:10	18:08	18:59							20:54			21:43			22:07		
26	08:31	07:34	06:29	07:03-07:36/33						06:19	06:55-07:10/15		05:28	06:13-06:30/17		05:16		
	17:11	18:10	19:01							20:55			21:44			22:07		
27	08:30	07:32	06:27	07:04-07:36/32						06:16	06:55-07:09/14		05:27	06:13-06:30/17		05:16		
	17:13	18:12	19:03							20:57			21:45			22:07		
28	08:28	07:29	06:24	07:14-07:34/20						06:14	06:55-07:09/14		05:26	06:14-06:30/16		05:16		
	17:15	18:14	19:04	07:04-07:12/8						20:59			21:47			22:06		
29	08:27		07:22	08:15-08:34/19						06:12	06:55-07:08/13		05:24	06:14-06:30/16		05:17		
	17:17		20:06							21:01			21:48			22:06		
30	08:25		07:20	08:16-08:33/17						06:10	06:56-07:06/10		05:23	06:15-06:31/16		05:18		
	17:19		20:08							21:02			21:49			22:06		
31	08:24		07:17	08:16-08:30/14									05:22	06:15-06:31/16				
	17:21		20:10										21:50					
Potential sun hours	256	0	276	0	367	413	418	889	243	94								
Sum of minutes with flicker																		

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

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar per WTG

Calculation: 6778 Moanmore Lower Worst Case **WTG:** 4 - Moanmore T1**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

July		August		September		October		November		December	
1	05:18 22:06	05:56 21:33	06:48 20:29	07:55-08:24/29 07:21-07:38/17	07:38 19:18	07:34 17:10	08:26 16:28				
2	05:19 22:05	05:58 21:31	06:49 20:26	07:55-08:25/30 07:22-07:37/15	07:40 19:15	07:35 17:08	08:28 16:27				
3	05:20 22:05	06:27-06:30/3 21:29	05:59 21:29	06:51 20:24	07:55-08:23/28 07:38-07:43/5	07:23-07:29/6 19:13	07:37 17:06	08:29 16:27			
4	05:20 22:05	06:26-06:32/6 21:27	06:01 21:27	06:53 20:22	07:55-08:23/28 07:36-07:46/10	07:43 19:11	07:39 17:04	08:30 16:26			
5	05:21 22:04	06:26-06:34/8 21:25	06:02 21:25	06:54 20:19	07:55-08:22/27 07:35-07:47/12	07:45 19:08	07:41 17:02	08:32 16:26			
6	05:22 22:03	06:26-06:35/9 21:24	06:04 21:24	06:56 20:17	07:55-08:21/26 07:33-07:46/13	07:47 19:06	07:43 17:01	08:33 16:25			
7	05:23 22:03	06:25-06:36/11 21:22	06:06 21:22	06:58 20:15	07:56-08:20/24 07:33-07:47/14	07:49 19:04	07:45 16:59	08:34 16:25			
8	05:24 22:02	06:24-06:35/11 21:20	06:07 21:20	06:59 20:12	07:57-08:18/21 07:32-07:46/14	07:50 19:01	07:47 16:57	08:36 16:24			
9	05:25 22:01	06:24-06:36/12 21:18	06:09 21:18	07:01 20:10	07:58-08:16/18 07:33-07:45/12	07:52 18:59	07:48 16:55	08:37 16:24			
10	05:26 22:01	06:23-06:37/14 21:16	06:11 21:16	07:03 20:08	08:01-08:14/13 07:34-07:44/10	07:54 18:57	07:50 16:54	08:38 16:24			
11	05:27 22:00	06:23-06:37/14 21:14	06:12 21:14	07:04 20:05	08:04-08:09/5 08:11-08:20/9	07:56 18:54	07:52 16:52	08:39 16:24			
12	05:28 21:59	06:23-06:38/15 21:12	06:14 21:12	07:06 20:03	07:06-07:13/7 08:09-08:22/13	07:57 18:52	07:54 16:51	08:40 16:23			
13	05:29 21:58	06:24-06:39/15 21:10	06:16 21:10	07:08 20:01	08:07-08:23/16 08:05-08:24/19	07:59 18:50	07:56 16:49	08:41 16:23			
14	05:31 21:57	06:23-06:40/17 21:08	06:17 21:08	07:09 19:58	08:05-08:24/19 08:05-08:25/20	08:01 18:48	07:58 16:47	08:42 16:23			
15	05:32 21:56	06:23-06:40/17 21:06	06:19 21:06	07:11 19:56	08:05-08:25/20 07:55-08:02/7	08:03 18:45	07:59 16:46	08:43 16:23			
16	05:33 21:55	06:23-06:40/17 21:04	06:21 21:04	07:13 19:53	07:52-08:24/32 07:51-08:24/33	08:04 18:43	08:01 16:45	08:44 16:23			
17	05:34 21:54	06:23-06:40/17 21:02	06:22 21:02	07:14 19:51	07:51-08:24/33 07:51-08:19/28	08:06 18:41	08:03 16:43	08:45 16:24			
18	05:36 21:53	06:23-06:40/17 21:00	06:24 21:00	07:16 19:49	07:51-08:24/33 07:50-08:23/33	08:08 18:39	08:05 16:42	08:46 16:24			
19	05:37 21:52	06:23-06:41/18 20:58	06:26 20:58	07:18 19:46	07:50-08:23/33 07:50-08:22/32	08:10 18:37	08:06 16:40	08:46 16:24			
20	05:38 21:50	06:23-06:40/17 20:56	06:27 20:56	07:19 19:44	07:50-08:22/32 07:51-08:21/30	08:12 18:34	08:08 16:39	08:47 16:25			
21	05:40 21:49	06:23-06:40/17 20:53	06:29 20:53	07:21 19:41	07:51-08:21/30 07:51-08:19/28	08:13 18:32	08:10 16:38	08:47 16:25			
22	05:41 21:48	06:23-06:40/17 20:51	06:31 20:51	07:23 19:39	07:51-08:19/28 07:50-08:17/23	08:15 18:30	08:12 16:37	08:48 16:25			
23	05:42 21:46	06:25-06:40/15 20:49	06:32 20:49	07:24 19:37	07:54-08:17/23 07:55-08:15/20	08:17 18:28	08:13 16:36	08:49 16:26			
24	05:44 21:45	06:25-06:39/14 20:47	06:34 20:47	07:26 19:34	07:55-08:15/20 07:56-08:15/19	08:19 18:26	08:15 16:34	08:49 16:27			
25	05:45 21:44	06:25-06:38/13 20:45	06:36 20:45	07:28 19:32	08:02-08:21/19 07:26-07:43/17	07:21 17:24	08:17 16:33	08:49 16:27			
26	05:47 21:42	06:27-06:38/11 20:42	06:37 20:42	07:30 19:30	08:00-08:22/22 07:58-08:15/17	07:23 17:22	08:18 16:32	08:50 16:28			
27	05:48 21:41	06:28-06:36/8 20:40	06:39 20:40	07:31 19:27	08:00-08:15/15 08:03-08:15/12	07:24 17:20	08:20 16:31	08:50 16:29			
28	05:50 21:39	06:31-06:34/3 20:38	06:41 20:38	07:33 19:25	08:03-08:15/12 08:03-08:13/10	07:26 17:18	08:22 16:30	08:50 16:29			
29	05:51 21:37	06:27-06:38/11 20:36	06:42 20:36	07:35 19:22	08:03-08:13/10 08:04-08:11/7	07:28 17:16	08:23 16:30	08:50 16:30			
30	05:53 21:36	06:27-06:38/11 20:33	06:44 20:33	07:36 19:20	08:04-08:11/7 07:55-08:24/29	07:30 17:14	08:25 16:29	08:50 16:31			
31	05:54 21:34	06:27-06:38/11 20:31	06:46 20:31	07:55-08:24/29 07:20-07:39/19	07:32 17:12			08:50 16:32			
Potential sun hours		506	456	381	813	330	263	240			
Sum of minutes with flicker		336	517	813		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

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar per WTG

Calculation: 6778 Moanmore Lower Worst Case **WTG:** 5 - Moanmore T2**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June
1	08:50 16:33	08:22 17:23	07:27 18:16	07:15 20:12	06:08 21:04	06:42-07:06/24 05:22 06:19-06:31/12
2	08:50 16:35	08:21 17:25	07:25 18:18	07:12 20:13	06:06 21:06	06:43-07:06/23 05:21 06:19-06:30/11
3	08:50 16:36	08:19 17:26	07:23 18:20	07:10 20:15	06:04 21:08	06:43-07:08/25 05:20 06:07-06:31/24
4	08:50 16:37	08:17 17:28	07:20 18:21	07:08 20:17	06:02 21:09	06:43-07:08/25 05:19 06:07-06:30/23
5	08:49 16:38	08:15 17:30	07:18 18:23	07:05 20:19	06:01 21:11	06:44-07:07/23 05:18 06:07-06:31/24
6	08:49 16:39	08:14 17:32	07:16 18:25	07:03 20:20	05:59 21:13	06:47-07:07/20 05:18 06:08-06:32/24
7	08:49 16:41	08:12 17:34	07:14 18:27	07:01 20:22	05:57 21:14	06:48-07:08/20 05:17 06:08-06:32/24
8	08:48 16:42	08:10 17:36	07:11 18:29	06:58 20:24	05:55 21:16	06:48-07:07/19 05:17 06:10-06:33/23
9	08:48 16:43	08:08 17:38	07:09 18:31	06:56 20:26	05:53 21:18	06:48-07:06/18 05:16 06:10-06:33/23
10	08:47 16:45	08:06 17:40	07:07 18:32	06:54 20:27	05:51 21:19	06:49-07:06/17 05:16 06:15-06:34/19
11	08:47 16:46	08:05 17:42	07:04 18:34	06:52 20:29	05:50 21:21	06:49-07:05/16 05:15 06:15-06:35/20
12	08:46 16:48	08:03 17:44	07:02 18:36	06:49 20:31	05:48 21:23	06:50-07:03/13 05:15 06:15-06:36/21
13	08:45 16:49	08:01 17:46	07:00 18:38	06:47 20:33	05:46 21:24	06:51-07:03/12 05:14 06:14-06:35/21
14	08:44 16:51	07:59 17:47	06:57 18:40	06:45 20:34	05:45 21:26	06:53-07:00/7 05:14 06:15-06:36/21
15	08:43 16:52	07:57 17:49	06:55 18:41	06:42 20:36	05:43 21:28	06:20-06:37/17 05:14 06:15-06:36/21
16	08:43 16:54	07:55 17:51	06:53 18:43	06:40 20:38	05:42 21:29	06:20-06:37/17 05:14 06:15-06:37/22
17	08:42 16:56	07:53 17:53	06:50 18:45	06:38 20:40	05:40 21:31	06:18-06:35/17 05:14 06:15-06:37/22
18	08:41 16:57	07:51 17:55	06:48 18:47	06:36 20:41	05:38 21:32	06:18-06:34/16 05:14 06:15-06:37/22
19	08:40 16:59	07:49 17:57	06:46 18:49	06:34 20:43	05:37 21:34	06:16-06:34/18 05:14 06:15-06:37/22
20	08:39 17:01	07:47 17:59	06:43 18:50	06:31 20:45	05:36 21:35	06:16-06:34/18 05:14 06:15-06:37/22
21	08:37 17:02	07:45 18:01	06:41 18:52	06:29 20:47	05:34 21:37	06:16-06:34/18 05:14 06:15-06:37/22
22	08:36 17:04	07:42 18:03	06:38 18:54	06:27 20:48	05:33 21:38	06:06-06:35/29 05:14 06:16-06:38/22
23	08:35 17:06	07:40 18:05	06:36 18:56	06:25 20:50	05:31 21:40	06:05-06:35/30 05:14 06:16-06:38/22
24	08:34 17:08	07:38 18:06	06:34 18:57	06:23 20:52	05:30 21:41	06:04-06:34/30 05:15 06:16-06:38/22
25	08:32 17:10	07:36 18:08	06:31 18:59	06:21 20:54	05:29 21:43	06:04-06:33/29 05:15 06:17-06:39/22
26	08:31 17:11	07:34 18:10	06:29 19:01	06:19 20:55	05:28 21:44	06:04-06:33/29 05:15 06:17-06:39/22
27	08:30 17:13	07:32 18:12	06:27 19:03	06:16 20:57	05:27 21:45	06:04-06:33/29 05:16 06:18-06:39/21
28	08:28 17:15	07:29 18:14	06:24 19:04	06:14 20:59	05:25 21:47	06:04-06:32/28 05:16 06:18-06:39/21
29	08:27 17:17		07:22 20:06	06:12 21:01	05:24 21:48	06:04-06:32/28 05:17 06:18-06:39/21
30	08:25 17:19		07:20 20:08	06:10 21:02	05:23 21:49	06:05-06:32/27 05:18 06:18-06:39/21
31	08:24 17:21		07:17 20:10		05:22 21:50	06:19-06:32/13 06:05-06:18/13
Potential sun hours	255	276	367	418	489	503
Sum of minutes with flicker	0	71	0	336	788	664

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

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar per WTG

Calculation: 6778 Moanmore Lower Worst Case WTG: 5 - Moanmore T2

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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	July		August		September		October		November		December	
1	05:18	06:19-06:39/20	05:56	07:00-07:14/14	06:48	07:18-07:35/17	07:38		07:34	08:06-08:17/11	08:26	
	22:06		21:33	06:34-06:48/14	20:29		19:18		17:10		16:28	
2	05:19	06:20-06:39/19	05:58	06:59-07:16/17	06:49	07:19-07:35/16	07:40		07:35	08:06-08:16/10	08:28	
	22:05		21:31	06:35-06:48/13	20:26		19:15		17:08		16:27	
3	05:20	06:20-06:39/19	05:59	06:58-07:16/18	06:51	07:20-07:34/14	07:42		07:37	08:07-08:16/9	08:29	
	22:05	06:16-06:19/3	21:29	06:35-06:47/12	20:24		19:13		17:06		16:27	
4	05:20	06:15-06:39/24	06:01	06:58-07:17/19	06:53	07:23-07:34/11	07:43		07:39	08:08-08:14/6	08:30	
	22:05		21:27	06:35-06:47/12	20:22		19:11		17:04		16:26	
5	05:21	06:15-06:39/24	06:02	06:57-07:16/19	06:54	07:24-07:33/9	07:45		07:41		08:32	
	22:04		21:26	06:36-06:46/10	20:19		19:08		17:02		16:26	
6	05:22	06:15-06:39/24	06:04	06:57-07:17/20	06:56	07:25-07:29/4	07:47		07:43		08:33	
	22:03		21:24	06:37-06:45/8	20:17		19:06		17:01		16:25	
7	05:23	06:15-06:38/23	06:06	06:56-07:18/22	06:58		07:49		07:45		08:34	
	22:03		21:22	06:41-06:42/1	20:15		19:04		16:59		16:25	
8	05:24	06:13-06:37/24	06:07	06:53-07:17/24	06:59		07:50		07:47		08:36	
	22:02		21:20		20:12		19:01		16:57		16:24	
9	05:25	06:13-06:37/24	06:09	06:53-07:17/24	07:01		07:52		07:48		08:37	
	22:01		21:18		20:10		18:59		16:55		16:24	
10	05:26	06:13-06:38/25	06:11	06:51-07:16/25	07:03		07:54		07:50		08:38	
	22:01		21:16		20:08		18:57		16:54		16:24	
11	05:27	06:27-06:38/11	06:12	06:51-07:16/25	07:04		07:56		07:52		08:39	
	22:00	06:13-06:25/12	21:14		20:05		18:54		16:52		16:24	
12	05:28	06:13-06:39/26	06:14	06:50-07:14/24	07:06		07:57		07:54		08:40	
	21:59		21:12		20:03		18:52		16:51		16:23	
13	05:29	06:14-06:41/27	06:16	06:51-07:13/22	07:08		07:59		07:56		08:41	
	21:58		21:10		20:01		18:50		16:49		16:23	
14	05:31	06:14-06:41/27	06:17	06:50-07:11/21	07:09		08:01		07:58		08:42	
	21:57		21:08		19:58		18:48		16:47		16:23	
15	05:32	06:13-06:41/28	06:19	07:04-07:08/4	07:11		08:03		07:59		08:43	
	21:56		21:06	06:51-07:02/11	19:56		18:45		16:46		16:23	
16	05:33	06:13-06:42/29	06:21	06:53-07:01/8	07:13		08:04		08:01		08:44	
	21:55		21:04		19:53		18:43		16:45		16:23	
17	05:34	06:13-06:42/29	06:22	06:54-06:58/4	07:14		08:06		08:03		08:45	
	21:54		21:02		19:51		18:41		16:43		16:24	
18	05:36	06:13-06:43/30	06:24		07:16		08:08		08:05		08:46	
	21:53		21:00		19:49		18:39		16:42		16:24	
19	05:37	06:15-06:44/29	06:26		07:18		08:10		08:06		08:46	
	21:52		20:58		19:46		18:37		16:40		16:24	
20	05:38	06:15-06:44/29	06:27	07:14-07:19/5	07:19		08:12		08:08		08:47	
	21:50		20:56		19:44		18:34		16:39		16:24	
21	05:40	06:15-06:44/29	06:29	07:11-07:20/9	07:21		08:13		08:10		08:47	
	21:49		20:53		19:41		18:32		16:38		16:25	
22	05:41	06:26-06:44/18	06:31	07:10-07:22/12	07:23		08:15		08:12		08:48	
	21:48	06:16-06:25/9	20:51		19:39		18:30		16:37		16:25	
23	05:42	06:27-06:45/18	06:32	07:10-07:22/12	07:24		08:17		08:13		08:49	
	21:46	06:18-06:24/6	20:49		19:37		18:28		16:36		16:26	
24	05:44	06:27-06:44/17	06:34	07:09-07:25/16	07:26		08:19		08:15		08:49	
	21:45	06:20-06:21/1	20:47		19:34		18:26		16:34		16:26	
25	05:45	06:27-06:44/17	06:36	07:09-07:26/17	07:28		07:21		08:17		08:49	
	21:44		20:45		19:32		17:24		16:33		16:27	
26	05:47	06:28-06:45/17	06:37	07:08-07:28/20	07:30		07:23		08:18		08:50	
	21:42		20:42		19:30		17:22		16:32		16:28	
27	05:48	06:29-06:46/17	06:39	07:09-07:30/21	07:31		07:24		08:20		08:50	
	21:41		20:40		19:27		17:20		16:31		16:29	
28	05:50	06:30-06:47/17	06:41	07:11-07:31/20	07:33		07:26	08:08-08:14/6	08:22		08:50	
	21:39		20:38		19:25		17:18		16:30		16:29	
29	05:51	07:05-07:09/4	06:42	07:14-07:32/18	07:35		07:28	08:07-08:16/9	08:23		08:50	
	21:37	06:31-06:48/17	20:36		19:22		17:16		16:30		16:30	
30	05:53	07:03-07:12/9	06:44	07:14-07:34/20	07:36		07:30	08:06-08:16/10	08:25		08:50	
	21:36	06:33-06:49/16	20:33		19:20		17:14		16:29		16:31	
31	05:54	07:01-07:13/12	06:46	07:15-07:35/20			07:32	08:06-08:17/11			08:50	
	21:34	06:34-06:48/14	20:31				17:12				16:32	
Potential sun hours	506		456		381		330		263		240	
Sum of minutes with flicker	744		581		71		36		36		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

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar per WTG

Calculation: 6778 Moanmore Lower Worst Case **WTG:** 6 - Moanmore T3**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January	February	March	April	May	June
1	08:50 16:33	08:22 09:12-09:20/8 17:23 09:01-09:06/5	07:27 07:55-08:13/18 18:16	07:15 20:12	06:08 06:40-06:50/10 21:04	05:22 06:16-06:40/24 21:52
2	08:50 16:35	08:21 09:14-09:17/3 17:25 08:59-09:08/9	07:25 07:53-08:12/19 18:18	07:12 20:13	06:06 06:41-06:51/10 21:06	05:21 06:16-06:39/23 21:53
3	08:50 16:36	08:19 08:58-09:10/12 17:26	07:23 07:52-08:11/19 18:20	07:10 20:15	06:04 06:41-06:54/13 21:08	05:20 06:16-06:39/23 21:54
4	08:50 16:37	08:17 08:58-09:11/13 17:28	07:20 07:51-08:08/17 18:21	07:08 20:17	06:03 06:42-06:56/14 21:09	05:19 06:16-06:36/20 21:55
5	08:50 16:38	08:16 08:57-09:12/15 17:30	07:18 07:51-08:03/12 18:23	07:05 20:19	06:01 06:42-06:56/14 21:11	05:18 06:16-06:35/19 21:56
6	08:49 16:39	08:14 08:57-09:12/15 17:32	07:16 07:51-08:03/12 18:25	07:03 20:20	05:59 06:40-06:57/17 21:13	05:18 06:17-06:35/18 21:57
7	08:49 16:41	08:12 08:56-09:12/16 17:34	07:14 07:51-08:01/10 18:27	07:01 20:22	05:57 06:40-06:58/18 21:14	05:17 06:17-06:35/18 21:58
8	08:48 16:42	08:10 08:57-09:12/15 17:36	07:11 07:53-07:59/6 18:29	06:58 20:24	05:55 06:36-06:58/22 21:16	05:17 06:18-06:35/17 21:59
9	08:48 16:43	08:08 08:57-09:12/15 17:38	07:09 18:31	06:56 20:26	05:53 06:34-06:58/24 21:18	05:16 06:18-06:34/16 22:00
10	08:47 16:45	08:07 08:58-09:11/13 17:40	07:07 18:32	06:54 20:27	05:51 06:34-06:59/25 21:19	05:16 06:18-06:35/17 22:00
11	08:47 16:46	08:05 08:59-09:10/11 17:42	07:04 07:29-07:33/4 18:34	06:52 20:29	05:50 06:32-06:58/26 21:21	05:15 06:19-06:35/16 22:01
12	08:46 16:48	08:03 09:00-09:09/9 17:44	07:02 07:27-07:35/8 18:36	06:49 20:31	05:48 06:30-06:58/28 21:23	05:15 06:20-06:35/15 22:02
13	08:45 16:49	08:01 17:46	07:00 07:25-07:35/10 18:38	06:47 20:33	05:46 06:28-06:58/30 21:24	05:14 06:19-06:34/15 22:03
14	08:44 16:51	07:59 17:48	06:57 07:25-07:36/11 18:40	06:45 20:34	05:45 06:26-06:57/31 21:26	05:14 06:20-06:35/15 22:03
15	08:44 16:52	07:57 17:49	06:55 07:24-07:34/10 18:41	06:42 20:36	05:43 06:26-06:57/31 21:28	05:14 06:21-06:35/14 22:04
16	08:43 16:54	07:55 17:51	06:53 07:25-07:34/9 18:43	06:40 20:38	05:42 06:26-06:56/30 21:29	05:14 06:21-06:35/14 22:04
17	08:42 16:56	07:53 08:20-08:26/6 17:53	06:50 07:27-07:32/5 18:45	06:38 20:40	05:40 06:24-06:55/31 21:31	05:14 06:21-06:35/14 22:05
18	08:41 16:57	07:51 08:19-08:28/9 17:55	06:48 18:47	06:36 20:41	05:38 06:24-06:54/30 21:32	05:14 06:22-06:35/13 22:05
19	08:40 16:59	07:49 08:18-08:29/11 17:57	06:46 18:49	06:34 20:43	05:37 06:20-06:52/32 21:34	05:14 06:22-06:35/13 22:06
20	08:39 17:01	07:47 08:16-08:28/12 17:59	06:43 18:50	06:31 20:45	05:36 06:18-06:49/31 21:35	05:14 06:22-06:35/13 22:06
21	08:37 17:03	07:45 08:17-08:28/11 18:01	06:41 18:52	06:29 20:47	05:34 06:18-06:49/31 21:37	05:14 06:23-06:36/13 22:06
22	08:36 09:11-09:17/6 17:04	07:42 08:17-08:28/11 18:03	06:38 18:54	06:27 20:48	05:33 06:17-06:49/32 21:38	05:14 06:23-06:36/13 22:06
23	08:35 09:09-09:18/9 17:06	07:40 08:18-08:28/10 18:05	06:36 18:56	06:25 20:50	05:31 06:17-06:48/31 21:40	05:14 06:23-06:36/13 22:07
24	08:34 09:09-09:19/10 17:08	07:38 08:19-08:26/7 18:06 08:06-08:13/7	06:34 18:57	06:23 20:52	05:30 06:15-06:47/32 21:41	05:15 06:23-06:36/13 22:07
25	08:32 09:09-09:21/12 17:10	07:36 08:02-08:13/11 18:08	06:31 18:59	06:21 20:54	05:29 06:15-06:46/31 21:43	05:15 06:23-06:37/14 22:07
26	08:31 09:08-09:21/13 17:11	07:34 08:01-08:14/13 18:10	06:29 19:01	06:19 20:55	05:28 06:15-06:45/30 21:44	05:16 06:23-06:37/14 22:07
27	08:30 09:08-09:21/13 17:13	07:32 08:00-08:15/15 18:12	06:27 19:03	06:16 06:43-06:49/6 20:57	05:27 06:15-06:43/28 21:45	05:16 06:24-06:38/14 22:07
28	08:28 09:09-09:22/13 17:15	07:29 08:00-08:15/15 18:14	06:24 19:04	06:14 06:41-06:50/9 20:59	05:26 06:15-06:42/27 21:47	05:16 06:23-06:38/15 22:06
29	08:27 09:09-09:21/12 17:17		07:22 20:06	06:12 06:40-06:51/11 21:01	05:24 06:15-06:41/26 21:48	05:17 06:24-06:39/15 22:06
30	08:25 09:10-09:22/12 17:19		07:20 20:08	06:10 06:40-06:51/11 21:02	05:23 06:16-06:42/26 21:49	05:18 06:23-06:38/15 22:06
31	08:24 09:11-09:21/10 17:21		07:17 20:10		05:22 06:16-06:41/25 21:50	
Potential sun hours	255	276	367	418	489	503
Sum of minutes with flicker	110	297	170	37	786	476

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

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar per WTG

Calculation: 6778 Moanmore Lower Worst Case **WTG:** 6 - Moanmore T3**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	July		August		September		October		November		December	
1	05:18	06:24-06:39/15	05:56	06:41-07:08/27	06:48		07:38	08:05-08:15/10	07:34	08:27-08:41/14	08:26	
	22:06		21:33		20:29		19:18		17:10		16:28	
2	05:19	06:24-06:40/16	05:58	06:43-07:09/26	06:49		07:40	08:06-08:13/7	07:36	08:26-08:42/16	08:28	
	22:05		21:31		20:26		19:15		17:08		16:27	
3	05:20	06:23-06:40/17	05:59	06:43-07:08/25	06:51		07:42		07:37	08:26-08:42/16	08:29	
	22:05		21:29		20:24		19:13		17:06		16:27	
4	05:20	06:23-06:40/17	06:01	06:45-07:08/23	06:53		07:43		07:39	08:26-08:42/16	08:30	
	22:05		21:27		20:22		19:11		17:04		16:26	
5	05:21	06:23-06:41/18	06:02	06:47-07:08/21	06:54		07:45	08:32-08:34/2	07:41	08:26-08:42/16	08:32	
	22:04		21:26		20:19		19:08		17:02		16:26	
6	05:22	06:24-06:41/17	06:04	06:50-07:07/17	06:56		07:47	08:29-08:37/8	07:43	08:27-08:42/15	08:33	
	22:04		21:24		20:17		19:06		17:01		16:25	
7	05:23	06:24-06:42/18	06:06	06:51-07:07/16	06:58		07:49	08:27-08:37/10	07:45	08:27-08:41/14	08:34	
	22:03		21:22		20:15		19:04		16:59		16:25	
8	05:24	06:23-06:41/18	06:07	06:51-07:06/15	06:59		07:50	08:26-08:38/12	07:47	08:28-08:40/12	08:36	
	22:02		21:20		20:12		19:01		16:57		16:24	
9	05:25	06:23-06:44/21	06:09	06:51-07:05/14	07:01		07:52	08:26-08:42/16	07:48	08:45-08:48/3	08:37	
	22:02		21:18		20:10		18:59		16:55	08:30-08:39/9	16:24	
10	05:26	06:23-06:46/23	06:11	06:49-07:02/13	07:03		07:54	08:26-08:44/18	07:50	08:42-08:51/9	08:38	
	22:01		21:16		20:08		18:57		16:54	08:33-08:37/4	16:24	
11	05:27	06:23-06:47/24	06:12	06:49-06:59/10	07:04		07:56	08:26-08:46/20	07:52	08:41-08:52/11	08:39	
	22:00		21:14		20:05		18:54		16:52		16:24	
12	05:28	06:23-06:48/25	06:14	06:48-06:59/11	07:06		07:57	08:27-08:46/19	07:54	08:41-08:53/12	08:40	
	21:59		21:12		20:03		18:52		16:51		16:23	
13	05:29	06:24-06:50/26	06:16	06:48-06:59/11	07:08		07:59	08:32-08:47/15	07:56	08:41-08:53/12	08:41	
	21:58		21:10		20:01		18:50		16:49		16:23	
14	05:31	06:24-06:50/26	06:17	06:48-06:58/10	07:09		08:01	08:32-08:47/15	07:58	08:41-08:54/13	08:42	
	21:57		21:08		19:58		18:48		16:47		16:23	
15	05:32	06:24-06:51/27	06:19	06:49-06:58/9	07:11		08:03	08:33-08:47/14	07:59	08:41-08:54/13	08:43	
	21:56		21:06		19:56		18:45		16:46		16:23	
16	05:33	06:24-06:51/27	06:21	06:51-06:57/6	07:13		08:04	08:34-08:46/12	08:01	08:41-08:54/13	08:44	
	21:55		21:04		19:53		18:43		16:45		16:23	
17	05:34	06:24-06:54/30	06:22		07:14		08:06	08:53-08:55/2	08:03	08:42-08:54/12	08:45	
	21:54		21:02		19:51		18:41	08:35-08:45/10	16:43		16:24	
18	05:36	06:24-06:55/31	06:24		07:16		08:08	08:50-08:58/8	08:05	08:43-08:53/10	08:46	
	21:53		21:00		19:49		18:39	08:38-08:43/5	16:42		16:24	
19	05:37	06:26-06:57/31	06:26		07:18		08:10	08:49-08:59/10	08:07	08:44-08:53/9	08:46	
	21:52		20:58		19:46		18:37		16:40		16:24	
20	05:38	06:26-06:57/31	06:27		07:19		08:12	08:47-08:59/12	08:08	08:46-08:52/6	08:47	
	21:50		20:56		19:44		18:34		16:39		16:25	
21	05:40	06:26-06:58/32	06:29		07:21		08:13	08:47-08:59/12	08:10		08:48	
	21:49		20:53		19:41		18:32		16:38		16:25	
22	05:41	06:27-06:58/31	06:31		07:23		08:15	08:47-08:59/12	08:12		08:48	
	21:48		20:51		19:39		18:30		16:37		16:25	
23	05:42	06:28-07:00/32	06:32		07:25		08:17	08:47-08:58/11	08:13		08:49	
	21:46		20:49		19:37		18:28		16:36		16:26	
24	05:44	06:29-07:01/32	06:34		07:26		08:19	08:48-08:57/9	08:15		08:49	
	21:45		20:47		19:34		18:26		16:34		16:27	
25	05:45	06:31-07:03/32	06:36		07:28		07:21	07:51-07:54/3	08:17		08:49	
	21:44		20:45		19:32		17:24		16:33		16:27	
26	05:47	06:35-07:05/30	06:37		07:30	08:10-08:12/2	07:23		08:18		08:50	
	21:42		20:42		19:30		17:22		16:32		16:28	
27	05:48	06:35-07:06/31	06:39		07:31	08:07-08:15/8	07:24		08:20		08:50	
	21:41		20:40		19:27		17:20		16:31		16:29	
28	05:50	06:36-07:07/31	06:41		07:33	08:06-08:16/10	07:26		08:22		08:50	
	21:39		20:38		19:25		17:18		16:30		16:29	
29	05:51	06:37-07:07/30	06:42		07:35	08:05-08:15/10	07:28	08:32-08:36/4	08:23		08:50	
	21:38		20:36		19:22		17:16		16:30		16:30	
30	05:53	06:38-07:08/30	06:44		07:36	08:05-08:15/10	07:30	08:29-08:39/10	08:25		08:50	
	21:36		20:33		19:20		17:14		16:29		16:31	
31	05:54	06:39-07:08/29	06:46				07:32	08:28-08:40/12			08:50	
	21:34		20:31				17:12				16:32	
Potential sun hours	506		456		381		330		263		240	
Sum of minutes with flicker	798		254		40		298		255		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

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar per WTG**Calculation:** 6778 Moanmore Lower Worst Case **WTG: 7 - Moanmore T4****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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

January			February			March			April			May			June		
1	08:50	16:33	08:22	17:23	07:27	18:16	07:15	07:38-07:50/12	06:08	06:50-07:12/22	05:22	06:05-06:13/8					
2	08:50	16:35	08:20	17:24	07:25	18:18	07:12	07:36-07:50/14	06:06	06:56-07:11/15	05:21	06:06-06:12/6					
3	08:50	16:36	08:19	17:26	07:23	18:19	07:10	07:33-07:47/14	06:04	06:58-07:11/13	05:20	06:08-06:12/4					
4	08:50	16:37	08:17	17:28	07:20	18:21	07:08	07:31-07:45/14	06:02	06:59-07:09/10	05:19						
5	08:49	16:38	08:15	17:30	07:18	18:23	07:05	07:29-07:44/15	06:01	07:01-07:07/6	05:18						
6	08:49	16:39	08:14	17:32	07:16	18:25	07:03	07:26-07:40/14	05:59	06:34-06:42/8	05:18						
7	08:49	16:41	08:12	17:34	07:14	18:27	07:01	07:26-07:39/13	05:57	06:36-06:41/5	05:17						
8	08:48	16:42	08:10	17:36	07:11	18:29	06:58	07:26-07:36/10	05:55		05:16						
9	08:48	16:43	08:08	17:38	07:09	18:31	06:56	07:24-07:34/10	05:53		05:16						
10	08:47	16:44	08:06	17:40	07:07	18:32	06:54	07:22-07:33/11	05:51		05:16						
11	08:47	16:45	08:05	17:42	07:04	18:34	06:52	07:21-07:34/13	05:50		05:15						
12	08:46	16:46	08:03	17:44	07:02	18:36	06:49	07:20-07:34/14	05:48		05:15						
13	08:45	16:47	08:01	17:46	07:00	18:38	06:47	07:19-07:34/15	05:46		05:14						
14	08:44	16:48	07:59	17:47	06:57	18:40	06:45	07:19-07:33/14	05:45		05:14						
15	08:43	16:49	07:57	17:49	06:55	18:41	06:42	07:19-07:33/14	05:43		05:14						
16	08:43	16:50	07:55	17:51	06:53	18:43	06:40	07:20-07:32/12	05:41		05:14						
17	08:42	16:51	07:53	17:53	06:50	18:45	06:38	07:21-07:31/10	05:40		05:14						
18	08:41	16:52	07:51	17:55	06:48	18:47	06:36	07:23-07:29/6	05:38	06:07-06:09/2	05:14						
19	08:40	16:53	07:49	17:57	06:46	18:49	06:34	07:07-07:13/6	05:37	06:04-06:11/7	05:14						
20	08:38	16:54	07:47	17:59	06:43	18:50	06:31	06:55-07:01/6	05:36	06:03-06:12/9	05:14						
21	08:37	16:55	07:44	18:01	06:41	18:52	06:29	06:53-07:02/9	05:34	06:03-06:13/10	05:14						
22	08:36	16:56	07:42	18:03	06:38	18:54	06:27	06:52-07:09/17	05:33	06:03-06:14/11	05:14						
23	08:35	16:57	07:40	18:05	06:36	18:56	06:25	06:51-07:11/20	05:31	06:03-06:14/11	05:14						
24	08:34	16:58	07:38	18:07	06:34	18:57	06:23	06:50-07:13/23	05:30	06:02-06:14/12	05:15						
25	08:32	16:59	07:36	18:08	06:31	18:59	06:21	06:49-07:13/24	05:29	06:02-06:14/12	05:15						
26	08:31	17:00	07:34	18:10	06:29	19:01	06:19	06:49-07:14/25	05:28	06:02-06:14/12	05:15						
27	08:30	17:01	07:32	18:12	06:27	19:03	06:16	06:48-07:14/26	05:27	06:02-06:14/12	05:16						
28	08:28	17:02	07:29	18:14	06:24	19:04	06:14	06:48-07:14/26	05:25	06:02-06:14/12	05:16						
29	08:27	17:03	07:27	18:16	06:22	19:06	06:12	06:49-07:13/24	05:24	06:03-06:14/11	05:17						
30	08:25	17:04	07:25	18:18	06:20	19:08	06:10	06:49-07:13/24	05:23	06:04-06:14/10	05:18						
31	08:24	17:05	07:23	18:20	06:18	19:10	06:08	06:49-07:13/24	05:22	06:05-06:14/9	05:19						
Potential sun hours			256	276	367	418	520	272	503	18							
Sum of minutes with flicker			0	0	23	520	272	503	18								

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

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

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar per WTG

Calculation: 6778 Moanmore Lower Worst Case **WTG:** 7 - Moanmore T4**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

July		August		September		October		November		December	
1	05:18 22:06	05:56 21:33		06:47 20:29	07:20-07:33/13	07:38 19:18	07:34 17:10	08:26 16:28			
2	05:19 22:05	05:58 21:31		06:49 20:26	07:21-07:32/11	07:40 19:15	07:35 17:08	08:28 16:27			
3	05:20 22:05	05:59 21:29		06:51 20:24	07:22-07:32/10	07:42 19:13	07:37 17:06	08:29 16:27			
4	05:20 22:05	06:01 21:27		06:53 20:22	07:23-07:33/10	07:43 19:11	07:39 17:04	08:30 16:26			
5	05:21 22:04	06:02 21:25		06:54 20:19	07:23-07:36/13	07:45 19:08	07:41 17:02	08:32 16:26			
6	05:22 22:03	06:04 21:24	06:45-06:51/6	06:56 20:17	07:22-07:36/14	07:47 19:06	07:43 17:01	08:33 16:25			
7	05:23 22:03	06:06 21:22	06:44-06:53/9	06:58 20:15	07:24-07:39/15	07:49 19:04	07:45 16:59	08:34 16:25			
8	05:24 22:02	06:07 21:20	07:09-07:17/8	06:59 20:12	07:25-07:39/14	07:50 19:01	07:47 16:57	08:36 16:24			
9	05:25 22:01	06:09 21:18	07:08-07:19/11	07:01 20:10	07:27-07:41/14	07:52 18:59	07:48 16:55	08:37 16:24			
10	05:26 22:01	06:11 21:16	07:06-07:20/14	07:03 20:08	07:29-07:43/14	07:54 18:57	07:50 16:54	08:38 16:24			
11	05:27 22:00	06:12 21:14	07:06-07:21/15	07:04 20:05	07:30-07:43/13	07:56 18:54	07:52 16:52	08:39 16:23			
12	05:28 21:59	06:14 21:12	06:58-07:21/23	07:06 20:03	07:32-07:43/11	07:57 18:52	07:54 16:51	08:40 16:23			
13	05:29 21:58	06:16 21:10	06:58-07:22/24	07:08 20:01	07:33-07:41/8	07:59 18:50	07:56 16:49	08:41 16:23			
14	05:31 21:57	06:17 21:08	06:56-07:21/25	07:09 19:58	07:35-07:40/5	08:01 18:48	07:58 16:47	08:42 16:23			
15	05:32 21:56	06:19 21:06	06:56-07:21/25	07:11 19:56	07:37-07:38/1	08:03 18:45	07:59 16:46	08:43 16:23			
16	05:33 21:55	06:21 21:04	06:56-07:21/25	07:13 19:53		08:04 18:43	08:01 16:44	08:44 16:23			
17	05:34 21:54	06:22 21:02	06:55-07:20/25	07:14 19:51		08:06 18:41	08:03 16:43	08:45 16:24			
18	05:36 21:53	06:24 21:00	06:56-07:20/24	07:16 19:49		08:08 18:39	08:05 16:42	08:45 16:24			
19	05:37 21:52	06:26 20:58	06:56-07:18/22	07:18 19:46		08:10 18:37	08:06 16:40	08:46 16:24			
20	05:38 21:50	06:27 20:56	06:57-07:17/20	07:19 19:44		08:12 18:34	08:08 16:39	08:47 16:24			
21	05:40 21:49	06:29 20:53	07:08-07:14/6	07:21 19:41		08:13 18:32	08:10 16:38	08:47 16:25			
22	05:41 21:48	06:31 20:51	06:58-07:06/8	07:23 19:39		08:15 18:30	08:12 16:37	08:48 16:25			
23	05:42 21:46	06:32 20:49	07:00-07:05/5	07:24 19:37		08:17 18:28	08:13 16:35	08:48 16:26			
24	05:44 21:45	06:34 20:47	07:11-07:17/6	07:26 19:34		08:19 18:26	08:15 16:34	08:49 16:26			
25	05:45 21:44	06:36 20:45	07:25-07:32/7	07:28 19:32		08:21 17:24	08:17 16:33	08:49 16:27			
26	05:47 21:42	06:37 20:42	07:23-07:33/10	07:30 19:29		08:23 17:22	08:18 16:32	08:50 16:28			
27	05:48 21:41	06:39 20:40	07:22-07:34/12	07:31 19:27		08:24 17:20	08:20 16:31	08:50 16:29			
28	05:50 21:39	06:41 20:38	07:21-07:35/14	07:33 19:25		08:26 17:18	08:22 16:30	08:50 16:29			
29	05:51 21:37	06:42 20:36	07:20-07:34/14	07:35 19:22		08:28 17:16	08:23 16:30	08:50 16:30			
30	05:53 21:36	06:44 20:33	07:20-07:34/14	07:36 19:20		08:30 17:14	08:25 16:29	08:50 16:31			
31	05:54 21:34	06:46 20:31	07:19-07:33/14			08:32 17:12		08:50 16:32			
Potential sun hours		506	456	381	166	330	263	240	0	0	0
Sum of minutes with flicker		159	513			0	0				

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

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

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar per WTG

Calculation: 6778 Moanmore Lower Worst Case **WTG:** 8 - Moanmore T5**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January		February		March		April		May		June	
1	08:50	08:22	09:04-09:09/5		07:27	08:06-08:17/11	07:15	07:41-07:58/17	06:08		05:22	05:53-06:02/9
	16:33	17:23			18:16	08:35-08:55/20	20:12		21:04		21:52	
2	08:50	08:21	09:01-09:11/10		07:25	08:08-08:15/7	07:12	07:40-07:58/18	06:06		05:21	05:52-06:02/10
	16:35	17:25			18:18	08:36-08:54/18	20:13		21:06		21:53	
3	08:50	08:19	09:01-09:14/13		07:23	08:38-08:52/14	07:10	07:39-07:56/17	06:04		05:20	05:53-06:03/10
	16:36	17:26			18:20		20:15		21:08		21:54	
4	08:50	08:17	09:00-09:15/15		07:20	08:40-08:48/8	07:08	07:39-07:55/16	06:03		05:19	05:52-06:03/11
	16:37	17:28			18:21	07:52-07:59/7	20:17		21:09		21:55	
5	08:50	08:16	08:59-09:15/16		07:18	07:50-08:01/11	07:05	07:40-07:53/13	06:01		05:18	05:52-06:03/11
	16:38	17:30			18:23		20:19		21:11		21:56	
6	08:49	08:14	08:58-09:16/18		07:16	07:49-08:03/14	07:03	07:40-07:48/8	05:59		05:18	05:53-06:04/11
	16:39	17:32			18:25		20:20		21:13		21:57	
7	08:49	08:12	08:58-09:16/18		07:14	07:47-08:02/15	07:01	07:43-07:45/2	05:57		05:17	05:52-06:04/12
	16:41	17:34			18:27		20:22		21:14		21:58	
8	08:48	08:10	08:58-09:16/18		07:11	07:47-08:03/16	06:58		05:55		05:17	05:53-06:05/12
	16:42	17:36			18:29		20:24		21:16		21:59	
9	08:48	08:08	08:58-09:16/18		07:09	07:47-08:03/16	06:56		05:53		05:16	05:53-06:05/12
	16:43	17:38			18:31		20:26		21:18		22:00	
10	08:47	08:07	08:59-09:16/17		07:07	07:47-08:01/14	06:54		05:52		05:16	05:53-06:05/12
	16:45	17:40			18:32		20:27		21:19		22:00	
11	08:47	08:05	08:59-09:15/16		07:04	07:48-08:01/13	06:52		05:50		05:15	05:53-06:05/12
	16:46	17:42			18:34		20:29		21:21		22:01	
12	08:46	08:03	09:00-09:14/14		07:02	07:49-07:59/10	06:49		05:48		05:15	05:54-06:06/12
	16:48	17:44			18:36	07:36-07:37/1	20:31		21:23		22:02	
13	08:45	08:01	09:02-09:13/11		07:00	07:51-07:56/5	06:47		05:46		05:14	05:53-06:05/12
	16:49	17:46			18:38	07:30-07:40/10	20:33		21:24		22:03	
14	08:44	07:59	09:04-09:11/7		06:57	07:28-07:42/14	06:45		05:45		05:14	05:54-06:06/12
	16:51	17:48			18:40		20:34		21:26		22:03	
15	08:44	07:57			06:55	07:26-07:42/16	06:42		05:43		05:14	05:54-06:06/12
	16:52	17:49			18:41		20:36		21:28		22:04	
16	08:43	07:55			06:53	07:25-07:42/17	06:40		05:42		05:14	05:54-06:06/12
	16:54	17:51			18:43		20:38		21:29		22:04	
17	08:42	07:53	08:45-08:48/3		06:50	07:24-07:43/19	06:38		05:40		05:14	05:54-06:06/12
	16:56	17:53			18:45		20:40		21:31		22:05	
18	08:41	07:51	08:41-08:53/12		06:48	07:22-07:42/20	06:36		05:38		05:14	05:55-06:06/11
	16:57	17:55			18:47		20:41		21:32		22:05	
19	08:40	07:49	08:18-08:22/4		06:46	07:18-07:41/23	06:34		05:37		05:14	05:55-06:07/12
	16:59	17:57	08:39-08:55/16		18:49		20:43		21:34		22:06	
20	08:39	07:47	08:13-08:24/11		06:43	07:15-07:39/24	06:31		05:36		05:14	05:55-06:07/12
	17:01	17:59	08:37-08:55/18		18:50		20:45		21:35		22:06	
21	08:37	07:45	08:12-08:25/13		06:41	07:13-07:38/25	06:29		05:34		05:14	05:56-06:08/12
	17:03	18:01	08:36-08:56/20		18:52		20:47		21:37		22:06	
22	08:36	07:42	08:11-08:25/14		06:39	07:12-07:36/24	06:27		05:33		05:14	05:56-06:08/12
	17:04	18:03	08:35-08:57/22		18:54		20:48		21:38		22:06	
23	08:35	07:40	08:09-08:26/17		06:36	07:11-07:34/23	06:25		05:31		05:14	05:56-06:08/12
	17:06	18:05	08:35-08:58/23		18:56		20:50		21:40		22:07	
24	08:34	07:38	08:08-08:26/18		06:34	07:11-07:31/20	06:23		05:30		05:15	05:56-06:08/12
	17:08	18:07	08:35-08:58/23		18:57		20:52		21:41		22:07	
25	08:32	07:36	08:06-08:24/18		06:31	07:11-07:26/15	06:21		05:29		05:15	05:57-06:08/11
	17:10	18:08	08:34-08:57/23		18:59		20:54		21:43		22:07	
26	08:31	07:34	08:06-08:23/17		06:29	07:11-07:25/14	06:19		05:28		05:16	05:56-06:08/12
	17:11	18:10	08:34-08:57/23		19:01		20:55		21:44		22:07	
27	08:30	07:32	08:06-08:21/15		06:27	07:12-07:24/12	06:16		05:27		05:16	05:57-06:09/12
	17:13	18:12	08:34-08:57/23		19:03		20:57		21:45		22:07	
28	08:28	07:29	08:06-08:18/12		06:24	07:13-07:21/8	06:14		05:26		05:16	05:57-06:09/12
	17:15	18:14	08:35-08:56/21		19:05		20:59		21:47		22:06	
29	08:27				07:22	07:48-07:57/9	06:12		05:24		05:17	05:57-06:09/12
	17:17				20:06		21:01		21:48		22:06	
30	08:25				07:20	07:47-07:58/11	06:10		05:23	05:55-06:00/5	05:18	05:57-06:09/12
	17:19				20:08		21:02		21:49		22:06	
31	08:24				07:17	07:42-07:58/16			05:22	05:54-06:01/7		
	17:21				20:10				21:50			
Potential sun hours	255	276			367		418		489		503	
Sum of minutes with flicker	0	562			520		91		12		348	

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

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar per WTG

Calculation: 6778 Moanmore Lower Worst Case **WTG:** 8 - Moanmore T5**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	July		August		September		October		November		December	
1	05:18	05:57-06:10/13	05:56	06:48			07:38	08:29-08:37/8	07:34	08:28-08:45/17	08:26	
	22:06		21:33	20:29			19:18	08:12-08:18/6	17:10		16:28	
2	05:19	05:58-06:10/12	05:58	06:49			07:40	08:27-08:39/12	07:36	08:28-08:46/18	08:28	
	22:05		21:31	20:26			19:15		17:08		16:27	
3	05:20	05:57-06:10/13	05:59	06:51			07:42	08:25-08:39/14	07:37	08:28-08:46/18	08:29	
	22:05		21:29	20:24			19:13		17:06		16:27	
4	05:20	05:58-06:10/12	06:01	06:53			07:43	08:24-08:40/16	07:39	08:28-08:46/18	08:30	
	22:05		21:27	20:22			19:11		17:04		16:26	
5	05:21	05:58-06:10/12	06:02	06:54	07:40-07:42/2		07:45	08:24-08:40/16	07:41	08:28-08:45/17	08:32	
	22:04		21:26	20:20			19:08		17:02		16:26	
6	05:22	05:59-06:11/12	06:04	06:56	07:36-07:44/8		07:47	08:24-08:40/16	07:43	08:29-08:45/16	08:33	
	22:04		21:24	20:17			19:06		17:01		16:25	
7	05:23	05:59-06:11/12	06:06	06:58	07:35-07:48/13		07:49	08:23-08:38/15	07:45	08:30-08:44/14	08:34	
	22:03		21:22	20:15			19:04		16:59		16:25	
8	05:24	06:00-06:11/11	06:07	06:59	07:33-07:49/16		07:50	08:24-08:37/13	07:47	08:31-08:43/12	08:36	
	22:02		21:20	20:12			19:01		16:57		16:24	
9	05:25	05:59-06:10/11	06:09	07:01	07:33-07:50/17		07:52	08:26-08:36/10	07:48	08:32-08:42/10	08:37	
	22:02		21:18	20:10			18:59		16:55		16:24	
10	05:26	06:00-06:10/10	06:11	07:03	07:33-07:51/18		07:54	09:13-09:25/12	07:50	08:35-08:39/4	08:38	
	22:01		21:16	20:08			18:57	08:28-08:33/5	16:54		16:24	
11	05:27	06:00-06:09/9	06:12	07:04	07:33-07:50/17		07:56	08:44-08:47/3	07:52		08:39	
	22:00		21:14	20:05			18:54	09:11-09:27/16	16:52		16:24	
12	05:28	06:02-06:10/8	06:14	07:06	07:34-07:50/16		07:57	08:40-08:49/9	07:54		08:40	
	21:59		21:12	20:03			18:52	09:09-09:27/18	16:51		16:23	
13	05:29	06:03-06:09/6	06:16	07:08	07:38-07:49/11		07:59	08:39-08:50/11	07:56		08:41	
	21:58		21:10	20:01			18:50	09:08-09:28/20	16:49		16:23	
14	05:31	06:04-06:08/4	06:17	07:09	07:38-07:47/9		08:01	08:38-08:51/13	07:58		08:42	
	21:57		21:08	19:58			18:48	09:07-09:29/22	16:47		16:23	
15	05:32		06:19	07:11	08:03-08:11/8		08:03	08:38-08:54/16	07:59		08:43	
	21:56		21:06	19:56	07:41-07:45/4		18:45	09:06-09:29/23	16:46		16:23	
16	05:33		06:21	07:13	08:00-08:12/12		08:04	08:38-08:56/18	08:01		08:44	
	21:55		21:04	19:53			18:43	09:06-09:29/23	16:45		16:23	
17	05:34		06:22	07:14	07:59-08:13/14		08:06	08:38-08:57/19	08:03		08:45	
	21:54		21:02	19:51			18:41	09:06-09:29/23	16:43		16:24	
18	05:36		06:24	07:16	07:59-08:14/15		08:08	08:39-08:57/18	08:05		08:46	
	21:53		21:00	19:49			18:39	09:06-09:29/23	16:42		16:24	
19	05:37		06:26	07:18	07:57-08:17/20		08:10	08:41-08:57/16	08:07		08:46	
	21:52		20:58	19:46			18:37	09:06-09:29/23	16:40		16:24	
20	05:38		06:27	07:19	07:57-08:20/23		08:12	08:42-08:57/15	08:08		08:47	
	21:50		20:56	19:44			18:34	09:06-09:27/21	16:39		16:25	
21	05:40		06:29	07:21	07:58-08:21/23		08:13	08:42-08:55/13	08:10		08:48	
	21:49		20:53	19:41			18:32	09:06-09:26/20	16:38		16:25	
22	05:41		06:31	07:23	07:57-08:22/25		08:15	08:44-08:54/10	08:12		08:48	
	21:48		20:51	19:39			18:30	09:07-09:25/18	16:37		16:25	
23	05:42		06:32	07:25	07:59-08:23/24		08:17	08:49-08:50/1	08:13		08:49	
	21:46		20:49	19:37			18:28	09:09-09:24/15	16:36		16:26	
24	05:44		06:34	07:26	08:01-08:25/24		08:19	09:11-09:21/10	08:15		08:49	
	21:45		20:47	19:34			18:26		16:34		16:27	
25	05:45		06:36	07:28	08:04-08:24/20		07:21		08:17		08:49	
	21:44		20:45	19:32			17:24		16:33		16:27	
26	05:47		06:37	07:30	08:05-08:24/19		07:23		08:18		08:50	
	21:42		20:42	19:30			17:22		16:32		16:28	
27	05:48		06:39	07:31	08:06-08:24/18		07:24		08:20		08:50	
	21:41		20:40	19:27			17:20		16:31		16:29	
28	05:50		06:41	07:33	08:07-08:24/17		07:26	08:33-08:41/8	08:22		08:50	
	21:39		20:38	19:25			17:18		16:30		16:29	
29	05:51		06:42	07:35	08:08-08:22/14		07:28	08:31-08:43/12	08:23		08:50	
	21:38		20:36	19:22			17:16		16:30		16:30	
30	05:53		06:44	07:36	08:09-08:21/12		07:30	08:30-08:44/14	08:25		08:50	
	21:36		20:33	19:20			17:14		16:29		16:31	
31	05:54		06:46				07:32	08:29-08:45/16			08:50	
	21:34		20:31				17:12				16:32	
Potential sun hours	506		456	381			330		263		240	
Sum of minutes with flicker	145		0	419			630		144		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

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar per WTG

Calculation: 6778 Moanmore Lower Worst Case **WTG:** 9 - Moanmore T6**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

January		February		March		April		May		June	
1	08:50 16:33	08:22 17:23		07:27 18:16	08:02-08:13/11	07:15 20:12	07:42-07:55/13	06:08 21:04	05:22 21:52		
2	08:50 16:35	08:21 17:25		07:25 18:18	08:01-08:14/13	07:12 20:13	07:41-07:56/15	06:06 21:06	05:21 21:53		
3	08:50 16:36	08:19 17:26		07:23 18:20	08:00-08:15/15	07:10 20:15	07:38-07:55/17	06:04 21:08	05:20 21:54		
4	08:50 16:37	08:17 17:28		07:20 18:21	07:58-08:15/17	07:08 20:17	07:37-07:54/17	06:03 21:09	05:19 21:55		
5	08:50 16:38	08:16 17:30		07:18 18:23	07:58-08:15/17	07:05 20:19	07:34-07:54/20	06:01 21:11	05:18 21:56		
6	08:49 16:39	08:14 17:32		07:16 18:25	07:59-08:15/16	07:03 20:20	07:31-07:52/21	05:59 21:13	05:18 21:57		
7	08:49 16:41	08:12 17:34		07:14 18:27	07:58-08:13/15	07:01 20:22	07:29-07:50/21	05:57 21:14	05:17 21:58		
8	08:48 16:42	08:10 17:36		07:11 18:29	07:35-07:41/6	06:58 20:24	07:29-07:49/20	05:55 21:16	05:16 21:59		
9	08:48 16:43	08:08 17:38		07:09 18:31	07:34-07:43/9	06:56 20:26	07:27-07:46/19	05:53 21:18	05:16 22:00		
10	08:47 16:45	08:07 17:40		07:07 18:32	07:32-07:43/11	06:54 20:27	07:27-07:44/17	05:51 21:19	05:16 22:00		
11	08:47 16:46	08:05 17:42		07:04 18:34	07:32-07:44/12	06:52 20:29	07:28-07:40/12	05:50 21:21	05:15 22:01		
12	08:46 16:48	08:03 17:44		07:02 18:36	07:28-07:44/16	06:49 20:31	07:29-07:39/10	05:48 21:23	05:15 22:02		
13	08:45 16:49	08:01 17:46		07:00 18:38	07:26-07:42/16	06:47 20:33	07:30-07:38/8	05:46 21:24	05:14 22:03		
14	08:44 16:51	07:59 17:48		06:57 18:40	07:25-07:42/17	06:45 20:34	07:09-07:23/14	05:45 21:26	05:14 22:03		
15	08:44 16:52	07:57 17:49		06:55 18:41	07:24-07:39/15	06:42 20:36	07:09-07:23/14	05:43 21:28	05:14 22:04		
16	08:43 16:54	07:55 17:51		06:53 18:43	07:24-07:36/12	06:40 20:38	07:09-07:22/13	05:42 21:29	05:14 22:04		
17	08:42 16:56	07:53 17:53		06:50 18:45	07:25-07:35/10	06:38 20:40	07:10-07:21/11	05:40 21:31	05:14 22:05		
18	08:41 16:57	07:51 17:55		06:48 18:47	07:26-07:32/6	06:36 20:41	07:11-07:17/6	05:38 21:32	05:14 22:05		
19	08:40 16:59	07:49 17:57		06:46 18:49	07:28-07:32/4	06:34 20:43		05:37 21:34	05:14 22:06		
20	08:39 17:01	07:47 17:59		06:43 18:50	07:23-07:35/12	06:31 20:45		05:36 21:35	05:14 22:06		
21	08:37 17:02	07:45 18:01		06:41 18:52	07:22-07:37/15	06:29 20:47		05:34 21:37	05:14 22:06		
22	08:36 17:04	07:42 18:03		06:38 18:54	07:20-07:38/18	06:27 20:48		05:33 21:38	05:14 22:06		
23	08:35 17:06	07:40 18:05		06:36 18:56	07:19-07:38/19	06:25 20:50		05:31 21:40	05:14 22:07		
24	08:34 17:08	07:38 18:06		06:34 18:57	07:18-07:38/20	06:23 20:52		05:30 21:41	05:15 22:07		
25	08:32 17:10	07:36 18:08		06:31 18:59	07:18-07:38/20	06:21 20:54		05:29 21:43	05:15 22:07		
26	08:31 17:11	07:34 18:10		06:29 19:01	07:17-07:37/20	06:19 20:55		05:28 21:44	05:15 22:07		
27	08:30 17:13	07:32 18:12		06:27 19:03	07:18-07:37/19	06:16 20:57		05:27 21:45	05:16 22:07		
28	08:28 17:15	07:29 18:14	08:05-08:11/6	06:24 19:04	07:17-07:36/19	06:14 20:59		05:25 21:47	05:16 22:06		
29	08:27 17:17			07:22 20:06	08:18-08:35/17	06:12 21:01		05:24 21:48	05:17 22:06		
30	08:25 17:19			07:20 20:08	08:20-08:33/13	06:10 21:02	07:47-07:54/7	05:23 21:49	05:18 22:06		
31	08:24 17:21			07:17 20:10	08:21-08:30/9		07:44-07:54/10	05:22 21:50			
Potential sun hours		255	276	367		418		489	503		
Sum of minutes with flicker		0	6	576		299		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

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
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Licensed user:

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IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar per WTG

Calculation: 6778 Moanmore Lower Worst Case **WTG:** 9 - Moanmore T6**Assumptions for shadow calculations**

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

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	July	August	September	October	November	December
1	05:18 22:06	05:56 21:33	06:48 20:29	07:27-07:39/12 07:14-07:21/7	07:38 19:18	08:06-08:23/17 17:10
2	05:19 22:05	05:58 21:31	06:49 20:26	07:26-07:43/17 20:26	07:40 19:15	08:09-08:23/14 17:08
3	05:20 22:05	05:59 21:29	06:51 20:24	07:25-07:44/19 20:24	07:42 19:13	08:10-08:21/11 17:06
4	05:20 22:05	06:01 21:27	06:53 20:22	07:26-07:46/20 20:22	07:43 19:11	08:10-08:20/10 17:04
5	05:21 22:04	06:02 21:26	06:54 20:20	07:26-07:47/21 20:20	07:45 19:08	08:11-08:19/8 17:02
6	05:22 22:04	06:04 21:24	06:56 20:17	07:27-07:48/21 20:17	07:47 19:06	08:36-08:50/14 17:01
7	05:23 22:03	06:06 21:22	06:58 20:15	07:29-07:49/20 20:15	07:49 19:04	08:34-08:50/16 16:59
8	05:24 22:02	06:07 21:20	06:59 20:12	07:31-07:49/18 20:12	07:50 19:01	08:34-08:50/16 16:57
9	05:25 22:02	06:09 21:18	07:01 20:10	07:32-07:49/17 20:10	07:52 18:59	08:33-08:50/17 16:55
10	05:26 22:01	06:11 21:16	07:03 20:08	07:34-07:49/15 20:08	07:54 18:57	08:34-08:49/15 16:54
11	05:27 22:00	06:12 21:14	07:04 20:05	07:34-07:48/14 20:05	07:56 18:54	08:34-08:49/15 16:52
12	05:28 21:59	06:14 21:12	07:06 20:03	08:14-08:22/8 07:36-07:47/11	07:57 18:52	08:34-08:47/13 16:51
13	05:29 21:58	06:16 21:10	07:08 20:01	08:10-08:23/13 07:53-08:01/8	07:59 18:50	08:36-08:45/9 16:49
14	05:31 21:57	06:17 21:08	07:09 19:58	08:09-08:25/16 07:50-08:01/11	08:01 18:48	07:58 16:47
15	05:32 21:56	06:19 21:06	07:11 19:56	08:08-08:26/18 07:49-08:02/13	08:03 18:45	07:59 16:46
16	05:33 21:55	06:21 21:04	07:13 19:53	08:06-08:25/19 07:48-08:01/13	08:04 18:43	08:01 16:45
17	05:34 21:54	06:22 21:02	07:14 19:51	08:06-08:26/20 07:48-08:01/13	08:06 18:41	08:03 16:43
18	05:36 21:53	06:24 21:00	07:16 19:49	08:06-08:26/20 07:48-08:01/13	08:08 18:39	08:05 16:42
19	05:37 21:52	06:26 20:58	07:18 19:46	08:05-08:25/20 07:48-07:59/11	08:10 18:37	08:07 16:40
20	05:38 21:50	06:27 20:56	07:19 19:44	08:05-08:24/19 07:49-07:58/9	08:12 18:34	08:08 16:39
21	05:40 21:49	06:29 20:53	07:21 19:41	08:06-08:24/18 19:41	08:13 18:32	08:10 16:38
22	05:41 21:48	06:31 20:51	07:23 19:39	08:06-08:22/16 19:39	08:15 18:30	08:12 16:37
23	05:42 21:46	06:32 20:49	07:25 19:37	08:07-08:20/13 19:37	08:17 18:28	08:13 16:36
24	05:44 21:45	06:34 20:47	07:26 19:34	08:10-08:17/7 19:34	08:19 18:26	08:15 16:34
25	05:45 21:44	06:36 20:45	07:28 19:32	08:09-08:14/5 19:32	07:21 17:24	08:17 16:33
26	05:47 21:42	06:37 20:42	07:30 19:30	08:07-08:16/9 19:30	07:23 17:22	08:18 16:32
27	05:48 21:41	06:39 20:40	07:31 19:27	08:06-08:17/11 19:27	07:24 17:20	08:20 16:31
28	05:50 21:39	06:41 20:38	07:33 19:25	08:06-08:17/11 19:25	07:26 17:18	08:22 16:30
29	05:51 21:38	06:42 20:36	07:35 19:22	08:05-08:21/16 19:22	07:28 17:16	08:23 16:30
30	05:53 21:36	06:44 20:33	07:36 19:20	08:05-08:22/17 19:20	07:30 17:14	08:25 16:29
31	05:54 21:34	06:46 20:31	07:27-07:38/11 07:13-07:23/10		07:32 17:12	08:50 16:32
Potential sun hours	506	456	381	330	263	240
Sum of minutes with flicker	0	101	586	195	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

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar per WTG

Calculation: 6778 Moanmore Lower Worst Case **WTG:** 10 - Moanmore T7**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	January			February			March			April			May			June		
1	08:50	08:22	07:27	07:15	07:59-08:08/9	06:08	07:20-07:48/28	05:22										
	16:33	17:23	18:16	20:12		21:04	06:35-07:10/35	21:52										
2	08:50	08:21	07:25	07:12	08:02-08:05/3	06:06	07:20-07:48/28	05:21										
	16:35	17:25	18:18	20:13		21:06	06:35-07:10/35	21:53										
3	08:50	08:19	07:23	07:10		06:04	07:21-07:48/27	05:20										
	16:36	17:26	18:20	20:15		21:08	06:35-07:08/33	21:54										
4	08:50	08:17	07:20	07:08		06:03	07:21-07:47/26	05:19										
	16:37	17:28	18:21	20:17		21:09	06:34-07:06/32	21:55										
5	08:50	08:16	07:18	07:05		06:01	07:22-07:46/24	05:18										
	16:38	17:30	18:23	20:19		21:11	06:34-07:04/30	21:56										
6	08:49	08:14	07:16	07:03		05:59	07:22-07:45/23	05:18										
	16:39	17:32	18:25	20:20		21:13	06:34-07:00/26	21:57										
7	08:49	08:12	07:14	07:01		05:57	07:24-07:44/20	05:17										
	16:41	17:34	18:27	20:22		21:14	06:35-06:59/24	21:58										
8	08:48	08:10	07:11	06:58		05:55	07:25-07:42/17	05:17										
	16:42	17:36	18:29	20:24		21:16	06:36-06:58/22	21:59										
9	08:48	08:08	07:09	06:56		05:53	07:26-07:40/14	05:16										
	16:43	17:38	18:31	20:26		21:18	06:47-06:56/9	22:00										
10	08:47	08:07	07:07	06:54	07:27-07:33/6	05:51	07:29-07:39/10	05:16										
	16:45	17:40	18:32	20:27		21:20	06:50-06:55/5	22:00										
11	08:47	08:05	07:04	06:52	07:25-07:36/11	05:50		05:15										
	16:46	17:42	18:34	20:29		21:21		22:01										
12	08:46	08:03	07:02	06:49	07:23-07:37/14	05:48		05:15										
	16:48	17:44	18:36	20:31		21:23		22:02										
13	08:45	08:01	07:00	06:47	07:23-07:38/15	05:46		05:14										
	16:49	17:46	18:38	20:33		21:24		22:03										
14	08:44	07:59	06:57	06:45	07:21-07:38/17	05:45		05:14										
	16:51	17:48	18:40	20:34		21:26		22:03										
15	08:44	07:57	06:55	06:42	07:21-07:38/17	05:43		05:14										
	16:52	17:49	18:41	20:36		21:28		22:04										
16	08:43	07:55	06:53	06:40	07:21-07:38/17	05:42		05:14										
	16:54	17:51	18:43	20:38		21:29		22:04										
17	08:42	07:53	06:50	06:38	07:21-07:37/16	05:40		05:14										
	16:56	17:53	18:45	20:40		21:31		22:05										
18	08:41	07:51	06:48	06:36	07:21-07:39/18	05:38		05:14										
	16:57	17:55	18:47	20:41	07:09-07:15/6	21:32		22:05										
19	08:40	07:49	06:46	06:34	07:21-07:43/22	05:37		05:14										
	16:59	17:57	18:49	20:43	07:05-07:16/11	21:34		22:06										
20	08:39	07:47	06:43	06:31	07:22-07:45/23	05:36		05:14										
	17:01	17:59	18:50	20:45	07:04-07:17/13	21:35		22:06										
21	08:37	07:45	06:41	06:29	07:24-07:47/23	05:34		05:14										
	17:02	18:01	18:52	20:47	07:02-07:18/16	21:37		22:06										
22	08:36	07:42	06:39	06:27	07:25-07:48/23	05:33		05:14										
	17:04	18:03	18:54	20:49	07:01-07:18/17	21:38		22:06										
23	08:35	07:40	06:36	06:25	07:24-07:48/24	05:31		05:14										
	17:06	18:05	18:56	20:50	06:59-07:18/19	21:40		22:07										
24	08:34	07:38	06:34	06:23	07:23-07:49/26	05:30		05:15										
	17:08	18:06	18:57	20:52	06:57-07:18/21	21:41		22:07										
25	08:32	07:36	06:31	06:21	07:22-07:49/27	05:29		05:15										
	17:10	18:08	18:59	20:54	06:55-07:18/23	21:43		22:07										
26	08:31	07:34	06:29	06:19	07:21-07:50/29	05:28		05:15										
	17:11	18:10	19:01	20:56	06:54-07:17/23	21:44		22:07										
27	08:30	07:32	06:27	06:16	07:21-07:50/29	05:27		05:16										
	17:13	18:12	19:03	20:57	06:51-07:16/25	21:45		22:07										
28	08:28	07:29	06:24	06:14	07:20-07:50/30	05:25		05:16										
	17:15	18:14	19:05	20:59	06:48-07:15/27	21:47		22:07										
29	08:27		07:22	06:12	07:20-07:49/29	05:24		05:17										
	17:17		20:06	21:01	06:47-07:14/27	21:48		22:06										
30	08:25		07:20	06:10	07:20-07:49/29	05:23		05:18										
	17:19		20:08	21:02	06:37-07:12/35	21:49		22:06										
31	08:24		07:17			05:22												
	17:21		20:10			21:50												
Potential sun hours	255	276	367	418		489		503										
Sum of minutes with flicker	0	0	441	723		476		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

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar per WTG**Calculation:** 6778 Moanmore Lower Worst Case **WTG:** 10 - Moanmore T7**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
229	231	210	320	200	640	608	691	568	658	724	1,086	671	733	661	530	8,760

	July	August	September	October	November	December
1	05:18 22:06	05:56 21:33	06:48 20:29	07:24-07:35/11 19:18	07:34 17:10	08:26 16:28
2	05:19 22:05	05:58 21:31	06:49 20:27	07:26-07:32/6 19:15	07:36 17:08	08:28 16:27
3	05:20 22:05	05:59 21:29	06:51 20:24	07:27-07:33/3 19:13	07:37 17:06	08:29 16:27
4	05:20 22:05	06:01 21:27	06:53 20:22	07:28-07:34/3 19:11	07:39 17:04	08:30 16:26
5	05:21 22:04	06:02 21:26	06:54 20:20	07:29-07:35/3 19:08	07:41 17:02	08:32 16:26
6	05:22 22:04	06:04 21:24	06:56 20:17	07:30-07:36/3 19:06	07:43 17:01	08:33 16:25
7	05:23 22:03	06:06 21:22	06:58 20:15	07:31-07:37/3 19:04	07:45 16:59	08:34 16:25
8	05:24 22:02	06:07 21:20	06:59 20:12	07:32-07:38/3 19:01	07:47 16:57	08:36 16:24
9	05:25 22:02	06:09 21:18	07:01 20:10	07:33-07:39/3 18:59	07:49 16:55	08:37 16:24
10	05:26 22:01	06:11 21:16	07:03 20:08	07:34-07:40/3 18:57	07:50 16:54	08:38 16:24
11	05:27 22:00	06:12 21:14	07:04 20:05	07:35-07:41/3 18:54	07:52 16:52	08:39 16:24
12	05:28 21:59	06:14 21:12	07:06 20:03	07:36-07:42/3 18:52	07:54 16:51	08:40 16:23
13	05:29 21:58	06:16 21:10	07:08 20:01	07:37-07:43/3 18:50	07:56 16:49	08:41 16:23
14	05:31 21:57	06:17 21:08	07:09 19:58	07:38-07:44/3 18:48	07:58 16:47	08:42 16:23
15	05:32 21:56	06:19 21:06	07:11 19:56	07:39-07:45/3 18:45	07:59 16:46	08:43 16:23
16	05:33 21:55	06:21 21:04	07:13 19:53	07:40-07:46/3 18:43	08:01 16:45	08:44 16:23
17	05:34 21:54	06:22 21:02	07:14 19:51	07:41-07:47/3 18:41	08:03 16:43	08:45 16:24
18	05:36 21:53	06:24 21:00	07:16 19:49	07:42-07:48/3 18:39	08:05 16:42	08:46 16:24
19	05:37 21:52	06:26 20:58	07:18 19:46	07:43-07:49/3 18:37	08:07 16:40	08:46 16:24
20	05:38 21:50	06:27 20:56	07:19 19:44	07:44-07:50/3 18:34	08:08 16:39	08:47 16:24
21	05:40 21:49	06:29 20:53	07:21 19:41	07:45-07:51/3 18:32	08:10 16:38	08:48 16:25
22	05:41 21:48	06:31 20:51	07:23 19:39	07:46-07:52/3 18:30	08:12 16:37	08:48 16:25
23	05:42 21:47	06:32 20:49	07:25 19:37	07:47-07:53/3 18:28	08:13 16:36	08:49 16:26
24	05:44 21:45	06:34 20:47	07:26 19:34	07:48-07:54/3 18:26	08:15 16:34	08:49 16:26
25	05:45 21:44	06:36 20:45	07:28 19:32	07:49-07:55/3 18:24	08:17 16:33	08:49 16:27
26	05:47 21:42	06:37 20:42	07:30 19:30	07:50-07:56/3 18:22	08:18 16:32	08:50 16:28
27	05:48 21:41	06:39 20:40	07:31 19:27	07:51-07:57/3 18:20	08:20 16:31	08:50 16:29
28	05:50 21:39	06:41 20:38	07:33 19:25	07:52-07:58/3 18:18	08:22 16:30	08:50 16:29
29	05:51 21:38	06:42 20:36	07:35 19:22	07:53-07:59/3 18:16	08:23 16:30	08:50 16:30
30	05:53 21:36	06:44 20:33	07:36 19:20	07:54-07:60/3 18:14	08:25 16:29	08:50 16:31
31	05:54 21:34	06:46 20:31	07:38 19:18	07:55-07:61/3 18:12	08:27 16:28	08:50 16:32
Potential sun hours	506	456	381	330	263	240
Sum of minutes with flicker	0	1181	470	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

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

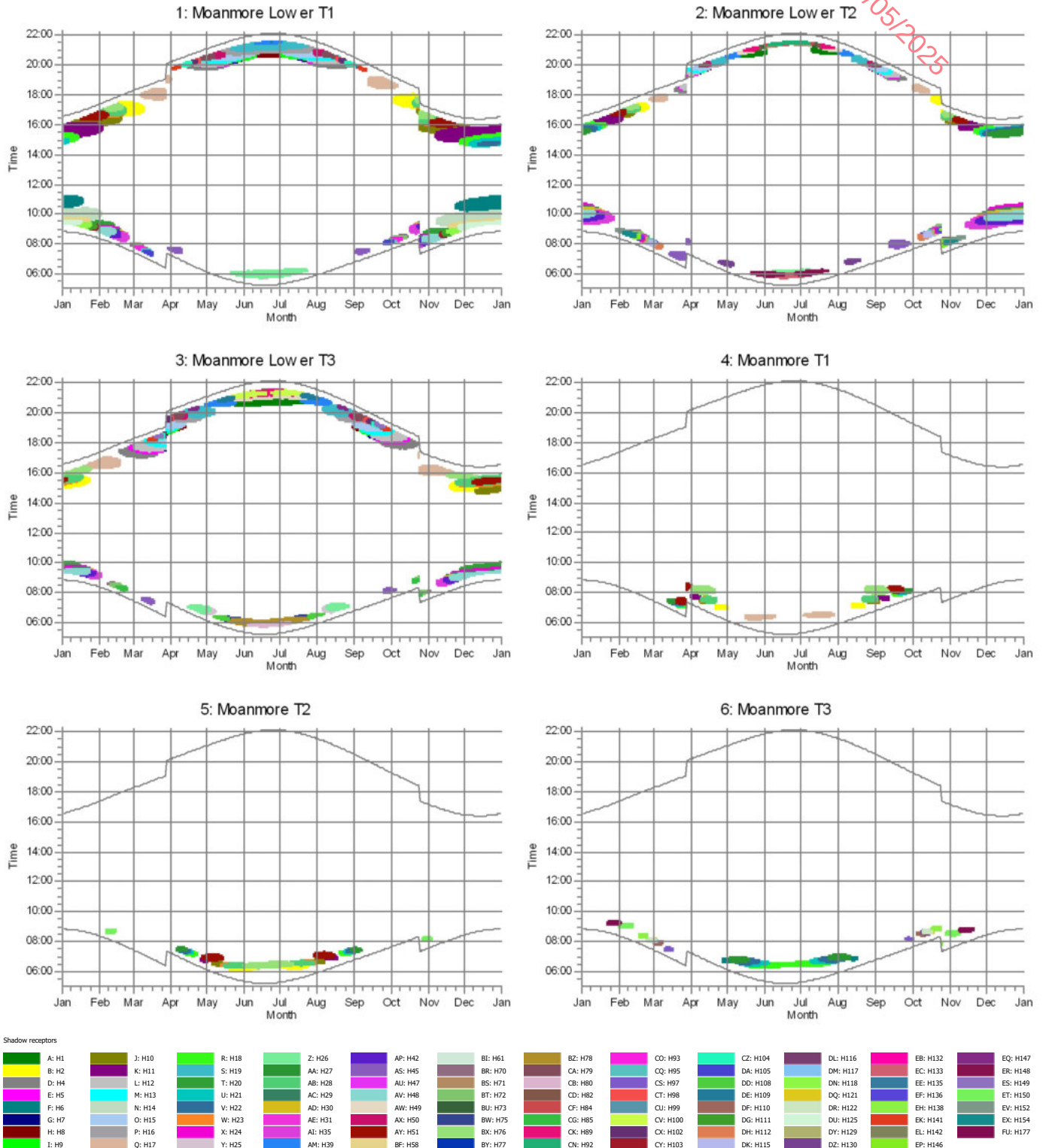
Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar per WTG, graphical

Calculation: 6778 Moanmore Lower Worst Case



Project:

6778 Moanmore Lower WF

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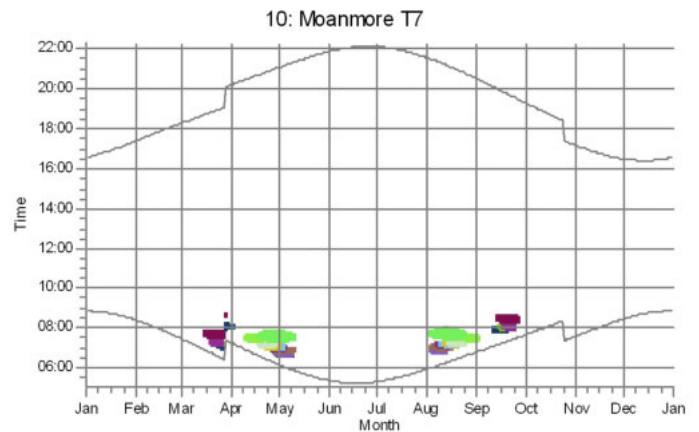
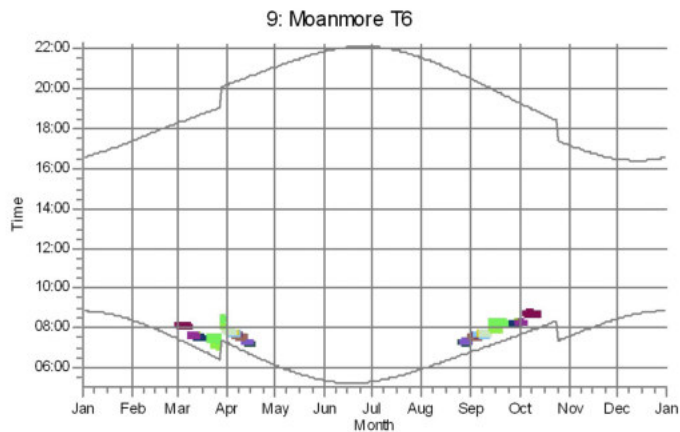
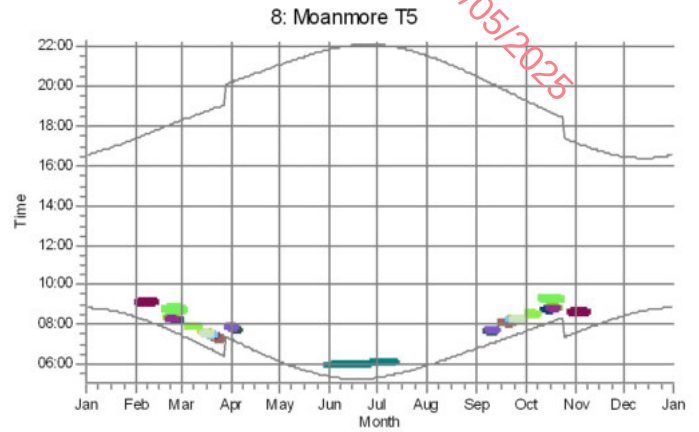
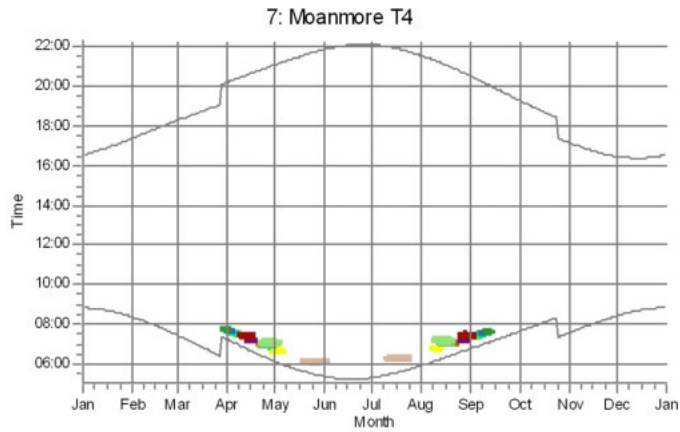
Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar per WTG, graphical

Calculation: 6778 Moanmore Lower Worst Case



Shadow receptors

B: H2	K: H11	U: H21	AA: H27	BK: H76	DF: H110	DQ: H121	ET: H150	FU: H177
F: H6	Q: H17	V: H22	AB: H28	CR: H96	DL: H116	DR: H122	FG: H163	FV: H178
J: H10	R: H18	W: H23	AY: H51	CS: H97	DM: H117	EH: H138	FP: H172	

Project:

6778 Moanmore Lower WF

Description:

3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
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Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

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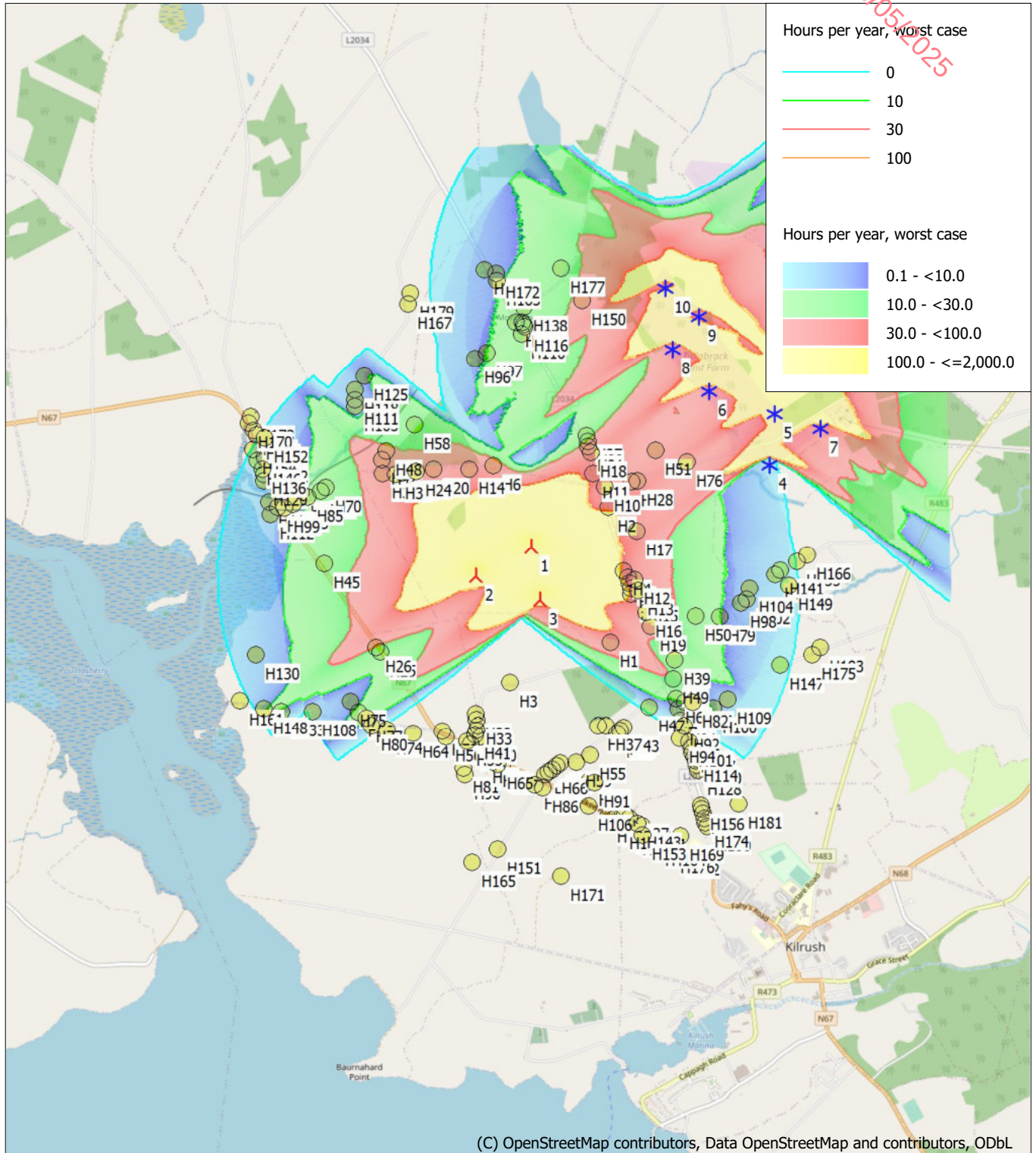
Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Map

Calculation: 6778 Moanmore Lower Worst Case



0 500 1000 1500 2000 m

Map: EMD OpenStreetMap , Print scale 1:40,000, Map center Irish ITM-IRENET95 (IE), geocentric, GRS80 East: 497,660 North: 657,950

▲ New WTG

★ Existing WTG

● Shadow receptor

Flicker map level: Elevation Grid Data Object: Ballykett WF Shadow Flicker_EMDGrid_0.wpg (1)

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