

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

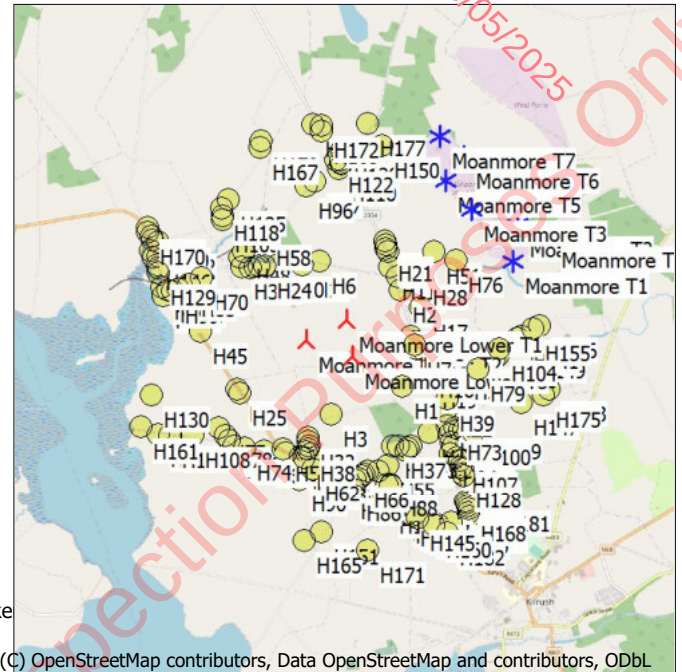
Monthly aggregation of real case reduction

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

Scale 1:75,000
New WTG Existing WTG Shadow receptor

WTGs

	Easting	Northing	Z	Row data/Description	WTG type		Type-generator	Power, rated	Rotor diameter	Hub height	Shadow data	
					Valid	Manufact.					Calculation distance	RPM
			[m]					[kW]	[m]	[m]	[m]	[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

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]
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...

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]
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

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]
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

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]
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: A - H1

Assumptions for shadow calculations

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

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

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
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	20:30 (3) 21:18 (3)	05:18 22:06	20:36 (3) 21:31 (3)	05:56 21:33	20:45 (2) 21:03 (2)	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	06:06 21:06	05:21 21:53	20:30 (3) 21:19 (3)	05:19 22:05	20:36 (3) 21:32 (3)	05:58 21:31	20:45 (2) 21:00 (2)	06:49 20:26	07:40 19:15	07:36 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	20:31 (3) 21:21 (3)	05:20 22:05	20:36 (3) 21:30 (3)	05:59 21:29	20:45 (2) 20:59 (2)	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	20:30 (2) 21:21 (3)	05:21 22:05	20:36 (3) 21:30 (3)	06:01 21:27	20:45 (2) 20:57 (2)	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	07:06 20:19	06:01 21:11	05:19 21:56	20:30 (3) 21:22 (3)	05:21 22:04	20:37 (3) 21:30 (3)	06:03 21:26	20:46 (2) 20:56 (2)	06:54 20:20	07:45 19:08	07:41 17:03	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	20:31 (3) 21:23 (3)	05:22 22:03	20:37 (3) 21:30 (3)	06:04 21:24	20:46 (2) 20:54 (2)	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	20:30 (3) 21:24 (3)	05:23 22:03	20:37 (3) 21:29 (3)	06:06 21:22	20:47 (2) 20:53 (2)	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	20:31 (3) 21:25 (3)	05:24 22:02	20:38 (3) 21:29 (3)	06:07 21:20	20:47 (2) 20:50 (2)	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	20:31 (3) 21:26 (3)	05:25 22:01	20:37 (3) 21:27 (3)	06:09 21:18	20:47 (2) 20:10	06:59 18:59	07:51 16:56	07:48 16:24	08:37 16:24
10	08:47 16:45	08:07 17:40	07:07 18:32	06:54 20:27	05:52 21:19	05:16 22:00	20:31 (3) 21:26 (3)	05:26 22:01	20:37 (3) 21:27 (3)	06:11 21:16	20:47 (2) 20:08	06:59 18:57	07:54 16:54	07:50 16:24	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	20:31 (3) 21:27 (3)	05:27 22:00	20:38 (3) 21:26 (3)	06:12 21:14	20:47 (2) 20:05	06:59 18:54	07:51 16:52	07:48 16:24	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	20:32 (3) 21:28 (3)	05:28 21:59	20:39 (3) 21:26 (3)	06:14 21:12	20:47 (2) 20:03	06:59 18:52	07:51 16:51	07:48 16:24	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 22:03	20:31 (3) 21:28 (3)	05:30 21:58	20:39 (3) 21:25 (3)	06:16 21:10	20:47 (2) 20:01	06:59 18:50	07:51 16:49	07:48 16:23	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	20:31 (3) 21:29 (3)	05:31 21:57	20:39 (3) 21:24 (3)	06:17 21:08	20:47 (2) 20:01	06:59 18:48	07:51 16:48	07:48 16:23	08:42 16:23
15	08:43 16:53	07:57 17:50	06:55 18:41	06:43 20:36	05:43 21:28	05:14 22:04	20:32 (3) 21:29 (3)	05:32 21:56	20:40 (3) 21:23 (3)	06:19 21:06	20:47 (2) 19:56	06:59 18:45	07:51 16:46	07:48 16:23	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	20:32 (3) 21:30 (3)	05:33 21:55	20:40 (3) 21:22 (3)	06:21 21:04	20:47 (2) 20:01	06:59 18:43	07:51 16:45	07:48 16:24	08:44 16:24
17	08:42 16:56	07:53 17:53	06:50 18:45	06:38 20:40	05:39 21:31	05:14 22:05	20:32 (3) 21:30 (3)	05:34 21:54	20:40 (3) 21:21 (3)	06:22 21:02	20:47 (2) 19:51	06:59 18:41	07:51 16:43	07:48 16:24	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	20:32 (3) 21:31 (3)	05:36 21:53	20:40 (3) 21:20 (3)	06:24 21:00	20:47 (2) 19:49	06:59 18:39	07:51 16:42	07:48 16:24	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	20:33 (3) 21:31 (3)	05:37 21:52	20:42 (3) 21:20 (3)	06:26 20:58	20:47 (2) 19:46	06:59 18:37	07:51 16:41	07:48 16:24	08:46 16:24
20	08:39 17:01	07:47 17:59	06:43 18:50	06:31 20:45	05:36 21:35	05:14 22:06	20:33 (3) 21:31 (3)	05:38 21:50	20:42 (3) 21:18 (3)	06:27 20:56	20:47 (2) 19:44	06:59 18:34	07:51 16:39	07:48 16:25	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	20:34 (3) 21:32 (3)	05:40 21:49	20:42 (3) 21:17 (3)	06:29 20:53	20:47 (2) 19:42	06:59 18:32	07:51 16:38	07:48 16:25	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	20:34 (3) 21:32 (3)	05:41 21:48	20:42 (3) 21:15 (3)	06:31 20:51	20:47 (2) 19:39	06:59 18:30	07:51 16:37	07:48 16:26	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	20:34 (3) 21:32 (3)	05:43 21:46	20:44 (3) 21:15 (2)	06:32 20:49	20:47 (2) 19:37	06:59 18:28	07:51 16:36	07:48 16:26	08:49 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	20:33 (3) 21:32 (3)	05:44 21:45	20:44 (3) 21:13 (2)	06:34 20:47	20:47 (2) 19:34	06:59 18:26	07:51 16:35	07:48 16:27	08:49 16:27
25	08:32 17:10	07:36 18:08	06:31 18:59	06:21 20:54	05:29 21:43	05:15 22:07	20:34 (3) 21:30 (3)	05:45 21:44	20:45 (2) 21:13 (2)	06:36 20:45	20:47 (2) 19:32	06:59 17:24	07:51 16:33	07:48 16:27	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	20:34 (3) 21:31 (3)	05:47 21:42	20:45 (2) 21:11 (2)	06:38 20:42	20:47 (2) 19:30	06:59 17:22	07:51 16:32	07:48 16:28	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	20:35 (3) 21:32 (3)	05:48 21:41	20:44 (2) 21:09 (2)	06:39 20:40	20:47 (2) 19:27	06:59 17:20	07:51 16:31	07:48 16:29	08:50 16:29
28	08:28 17:15	07:29 18:14	06:24 19:05	06:15 20:59	05:26 21:47	05:17 22:06	20:35 (3) 21:32 (3)	05:50 21:39	20:45 (2) 21:08 (2)	06:41 20:38	20:47 (2) 19:25	06:59 17:18	07:51 16:31	07:48 16:30	08:50 16:30
29	08:27 17:17	07:22 18:16	06:12 19:06	06:02 21:01	05:25 21:48	05:17 22:06	20:35 (3) 21:32 (3)	05:51 21:37	20:44 (2) 21:06 (2)	06:43 20:36	20:47 (2) 19:22	06:59 17:16	07:51 16:30	07:48 16:30	08:50 16:30
30	08:25 17:19	07:20 18:18	06:10 19:08	06:00 21:02	05:24 21:49	05:18 22:06	20:35 (3) 21:31 (3)	05:53 21:36	20:45 (2) 21:05 (2)	06:44 20:33	20:47 (2) 19:20	06:59 17:14	07:51 16:29	07:48 16:31	08:50 16:31
31	08:24 17:21	07:17 18:19	06:07 19:10	05:57 21:03	05:23 21:50	05:19 22:06	20:44 (2) 21:17 (3)	06:46 21:34	20:44 (2) 21:04 (2)	20:36 20:31	20:47 (2) 17:12	06:59 16:30	07:51 16:29	07:48 16:32	08:50 16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240	240	240	240
Total, worst case					729		1671	1246		86					
Sun reduction					0.37		0.30	0.26		0.30					
Oper. time red.					1.00		1.00	1.00		1.00					
Wind dir. red.					0.66		0.66	0.66		0.67					
Total reduction					0.24		0.20	0.18		0.20					
Total, real					178		329	219		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: 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)
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)	13
	16:35	41	15:41 (3)	17:25	18:18	46	17:27 (1)	20:13	21:06	11	06:45 (7)
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)	12
	16:36	41	15:41 (3)	17:26	18:20	43	17:26 (1)	20:15	21:08	11	06:44 (7)
4	08:50	15:01 (3)	08:17	07:20	16:53 (1)	07:08	06:03	06:33 (7)	05:19	06:07 (5)	11
	16:37	41	15:42 (3)	17:28	16:58 (1)	18:21	21:09	06:44 (7)	21:55	10	06:17 (5)
5	08:50	15:01 (3)	08:16	07:18	16:51 (1)	07:06	06:01	06:33 (7)	05:18	06:07 (5)	10
	16:38	41	15:42 (3)	17:30	17:00 (1)	18:23	21:11	06:43 (7)	21:56	10	06:17 (5)
6	08:49	15:03 (3)	08:14	07:16	16:49 (1)	07:03	05:59	06:34 (7)	05:18	06:08 (5)	9
	16:39	39	15:42 (3)	17:32	17:02 (2)	18:25	21:13	06:42 (7)	21:57	9	06:17 (5)
7	08:49	15:03 (3)	08:12	07:14	16:47 (1)	07:01	05:57	06:36 (7)	05:17	06:08 (5)	8
	16:41	39	15:42 (3)	17:34	17:04 (2)	18:27	21:14	06:41 (7)	21:58	8	06:16 (5)
8	08:48	15:03 (3)	08:10	07:11	16:46 (1)	06:59	05:55		05:17	06:10 (5)	6
	16:42	39	15:42 (3)	17:36	17:06 (2)	18:29	21:16		21:59	6	06:16 (5)
9	08:48	15:05 (3)	08:08	07:09	16:45 (1)	06:56	05:53		05:16	06:10 (5)	5
	16:43	38	15:43 (3)	17:38	17:08 (2)	18:31	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)	2
	16:45	38	15:43 (3)	17:40	17:10 (2)	18:32	21:19		22:00	2	06:14 (5)
11	08:47	15:06 (3)	08:05	07:04	16:43 (1)	06:52	05:50		05:15		
	16:46	37	15:43 (3)	17:42	17:13 (2)	18:34	20:29		22:01		
12	08:46	15:06 (3)	08:03	07:02	16:42 (1)	06:50	05:48		05:15		
	16:48	37	15:43 (3)	17:44	17:15 (2)	18:36	20:31		22:02		
13	08:45	15:07 (3)	08:01	07:00	16:42 (1)	06:48	05:46		05:15		
	16:49	35	15:42 (3)	17:46	17:17 (2)	18:38	20:33		22:03		
14	08:44	15:08 (3)	07:59	06:57	16:41 (1)	06:45	05:45		05:14		
	16:51	34	15:42 (3)	17:48	17:19 (2)	18:40	20:34		22:03		
15	08:44	15:09 (3)	07:57	06:55	16:40 (1)	06:43	05:43		05:14		
	16:53	33	15:42 (3)	17:49	17:21 (2)	18:41	20:36		22:04		
16	08:43	15:10 (3)	07:55	06:53	16:40 (1)	06:40	05:42		05:14		
	16:54	32	15:42 (3)	17:51	17:23 (2)	18:43	20:38		22:04		
17	08:42	15:12 (3)	07:53	06:50	16:40 (1)	06:50	05:40		05:14		
	16:56	29	15:41 (3)	17:53	17:25 (2)	18:45	20:40		22:05		
18	08:41	15:13 (3)	07:51	06:48	16:40 (1)	06:48	05:39		05:14		
	16:57	28	15:41 (3)	17:55	17:28 (1)	18:47	20:41		22:05		
19	08:40	15:15 (3)	07:49	06:46	16:38 (1)	06:46	05:37		05:14		
	16:59	26	15:41 (3)	17:57	17:29 (1)	18:49	20:43		22:06		
20	08:39	15:16 (3)	07:47	06:43	16:38 (1)	06:43	05:36		05:14		
	17:01	23	15:39 (3)	17:59	17:31 (1)	18:50	20:45		22:06		
21	08:37	15:18 (3)	07:45	06:41	16:38 (1)	06:41	05:34		05:14		
	17:03	20	15:38 (3)	18:01	17:31 (1)	18:52	20:47		22:06		
22	08:36	15:21 (3)	07:42	06:39	16:39 (1)	06:39	05:33		05:14		
	17:04	16	15:37 (3)	18:03	17:31 (1)	18:54	20:48		22:06		
23	08:35	15:24 (3)	07:40	06:36	16:39 (1)	06:36	05:32		05:15		
	17:06	9	15:33 (3)	18:05	17:31 (1)	18:56	20:50		22:07		
24	08:34		07:38	06:34	16:38 (1)	06:34	05:30		05:15		
	17:08		18:07	52	17:30 (1)	18:57	20:52		22:07		
25	08:32		07:36	06:31	16:39 (1)	06:31	05:29		05:15		
	17:10		18:08	51	17:30 (1)	18:59	20:54		22:07		
26	08:31		07:34	06:29	16:39 (1)	06:29	05:28		05:16		
	17:12		18:10	51	17:30 (1)	19:01	20:55		22:07		
27	08:30		07:32	06:27	16:40 (1)	06:27	05:27		05:16		
	17:13		18:12	49	17:29 (1)	19:03	20:57		22:07		
28	08:28		07:29	06:24	16:40 (1)	06:24	05:26		05:17		
	17:15		18:14	48	17:28 (1)	19:05	20:59		22:06		
29	08:27			07:22			06:12		05:17		
	17:17			20:06			21:01		22:06		
30	08:25			07:20			06:10		05:18		
	17:19			20:08			21:02		22:06		
31	08:24			07:17					05:18		
	17:21			20:10			21:50		06:05 (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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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

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

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	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	16:28
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	16:29
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	16:30
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
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	16:31
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
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)	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: 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)
	16:43	17:38		18:31	43	18:05 (3)	20:26		21:18	44	20:39 (1)
10	08:47	08:07		07:07		17:21 (3)	06:54		05:52		19:56 (1)
	16:45	17:40		18:32	45	18:06 (3)	20:27		21:19	43	20:39 (1)
11	08:47	08:05		07:04		17:21 (3)	06:52		05:50		19:56 (1)
	16:46	17:42		18:34	47	18:08 (3)	20:29		21:21	42	20:38 (1)
12	08:46	08:03		07:02		17:20 (3)	06:49		05:48		19:56 (1)
	16:48	17:44		18:36	50	18:10 (3)	20:31		21:23	41	20:37 (1)
13	08:45	08:01		07:00		17:20 (3)	06:47		05:46		19:57 (1)
	16:49	17:46		18:38	50	18:10 (3)	20:33		21:24	40	20:37 (1)
14	08:44	07:59		06:57		17:20 (3)	06:45		05:45		19:58 (1)
	16:51	17:48		18:40	50	18:10 (3)	20:34		21:26	38	20:36 (1)
15	08:44	07:57		06:55		17:19 (3)	06:43		05:43		19:59 (1)
	16:53	17:49		18:41	50	18:09 (3)	20:36		21:28	36	20:35 (1)
16	08:43	07:55		06:53		17:20 (3)	06:40		05:42		20:00 (1)
	16:54	17:51		18:43	48	18:08 (3)	20:38		21:29	35	20:35 (1)
17	08:42	07:53		06:50		17:20 (3)	06:38	20:10 (1)	05:40		20:00 (1)
	16:56	17:53		18:45	48	18:08 (3)	20:40	3	20:13 (1)	34	20:34 (1)
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)	31	20:33 (1)
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)	29	20:32 (1)
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)	27	20:31 (1)
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)	25	20:30 (1)
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	20:28 (1)
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	20:27 (1)
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	20:24 (1)
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	20:21 (1)
26	08:31	07:34		06:29		17:28 (3)	06:19		19:57 (1)	05:28	20:17
	17:12	18:10	6	17:43 (3)	39	18:35 (2)	20:55	30	20:27 (1)	21:44	20:27
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	20:27
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	20:27
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	20:26
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	20:26
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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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	44	18:43 (3)	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	42	18:41 (3)	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	39	18:38 (3)	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	36	18:35 (3)	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	34	18:33 (3)	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	31	18:31 (3)	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	28	18:29 (3)	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	25	18:27 (3)	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	21	18:23 (3)	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	17	18:21 (3)	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	13	18:19 (3)	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	9	18:17 (3)	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	4	18:15 (3)	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	16:24	
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	16:25	
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	16:25	
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	16:25	
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	16:26	
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	16:27	
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	16:27	
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	16:28	
27	05:48		06:39		20:10 (1)	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		20:10 (1)	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		20:09 (1)	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		20:09 (1)	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		20:08 (1)	07:37		17:42	07:32		08:50	08:50	
	21:34	39	20:47 (1)	20:31		17:12		17:12			16:32	16:32	
Hours	506		456			381		330			263	240	
Base	367		834			919		488					
ion	0.26		0.30			0.28		0.24					
ed.	1.00		1.00			1.00		1.00					
ed.	0.68		0.68			0.67		0.66					
ion	0.18		0.20			0.19		0.16					
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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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		
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)	9	06:02 (8)
08:50		10:27 (1)	08:21	07:25	07:13			06:07		06:41 (6)		05:52 (8)
16:35	44	11:11 (1)	17:25	18:18	20:13			21:06	10	06:51 (6)	10	06:02 (8)
08:50		10:27 (1)	08:19	07:23	07:10			06:05		06:41 (6)		05:53 (8)
16:36	44	11:11 (1)	17:27	18:20	20:15			21:08	9	06:50 (6)	10	06:03 (8)
08:50		10:28 (1)	08:17	07:21	07:08			06:03		06:42 (6)		05:52 (8)
16:37	43	11:11 (1)	17:28	18:21	20:17			21:09	6	06:48 (6)	11	06:03 (8)
08:50		10:29 (1)	08:16	07:18	07:06			06:01				05:52 (8)
16:38	42	11:11 (1)	17:30	18:23	20:19			21:11			11	06:03 (8)
08:49		10:30 (1)	08:14	07:16	07:03			05:59				05:53 (8)
16:39	41	11:11 (1)	17:32	18:25	20:20			21:13			11	06:04 (8)
08:49		10:31 (1)	08:12	07:14	07:01			05:57				05:52 (8)
16:41	40	11:11 (1)	17:34	18:27	20:22			21:15			12	06:04 (8)
08:48		10:32 (1)	08:10	07:11	06:59			05:55				05:53 (8)
16:42	39	11:11 (1)	17:36	18:29	20:24			21:16			12	06:05 (8)
08:48		10:33 (1)	08:08	07:09	06:56			05:53				05:53 (8)
16:44	37	11:10 (1)	17:38	18:31	20:26			21:18			12	06:05 (8)
08:47		10:34 (1)	08:07	07:07	06:54			05:52				05:53 (8)
16:45	36	11:10 (1)	17:40	18:32	20:27			21:20			12	06:05 (8)
08:47		10:35 (1)	08:05	07:04	06:52			05:50				05:53 (8)
16:46	34	11:09 (1)	17:42	18:34	20:29			21:21			12	06:05 (8)
08:46		10:36 (1)	08:03	07:02	06:49			05:48				05:54 (8)
16:48	32	11:08 (1)	17:44	18:36	20:31			21:23			12	06:06 (8)
08:45		10:37 (1)	08:01	07:00	06:47			05:46				05:53 (8)
16:49	31	11:08 (1)	17:46	18:38	20:33			21:24			12	06:05 (8)
08:44		10:39 (1)	07:59	06:57	06:45			05:45				05:54 (8)
16:51	28	11:07 (1)	17:48	18:40	20:35			21:26			12	06:06 (8)
08:44		10:41 (1)	07:57	06:55	06:43			05:43				05:54 (8)
16:53	24	11:05 (1)	17:50	18:41	20:36			21:28			12	06:06 (8)
08:43		10:43 (1)	07:55	06:53	06:40			05:42				05:54 (8)
16:54	21	11:04 (1)	17:51	18:43	20:38			21:29			12	06:06 (8)
08:42		10:46 (1)	07:53	06:50	06:38			05:40				05:54 (8)
16:56	16	11:02 (1)	17:53	18:45	20:40			21:31			12	06:06 (8)
08:41		10:50 (1)	07:51	06:48	06:36			05:39				05:55 (8)
16:57	9	10:59 (1)	17:55	18:47	20:42			21:32			11	06:06 (8)
08:40			07:49	06:46	06:34			05:37				05:55 (8)
16:59			17:57	18:49	20:43			21:34			12	06:07 (8)
08:39			07:47	06:43	06:31			05:36				05:55 (8)
17:01			17:59	18:50	20:45			21:35			12	06:07 (8)
08:37			07:45	06:41	06:29			05:34				05:56 (8)
17:03			18:01	18:52	20:47			21:37			12	06:08 (8)
08:36			07:43	06:39	06:27			05:33				05:56 (8)
17:04			18:03	18:54	20:49			21:38			12	06:08 (8)
08:35			07:40	06:36	06:25			05:32				05:56 (8)
17:06			18:05	18:56	20:50			21:40			12	06:08 (8)
08:34			07:38	06:34	06:23			05:30				05:56 (8)
17:08			18:07	18:58	20:52			21:41			12	06:08 (8)
08:32			07:36	06:31	06:21			05:29				05:57 (8)
17:10			18:08	18:59	20:54			21:43			11	06:08 (8)
08:31			07:34	06:29	06:19			05:28				05:56 (8)
17:12			18:10	19:01	20:56			21:44			12	06:08 (8)
08:30			07:32	06:27	06:17		06:43 (6)	05:27				05:57 (8)
17:13			18:12	19:03	20:57	6	06:49 (6)	21:45			12	06:09 (8)
08:28			07:29	06:24	06:15		06:41 (6)	05:26				05:57 (8)
17:15			18:14	19:05	20:59	9	06:50 (6)	21:47			12	06:09 (8)
08:27			07:22	06:12	06:02		06:40 (6)	05:25				05:57 (8)
17:17			20:06	21:01	21:48	11	06:51 (6)	21:48			12	06:09 (8)
08:25			07:20	06:10	06:00		06:40 (6)	05:24		05:55 (8)		05:57 (8)
17:19			20:08		21:03	11	06:51 (6)	21:49	5	06:00 (8)	12	06:09 (8)
08:24			07:17					05:23		05:54 (8)		
17:21			20:10					21:50	7	06:01 (8)		
256			276	367	418			489		503		
606					37				47		348	
0.16					0.35				0.37		0.30	
1.00					1.00				1.00		1.00	
0.63					0.66				0.65		0.63	
0.10					0.23				0.24		0.19	
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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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

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

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	18:16	07:27	17:51 (3)	07:10	07:15	20:12	40	18:41 (3)	06:08	20:05 (1)	05:22	20:23 (1)	
2	08:50	16:35	08:21	17:25	18:18	07:25	17:54 (3)	07:10	20:12	19:45 (2)	30	19:45 (2)	21:04	20:35 (1)	21:51	20:33 (1)	10
3	08:50	16:36	08:19	17:27	18:20	07:23	17:54 (3)	07:10	20:12	18:45 (3)	31	19:47 (2)	21:06	20:37 (1)	21:53	20:27 (1)	2
4	08:50	16:37	08:17	17:28	18:21	07:20	17:55 (3)	07:08	20:17	19:25 (2)	23	19:48 (2)	21:08	20:39 (1)	21:54	20:29 (1)	
5	08:50	16:38	08:15	17:30	18:23	07:18	17:57 (3)	07:06	20:19	19:26 (2)	26	19:51 (2)	21:09	20:40 (1)	21:55	20:31 (1)	
6	08:49	16:39	08:14	17:32	18:25	07:16	17:59 (3)	07:03	20:20	19:26 (2)	27	19:52 (2)	21:11	20:41 (1)	21:56	20:32 (1)	
7	08:49	16:40	08:12	17:34	18:27	07:14	18:00 (3)	07:01	20:22	19:27 (2)	24	19:51 (2)	21:14	20:42 (1)	21:57	20:33 (1)	
8	08:48	16:41	08:10	17:36	18:29	07:11	18:03 (3)	06:59	20:24	19:28 (2)	24	19:52 (2)	21:16	20:43 (1)	21:58	20:34 (1)	
9	08:48	16:42	08:08	17:38	18:31	07:09	18:05 (3)	06:56	20:26	19:28 (2)	22	19:53 (2)	21:18	20:44 (1)	21:59	20:35 (1)	
10	08:47	16:43	08:07	17:40	18:34	07:07	18:08 (3)	06:54	20:27	19:28 (2)	20	19:54 (2)	21:20	20:45 (1)	22:00	20:36 (1)	
11	08:47	16:44	08:05	17:42	18:36	07:04	18:10 (3)	06:52	20:29	19:29 (2)	16	19:55 (2)	21:22	20:46 (1)	22:01	20:37 (1)	
12	08:46	16:45	08:03	17:44	18:38	07:02	18:12 (3)	06:50	20:31	19:30 (2)	10	19:56 (2)	21:24	20:47 (1)	22:02	20:38 (1)	
13	08:45	16:46	08:01	17:46	18:40	07:00	18:14 (3)	06:48	20:33	19:31 (2)	45	19:57 (2)	21:26	20:48 (1)	22:03	20:39 (1)	
14	08:44	16:47	07:59	17:48	18:42	06:58	18:15 (3)	06:46	20:35	19:32 (2)	43	19:58 (2)	21:28	20:49 (1)	22:04	20:40 (1)	
15	08:44	16:48	07:57	17:50	18:44	06:55	18:16 (3)	06:44	20:37	19:33 (2)	42	19:59 (2)	21:30	20:50 (1)	22:05	20:41 (1)	
16	08:43	16:49	07:55	17:52	18:46	06:53	18:17 (3)	06:42	20:39	19:34 (2)	42	20:00 (2)	21:32	20:51 (1)	22:06	20:42 (1)	
17	08:42	16:50	07:53	17:54	18:48	06:50	18:18 (3)	06:40	20:41	20:01 (1)	41	20:01 (1)	21:34	20:52 (1)	22:07	20:43 (1)	
18	08:41	16:51	07:51	17:56	18:50	06:48	18:19 (3)	06:38	20:43	20:02 (1)	40	20:02 (1)	21:36	20:53 (1)	22:08	20:44 (1)	
19	08:40	16:52	07:49	17:58	18:52	06:46	18:20 (3)	06:36	20:45	20:03 (1)	39	20:03 (1)	21:38	20:54 (1)	22:09	20:45 (1)	
20	08:39	16:53	07:47	17:59	18:54	06:44	18:21 (3)	06:34	20:47	20:04 (1)	38	20:04 (1)	21:40	20:55 (1)	22:10	20:46 (1)	
21	08:37	16:54	07:45	18:01	18:56	06:41	18:22 (3)	06:32	20:49	20:05 (1)	37	20:05 (1)	21:42	20:56 (1)	22:11	20:47 (1)	
22	08:36	16:55	07:42	18:03	18:58	06:39	18:23 (3)	06:30	20:51	20:06 (1)	35	20:06 (1)	21:44	20:57 (1)	22:12	20:48 (1)	
23	08:35	16:56	07:40	18:05	18:59	06:36	18:24 (3)	06:28	20:53	20:07 (1)	34	20:07 (1)	21:46	20:58 (1)	22:13	20:49 (1)	
24	08:34	16:57	07:38	18:07	19:00	06:34	18:25 (3)	06:26	20:55	20:08 (1)	33	20:08 (1)	21:48	20:59 (1)	22:14	20:50 (1)	
25	08:32	16:58	07:36	18:09	19:02	06:31	18:26 (3)	06:24	20:57	20:09 (1)	31	20:09 (1)	21:50	21:00 (1)	22:15	20:51 (1)	
26	08:31	16:59	07:34	18:11	19:04	06:29	18:27 (3)	06:22	20:59	20:10 (1)	29	20:10 (1)	21:52	21:01 (1)	22:16	20:52 (1)	
27	08:30	17:00	07:32	18:13	19:06	06:27	18:28 (3)	06:20	21:01	20:11 (1)	27	20:11 (1)	21:54	21:02 (1)	22:17	20:53 (1)	
28	08:28	17:01	07:29	18:15	19:08	06:24	18:29 (3)	06:18	21:03	20:12 (1)	24	20:12 (1)	21:56	21:03 (1)	22:18	20:54 (1)	
29	08:27	17:02	07:27	18:17	19:10	06:22	18:30 (3)	06:16	21:05	20:13 (1)	22	20:13 (1)	21:58	21:04 (1)	22:19	20:55 (1)	
30	08:25	17:03	07:25	18:19	19:12	06:20	18:31 (3)	06:14	21:07	20:14 (1)	20	20:14 (1)	22:00	21:05 (1)	22:20	20:56 (1)	
31	08:24	17:04	07:23	18:21	19:14	06:18	18:32 (3)	06:12	21:09	20:15 (1)	18	20:15 (1)	22:02	21:06 (1)	22:21	20:57 (1)	
Potential sun hours	256	276	367	418	414	489	503	12	0.30	1.00	0.68	0.20	2				
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)

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)	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:** 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	07:15	07:15	18:49 (3)	06:08	20:33 (1)	05:22	20:27 (1)			
2	08:50	16:35	08:21	17:25	18:18	07:23	18:23	07:13	50	19:45 (2)	21:04	20:35 (1)	21:51	37	21:04 (1)		
3	08:50	16:36	08:19	17:27	18:20	07:23	18:23	07:10	52	19:47 (2)	21:06	20:37 (1)	21:53	36	21:03 (1)		
4	08:50	16:37	08:17	17:28	18:21	07:20	18:21	07:08	54	19:48 (2)	21:08	20:39 (1)	21:54	36	21:04 (1)		
5	08:49	16:38	08:15	17:30	18:23	07:18	18:23	07:06	57	19:51 (2)	21:09	20:40 (1)	21:55	35	21:03 (1)		
6	08:49	16:39	08:14	17:32	18:25	07:16	18:25	07:03	58	19:52 (2)	21:11	20:41 (1)	21:56	34	21:03 (1)		
7	08:49	16:40	08:12	17:34	18:27	07:14	18:27	07:01	58	19:52 (2)	21:11	20:41 (1)	21:56	34	21:03 (1)		
8	08:48	16:41	08:10	17:36	18:29	07:11	18:31	06:59	58	19:52 (2)	21:11	20:41 (1)	21:56	34	21:03 (1)		
9	08:48	16:42	08:08	17:38	18:31	07:09	18:31	06:56	56	19:52 (2)	21:11	20:41 (1)	21:56	34	21:03 (1)		
10	08:47	16:43	08:07	17:40	18:32	07:07	18:32	06:54	55	19:52 (2)	21:11	20:41 (1)	21:56	34	21:03 (1)		
11	08:47	16:44	08:05	17:42	18:34	07:04	18:34	06:52	50	20:02 (2)	21:21	20:51 (1)	22:01	29	21:02 (1)		
12	08:46	16:45	08:03	17:44	18:36	07:02	18:36	06:49	46	20:04 (2)	21:23	20:52 (1)	22:02	29	21:02 (1)		
13	08:45	16:46	08:01	17:46	18:38	07:00	18:38	06:47	35	20:02 (2)	21:24	20:54 (1)	22:03	29	21:02 (1)		
14	08:44	16:47	07:59	17:48	18:40	06:57	18:40	06:45	23	20:01 (2)	21:26	20:55 (1)	22:03	28	21:02 (1)		
15	08:43	16:48	07:57	17:51	18:43	06:55	18:43	06:43	19	19:40 (2)	21:28	20:57 (1)	22:04	28	21:02 (1)		
16	08:43	16:49	07:55	17:53	18:45	06:53	18:45	06:41	16	19:41 (2)	21:29	20:58 (1)	22:04	27	21:02 (1)		
17	08:42	16:50	07:53	17:55	18:47	06:50	18:47	06:38	11	19:42 (2)	21:30	20:59 (1)	22:05	27	21:02 (1)		
18	08:41	16:51	07:51	17:57	18:49	06:48	18:49	06:36	22	19:43 (2)	21:31	20:59 (1)	22:05	27	21:02 (1)		
19	08:40	16:52	07:49	17:59	18:51	06:46	18:51	06:34	26	19:44 (2)	21:32	20:59 (1)	22:05	27	21:02 (1)		
20	08:39	16:53	07:47	18:01	18:53	06:44	18:53	06:32	29	19:45 (2)	21:33	20:59 (1)	22:05	27	21:02 (1)		
21	08:37	16:54	07:45	18:03	18:55	06:41	18:55	06:29	31	19:46 (2)	21:34	20:59 (1)	22:05	27	21:02 (1)		
22	08:36	16:55	07:42	18:05	18:57	06:39	18:57	06:27	34	19:47 (2)	21:35	20:59 (1)	22:05	27	21:02 (1)		
23	08:35	16:56	07:40	18:07	18:59	06:36	18:59	06:24	38	19:48 (2)	21:36	20:59 (1)	22:05	27	21:02 (1)		
24	08:34	16:57	07:38	18:09	19:01	06:34	19:01	06:22	40	19:49 (2)	21:37	20:59 (1)	22:05	27	21:02 (1)		
25	08:32	16:58	07:36	18:11	19:03	06:31	19:03	06:19	42	19:50 (2)	21:38	20:59 (1)	22:05	27	21:02 (1)		
26	08:31	16:59	07:34	18:13	19:05	06:29	19:05	06:17	45	19:51 (2)	21:39	20:59 (1)	22:05	27	21:02 (1)		
27	08:30	17:00	07:32	18:15	19:07	06:27	19:07	06:15	47	19:52 (2)	21:40	20:59 (1)	22:05	27	21:02 (1)		
28	08:28	17:01	07:29	18:17	19:09	06:24	19:09	06:12	49	19:53 (2)	21:41	20:59 (1)	22:05	27	21:02 (1)		
29	08:27	17:02	07:27	18:19	19:11	06:22	19:11	06:10	50	19:54 (2)	21:42	20:59 (1)	22:05	27	21:02 (1)		
30	08:25	17:03	07:25	18:21	19:13	06:20	19:13	06:08	49	19:55 (2)	21:43	20:59 (1)	22:05	27	21:02 (1)		
31	08:24	17:04	07:23	18:23	19:15	06:18	19:15	06:06	49	19:56 (2)	21:44	20:59 (1)	22:05	27	21:02 (1)		
Potential sun hours	256	276	367	418	489	503	584	601	750	945	884						
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: 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	16:28
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	16:27
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	16:27
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	16:26
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	16:26
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	16:25
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	16:25
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	16:24
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	16:24
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	16:24
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	16:24
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	16:23
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	16:28
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	16:29
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	16:30
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	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	16:29	16:31
31	05:55		20:33 (1)	06:46		19:00 (3)				07:32		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		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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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	08:22	07:27		07:15	18:42 (3)	06:08	20:16 (1)	05:22	20:22 (1)
	16:34	17:23	18:16		20:12	51 19:45 (2)	21:04	19	20:35 (1)	21:51
2	08:50	08:21	07:25		07:13	18:44 (3)	06:06	20:16 (1)	05:21	20:23 (1)
	16:35	17:25	18:18		20:13	51 19:47 (2)	21:06	21	20:37 (1)	21:53
3	08:50	08:19	07:23		07:10	18:44 (3)	06:05	20:15 (1)	05:20	20:25 (1)
	16:36	17:27	18:20		20:15	50 19:48 (2)	21:08	24	20:39 (1)	21:54
4	08:50	08:17	07:20		07:08	18:46 (3)	06:03	20:14 (1)	05:19	20:25 (1)
	16:37	17:28	18:21		20:17	49 19:51 (2)	21:09	26	20:40 (1)	21:55
5	08:49	08:15	07:18		07:06	18:49 (3)	06:01	20:13 (1)	05:18	20:26 (1)
	16:38	17:30	18:23		20:19	46 19:53 (2)	21:11	28	20:41 (1)	21:56
6	08:49	08:14	07:16		07:03	18:51 (3)	05:59	20:13 (1)	05:18	20:28 (1)
	16:39	17:32	18:25		20:20	42 19:54 (2)	21:13	30	20:43 (1)	21:57
7	08:49	08:12	07:14		07:01	18:56 (3)	05:57	20:13 (1)	05:17	20:29 (1)
	16:41	17:34	18:27		20:22	33 19:56 (2)	21:14	32	20:45 (1)	21:58
8	08:48	08:10	07:11		06:59	19:31 (2)	05:55	20:12 (1)	05:17	20:30 (1)
	16:42	17:36	18:29	4	18:03 (3)	20:24	26 19:57 (2)	21:16	34 20:46 (1)	21:59
9	08:48	08:08	07:09		17:56 (3)	06:56	19:31 (2)	05:53	20:12 (1)	05:16
	16:43	17:38	18:31	9	18:05 (3)	20:26	25 19:56 (2)	21:18	35 20:47 (1)	22:00
10	08:47	08:07	07:07		17:53 (3)	06:54	19:32 (2)	05:52	20:12 (1)	05:16
	16:45	17:40	18:32	13	18:06 (3)	20:27	23 19:55 (2)	21:19	38 20:50 (1)	22:00
11	08:47	08:05	07:04		17:51 (3)	06:52	19:33 (2)	05:50	20:12 (1)	05:15
	16:46	17:42	18:34	17	18:08 (3)	20:29	21 19:54 (2)	21:21	39 20:51 (1)	22:01
12	08:46	08:03	07:02		17:49 (3)	06:49	19:35 (2)	05:48	20:11 (1)	05:15
	16:48	17:44	18:36	21	18:10 (3)	20:31	18 19:53 (2)	21:23	41 20:52 (1)	22:02
13	08:45	08:01	07:00		17:47 (3)	06:47	19:36 (2)	05:46	20:12 (1)	05:15
	16:49	17:46	18:38	25	18:12 (3)	20:33	13 19:49 (2)	21:24	42 20:54 (1)	22:03
14	08:44	07:59	06:57		17:46 (3)	06:45	19:40 (2)	05:45	20:12 (1)	05:14
	16:51	17:48	18:40	28	18:14 (3)	20:34	5 19:45 (2)	21:26	43 20:55 (1)	22:03
15	08:43	07:57	06:55		17:44 (3)	06:43		05:43	20:12 (1)	05:14
	16:53	17:49	18:41	31	18:15 (3)	20:36		21:28	44 20:56 (1)	22:04
16	08:43	07:55	06:53		17:44 (3)	06:40		05:42	20:13 (1)	05:14
	16:54	17:51	18:43	33	18:17 (3)	20:38		21:29	43 20:56 (1)	22:04
17	08:42	07:53	06:50		17:43 (3)	06:38		05:40	20:13 (1)	05:14
	16:56	17:53	18:45	37	18:20 (3)	20:40		21:31	42 20:55 (1)	22:05
18	08:41	07:51	06:48		17:42 (3)	06:36		05:39	20:13 (1)	05:14
	16:57	17:55	18:47	39	18:21 (3)	20:41		21:32	42 20:55 (1)	22:05
19	08:40	07:49	06:46		17:41 (3)	06:34		05:37	20:14 (1)	05:14
	16:59	17:57	18:49	42	18:23 (3)	20:43		21:34	41 20:55 (1)	22:06
20	08:39	07:47	06:43		17:40 (3)	06:31		05:36	20:14 (1)	05:14
	17:01	17:59	18:50	44	18:24 (3)	20:45		21:35	40 20:54 (1)	22:06
21	08:37	07:45	06:41		17:40 (3)	06:29		05:34	20:14 (1)	05:14
	17:03	18:01	18:52	46	18:26 (3)	20:47		21:37	40 20:54 (1)	22:06
22	08:36	07:42	06:39		17:40 (3)	06:27		05:33	20:15 (1)	05:14
	17:04	18:03	18:54	48	18:28 (3)	20:48		21:38	39 20:54 (1)	22:06
23	08:35	07:40	06:36		17:39 (3)	06:25		05:32	20:16 (1)	05:15
	17:06	18:05	18:56	49	18:28 (3)	20:50		21:40	38 20:54 (1)	22:06
24	08:34	07:38	06:34		17:39 (3)	06:23		05:30	20:16 (1)	05:15
	17:08	18:07	18:57	49	18:28 (3)	20:52		21:41	36 20:52 (1)	22:07
25	08:32	07:36	06:31		17:39 (3)	06:21		05:29	20:16 (1)	05:15
	17:10	18:08	18:59	48	18:27 (3)	20:54		21:43	36 20:52 (1)	22:07
26	08:31	07:34	06:29		17:39 (3)	06:19		05:28	20:17 (1)	05:16
	17:12	18:10	19:01	48	18:27 (3)	20:55	4	20:27 (1)	21:44	34 20:51 (1)
27	08:30	07:32	06:27		17:40 (3)	06:17		05:27	20:18 (1)	05:16
	17:13	18:12	19:03	47	18:27 (3)	20:57	8	20:29 (1)	21:45	33 20:51 (1)
28	08:28	07:29	06:24		17:39 (3)	06:14		05:26	20:18 (1)	05:17
	17:15	18:14	19:05	46	18:25 (3)	20:59	10	20:30 (1)	21:47	32 20:50 (1)
29	08:27		07:22		18:40 (3)	06:12		05:25	20:20 (1)	05:17
	17:17		20:06	48	19:40 (2)	21:01	14	20:32 (1)	21:48	31 20:51 (1)
30	08:25		07:20		18:41 (3)	06:10		05:24	20:21 (1)	05:18
	17:19		20:08	49	19:42 (2)	21:02	16	20:33 (1)	21:49	29 20:50 (1)
31	08:24		07:17		18:41 (3)			05:23	20:22 (1)	
	17:21		20:10	50	19:43 (2)			21:50	20:49 (1)	
Potential sun hours	256	276	367		418			489		503
Total, worst case			871		505		1079			183
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		0.67			0.67
Total reduction			0.16		0.24		0.25			0.20
Total, real			143		121		267			37

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: 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	
2	22:06		21:33	21:03 (1)	20:29	19:53 (2)	19:18	18:50 (3)	17:10	16:28	
3	22:05	6	20:45 (1)	21:31	21:00 (1)	20:26	19:54 (2)	19:15	18:47 (3)	17:08	16:27
4	05:20		20:37 (1)	05:59	20:22 (1)	06:51	19:29 (2)	07:42	18:30 (3)	07:37	08:29
5	22:05	9	20:46 (1)	21:29	20:58 (1)	20:24	19:54 (2)	19:13	18:45 (3)	17:06	16:27
6	05:21		20:36 (1)	06:01	20:22 (1)	06:53	19:28 (2)	07:43	18:32 (3)	07:39	08:30
7	22:05	12	20:48 (1)	21:27	20:57 (1)	20:22	19:55 (2)	19:11	18:43 (3)	17:04	16:26
8	05:21		20:35 (1)	06:03	20:22 (1)	06:54	18:53 (3)	07:45	18:34 (3)	07:41	08:32
9	22:04	15	20:50 (1)	21:26	20:55 (1)	20:20	19:53 (2)	19:08	18:41 (3)	17:02	16:26
10	05:22		20:35 (1)	06:04	20:22 (1)	06:56	18:47 (3)	07:47	07:43	08:33	
11	22:03	16	20:51 (1)	21:24	20:54 (1)	20:17	19:50 (2)	19:06	17:01	16:25	
12	05:23		20:34 (1)	06:06	20:23 (1)	06:58	18:44 (3)	07:49	07:45	08:34	
13	22:03	19	20:53 (1)	21:22	20:53 (1)	20:15	19:48 (2)	19:04	16:59	16:25	
14	05:24		20:33 (1)	06:07	20:23 (1)	06:59	18:41 (3)	07:50	07:47	08:36	
15	22:02	21	20:54 (1)	21:20	20:50 (1)	20:12	19:45 (2)	19:01	16:57	16:24	
16	05:25		20:31 (1)	06:09	20:24 (1)	07:01	18:39 (3)	07:52	07:48	08:37	
17	22:01	23	20:54 (1)	21:18	20:49 (1)	20:10	19:43 (2)	18:59	16:56	16:24	
18	05:26		20:31 (1)	06:11	20:24 (1)	07:03	18:37 (3)	07:54	07:50	08:38	
19	22:01	24	20:55 (1)	21:16	20:47 (1)	20:08	19:41 (2)	18:57	16:54	16:24	
20	05:27		20:30 (1)	06:12	20:25 (1)	07:04	18:35 (3)	07:56	07:52	08:39	
21	22:00	26	20:56 (1)	21:14	20:45 (1)	20:05	19:38 (2)	18:54	16:52	16:24	
22	05:28		20:29 (1)	06:14	20:25 (1)	07:06	18:33 (3)	07:57	07:54	08:40	
23	21:59	28	20:57 (1)	21:12	20:43 (1)	20:03	19:36 (2)	18:52	16:51	16:23	
24	05:30		20:30 (1)	06:16	20:26 (1)	07:08	18:31 (3)	07:59	07:56	08:41	
25	21:58	28	20:58 (1)	21:10	20:41 (1)	20:01	19:33 (2)	18:50	16:49	16:23	
26	05:31		20:29 (1)	06:17	20:26 (1)	07:09	18:31 (3)	08:01	07:58	08:42	
27	21:57	30	20:59 (1)	21:08	20:39 (1)	19:58	19:31 (2)	18:48	16:48	16:23	
28	05:32		20:28 (1)	06:19	20:28 (1)	07:11	18:30 (3)	08:03	07:59	08:43	
29	21:56	32	21:00 (1)	21:06	20:37 (1)	19:56	19:29 (2)	18:45	16:46	16:23	
30	05:33		20:28 (1)	06:21	20:29 (1)	07:13	18:28 (3)	08:04	08:01	08:44	
31	21:55	32	21:00 (1)	21:04	20:36 (1)	19:53	19:15 (3)	18:43	16:45	16:24	
32	05:34		20:27 (1)	06:22	20:30 (1)	07:14	18:28 (3)	08:06	08:03	08:45	
33	21:54	34	21:01 (1)	21:02	20:33 (1)	19:51	19:15 (3)	18:41	16:43	16:24	
34	05:36		20:26 (1)	06:24	20:26 (1)	07:16	18:27 (3)	08:08	08:05	08:46	
35	21:53	35	21:01 (1)	21:00	20:33 (1)	19:51	19:16 (3)	18:39	16:42	16:24	
36	05:37		20:26 (1)	06:26	20:26 (1)	07:18	18:26 (3)	08:10	08:06	08:46	
37	21:52	37	21:03 (1)	20:58	20:37 (1)	19:56	19:15 (3)	18:37	16:40	16:24	
38	05:38		20:26 (1)	06:27	20:26 (1)	07:19	18:26 (3)	08:12	08:08	08:47	
39	21:50	37	21:03 (1)	20:56	20:37 (1)	19:54	19:15 (3)	18:34	16:39	16:25	
40	05:40		20:25 (1)	06:29	20:25 (1)	07:21	18:26 (3)	08:13	08:10	08:47	
41	21:49	38	21:03 (1)	20:53	20:37 (1)	19:54	19:14 (3)	18:32	16:38	16:25	
42	05:41		20:24 (1)	06:31	20:24 (1)	07:23	18:25 (3)	08:15	08:12	08:48	
43	21:48	39	21:03 (1)	20:51	20:37 (1)	19:53	19:11 (3)	18:30	16:37	16:25	
44	05:43		20:25 (1)	06:32	20:25 (1)	07:25	18:25 (3)	08:17	08:13	08:49	
45	21:46	40	21:05 (1)	20:49	20:37 (1)	19:57	19:09 (3)	18:28	16:36	16:26	
46	05:44		20:24 (1)	06:34	20:26 (1)	07:26	18:25 (3)	08:19	08:15	08:49	
47	21:45	41	21:05 (1)	20:47	20:37 (1)	19:54	19:07 (3)	18:26	16:35	16:27	
48	05:45		20:24 (1)	06:36	20:28 (1)	07:28	18:24 (3)	07:21	08:17	08:49	
49	21:44	42	21:06 (1)	20:45	20:37 (1)	19:52	19:04 (3)	17:24	16:33	16:27	
50	05:47		20:23 (1)	06:37	20:30 (1)	07:30	18:25 (3)	07:23	08:18	08:50	
51	21:42	43	21:06 (1)	20:42	20:30 (1)	07:31	19:02 (3)	17:22	16:32	16:28	
52	05:48		20:23 (1)	06:39	20:31 (1)	07:31	18:25 (3)	07:24	08:20	08:50	
53	21:41	43	21:06 (1)	20:40	20:31 (1)	07:32	19:00 (3)	17:20	16:31	16:29	
54	05:50		20:23 (1)	06:41	20:33 (1)	07:33	18:26 (3)	07:26	08:22	08:50	
55	21:39	43	21:06 (1)	20:38	20:33 (1)	07:34	18:58 (3)	17:18	16:31	16:30	
56	05:51		20:23 (1)	06:43	19:40 (2)	07:35	18:26 (3)	07:28	08:23	08:50	
57	21:37	43	21:06 (1)	20:36	19:46 (2)	07:36	18:55 (3)	17:16	16:30	16:30	
58	05:53		20:23 (1)	06:44	19:37 (2)	07:36	18:27 (3)	07:30	08:25	08:50	
59	21:36	43	21:06 (1)	20:33	19:50 (2)	07:37	18:52 (3)	17:14	16:29	16:31	
60	05:55		20:22 (1)	06:46	19:34 (2)	07:38	18:27 (3)	07:31	08:26	08:50	
61	21:34	42	21:04 (1)	20:31	19:52 (2)	07:39	17:12	17:12	16:32	16:32	
62	Potential sun hours	506	456	381	330	263	240				
63	Total, worst case	921	441	1231	74						
64	Sun reduction	0.26	0.30	0.28	0.24						
65	Oper. time red.	1.00	1.00	1.00	1.00						
66	Wind dir. red.	0.67	0.67	0.67	0.67						
67	Total reduction	0.18	0.20	0.19	0.16						
68	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)	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: 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	53 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	55 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	56 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	58 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	59 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	60 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	59 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	58 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	56 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	55 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	53 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	50 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	45 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	35 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	32 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	28 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	24 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	17 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	5 16:28 (1)	18:49	20:43		21:34		22:06	
20	08:39	15:59 (1)	07:47		06:43	06:31		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		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		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		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		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		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		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		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	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)	06:39	07:24 (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)	06:41	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)	06:43	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)	06:44	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)	06:46	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)	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: 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	06:43 (5)	05:21
	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)	05:20
	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	06:43 (5)	05:19
	16:37	50	16:01 (1)	17:28		18:21	20:17	13	07:51 (4)	21:09	10
5	08:50	15:11 (1)	08:16		07:18	07:06		07:38 (4)	06:01	06:44 (5)	05:18
	16:38	50	16:01 (1)	17:30		18:23	20:19	14	07:52 (4)	21:11	7
6	08:49	15:12 (1)	08:14		07:16	07:03		07:37 (4)	05:59		05:18
	16:39	51	16:04 (2)	17:32		18:25	20:20	13	07:50 (4)	21:13	
7	08:49	15:12 (1)	08:12		07:14	07:01		07:38 (4)	05:57		05:17
	16:41	52	16:05 (2)	17:34		18:27	20:22	12	07:50 (4)	21:14	
8	08:48	15:13 (1)	08:10		07:11	06:59		07:39 (4)	05:55		05:17
	16:42	53	16:07 (2)	17:36		18:29	20:24	10	07:49 (4)	21:16	
9	08:48	15:13 (1)	08:08		07:09	06:56		07:40 (4)	05:53		05:16
	16:43	56	16:09 (2)	17:38		18:31	20:26	5	07:45 (4)	21:18	
10	08:47	15:13 (1)	08:07		07:07	06:54			05:52		05:16
	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		05:15
	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		05:15
	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		05:15
	16:49	60	16:14 (2)	17:46		18:38	20:33	5	07:15 (7)	21:24	
14	08:44	15:14 (1)	07:59		06:57	06:45		07:08 (7)	05:45		05:14
	16:51	62	16:16 (2)	17:48		18:40	20:34	8	07:16 (7)	21:26	
15	08:44	15:15 (1)	07:57		06:55	06:43		07:06 (7)	05:43		05:14
	16:53	63	16:18 (2)	17:49		18:41	20:36	10	07:16 (7)	21:28	
16	08:43	15:15 (1)	07:55		06:53	06:40		07:06 (7)	05:42		05:14
	16:54	65	16:20 (2)	17:51		18:43	20:38	11	07:17 (7)	21:29	
17	08:42	15:16 (1)	07:53		06:50	06:38		07:06 (7)	05:40		05:14
	16:56	66	16:22 (2)	17:53		18:45	20:40	10	07:16 (7)	21:31	
18	08:41	15:17 (1)	07:51		06:48	06:36		07:07 (7)	05:39		05:14
	16:57	67	16:24 (2)	17:55		18:47	20:41	8	07:15 (7)	21:32	
19	08:40	15:18 (1)	07:49		06:46	06:34		07:07 (7)	05:37		05:14
	16:59	68	16:26 (2)	17:57		18:49	20:43	6	07:13 (7)	21:34	
20	08:39	15:19 (1)	07:47		06:43	06:31			05:36		05:14
	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		05:14
	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		05:14
	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		05:15
	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		05:15
	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		05:15
	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		05:16
	17:12	70	16:36 (2)	18:10		19:01	20:56	5	06:52 (5)	21:44	
27	08:30	15:24 (1)	07:32		06:27	06:17		06:45 (5)	05:27		05:16
	17:13	67	16:35 (2)	18:12		19:03	20:57	9	06:54 (5)	21:45	
28	08:28	15:26 (1)	07:29		06:24	06:14		06:43 (5)	05:26		05:17
	17:15	63	16:35 (2)	18:14		19:05	20:59	11	06:54 (5)	21:47	
29	08:27	15:27 (1)			07:22	06:12		06:42 (5)	05:25		05:17
	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		05:18
	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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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		
05:18	05:56		06:48		07:38	07:34	08:26	14:55 (1)	
22:06	21:33		20:29		19:18	17:10	16:28	59 15:54 (2)	
05:19	05:58		06:49		07:40	07:36	08:28	14:56 (1)	
22:05	21:31		20:27		19:15	17:08	16:27	57 15:53 (2)	
05:20	05:59		06:51	07:38 (4)	07:42	07:37	08:29	14:56 (1)	
22:05	21:29		20:24	5 07:43 (4)	19:13	17:06	16:27	56 15:52 (2)	
05:21	06:01		06:53	07:36 (4)	07:43	07:39	08:30	14:57 (1)	
22:05	21:27		20:22	10 07:46 (4)	19:11	17:04	16:26	54 15:52 (2)	
05:21	06:03		06:54	07:35 (4)	07:45	07:41	08:32	14:57 (1)	
22:04	21:26		20:20	12 07:47 (4)	19:08	17:02	16:26	52 15:50 (2)	
05:22	06:04		06:56	07:33 (4)	07:47	07:43	08:33	14:58 (1)	
22:04	21:24		20:17	13 07:46 (4)	19:06	17:01	16:25	50 15:48 (1)	
05:23	06:06	06:56 (5)	06:58	07:33 (4)	07:49	07:45	15:14 (1)	08:34	14:58 (1)
22:03	21:22	4 07:00 (5)	20:15	14 07:47 (4)	19:04	16:59	4 15:18 (1)	16:25	50 15:48 (1)
05:24	06:07	06:53 (5)	06:59	07:32 (4)	07:50	07:47	15:08 (1)	08:36	14:58 (1)
22:02	21:20	8 07:01 (5)	20:12	14 07:46 (4)	19:01	16:57	25 15:58 (2)	16:24	50 15:48 (1)
05:25	06:09	06:53 (5)	07:01	07:33 (4)	07:52	07:48	15:05 (1)	08:37	14:59 (1)
22:02	21:18	10 07:03 (5)	20:10	12 07:45 (4)	18:59	16:56	37 16:01 (2)	16:24	50 15:49 (1)
05:26	06:11	06:51 (5)	07:03	07:34 (4)	07:54	07:50	15:03 (1)	08:38	14:59 (1)
22:01	21:16	12 07:03 (5)	20:08	10 07:44 (4)	18:57	16:54	45 16:03 (2)	16:24	49 15:48 (1)
05:27	06:12	06:51 (5)	07:04	07:34 (4)	07:56	07:52	15:01 (1)	08:39	15:00 (1)
22:00	21:14	13 07:04 (5)	20:05	8 07:42 (4)	18:54	16:52	51 16:04 (2)	16:24	48 15:48 (1)
05:28	06:14	06:50 (5)	07:06		07:57	07:54	15:00 (1)	08:40	15:00 (1)
21:59	21:12	13 07:03 (5)	20:03		18:52	16:51	56 16:05 (2)	16:23	48 15:48 (1)
05:29	06:16	06:51 (5)	07:08		07:59	07:56	14:59 (1)	08:41	15:01 (1)
21:58	21:10	12 07:03 (5)	20:01		18:50	16:49	60 16:06 (2)	16:23	47 15:48 (1)
05:31	06:17	06:50 (5)	07:09		08:01	07:58	14:58 (1)	08:42	15:01 (1)
21:57	21:08	12 07:02 (5)	19:58		18:48	16:48	63 16:07 (2)	16:23	46 15:47 (1)
05:32	06:19	06:51 (5)	07:11		08:03	07:59	14:57 (1)	08:43	15:02 (1)
21:56	21:06	11 07:02 (5)	19:56		18:45	16:46	67 16:08 (2)	16:23	45 15:47 (1)
05:33	06:21	06:53 (5)	07:13		08:04	08:01	14:56 (1)	08:44	15:02 (1)
21:55	21:04	8 07:01 (5)	19:53		18:43	16:45	70 16:09 (2)	16:24	46 15:48 (1)
05:34	06:22	06:54 (5)	07:14		08:06	08:03	14:56 (1)	08:45	15:03 (1)
21:54	21:02	4 06:58 (5)	19:51		18:41	16:43	71 16:09 (2)	16:24	45 15:48 (1)
05:36	06:24		07:16		08:08	08:05	14:55 (1)	08:46	15:03 (1)
21:53	21:00		19:49		18:39	16:42	73 16:09 (2)	16:24	44 15:47 (1)
05:37	06:26		07:18		08:10	08:07	14:55 (1)	08:46	15:04 (1)
21:52	20:58		19:46		18:37	16:40	73 16:08 (2)	16:24	44 15:48 (1)
05:38	06:27		07:19		08:12	08:08	14:55 (1)	08:47	15:04 (1)
21:50	20:56		19:44		18:34	16:39	72 16:07 (2)	16:25	45 15:49 (1)
05:40	06:29		07:21		08:13	08:10	14:55 (1)	08:48	15:04 (1)
21:49	20:53		19:42		18:32	16:38	70 16:05 (2)	16:25	45 15:49 (1)
05:41	06:31		07:23		08:15	08:12	14:55 (1)	08:48	15:05 (1)
21:48	20:51		19:39		18:30	16:37	69 16:04 (2)	16:25	45 15:50 (1)
05:43	06:32		07:25		08:17	08:13	14:54 (1)	08:49	15:05 (1)
21:46	20:49		19:37		18:28	16:36	68 16:02 (2)	16:26	45 15:50 (1)
05:44	06:34	07:11 (7)	07:26		08:19	08:15	14:54 (1)	08:49	15:05 (1)
21:45	20:47	6 07:17 (7)	19:34		18:26	16:34	67 16:01 (2)	16:27	45 15:50 (1)
05:45	06:36	07:10 (7)	07:28		07:21	08:17	14:54 (1)	08:49	15:07 (1)
21:44	20:45	8 07:18 (7)	19:32		17:24	16:33	66 16:00 (2)	16:27	44 15:51 (1)
05:47	06:37	07:08 (7)	07:30		07:23	08:18	14:55 (1)	08:50	15:07 (1)
21:42	20:42	10 07:18 (7)	19:30		17:22	16:32	64 15:59 (2)	16:28	45 15:52 (1)
05:48	06:39	07:08 (7)	07:31		07:24	08:20	14:55 (1)	08:50	15:07 (1)
21:41	20:40	10 07:18 (7)	19:27		17:20	16:31	63 15:58 (2)	16:29	45 15:52 (1)
05:50	06:41	07:08 (7)	07:33		07:26	08:22	14:54 (1)	08:50	15:07 (1)
21:39	20:38	10 07:18 (7)	19:25		17:18	16:31	62 15:56 (2)	16:29	46 15:53 (1)
05:51	06:43	07:09 (7)	07:35		07:28	08:23	14:55 (1)	08:50	15:08 (1)
21:38	20:36	8 07:17 (7)	19:22		17:16	16:30	61 15:56 (2)	16:30	46 15:54 (1)
05:53	06:44	07:11 (7)	07:36		07:30	08:25	14:56 (1)	08:50	15:08 (1)
21:36	20:33	4 07:15 (7)	19:20		17:14	16:29	59 15:55 (2)	16:31	47 15:55 (1)
05:55	06:46				07:32			08:50	15:09 (1)
21:34	20:31				17:12			16:32	47 15:56 (1)
506	456		381		330	263	240		
	163		98			1416		1485	
	0.30		0.28			0.19		0.14	
	1.00		1.00			1.00		1.00	
	0.66		0.68			0.62		0.61	
	0.20		0.19			0.12		0.08	
	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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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

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

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	08:22	07:27		07:15		18:49 (3)	06:08		20:14 (1)	05:22	
	16:34	17:23	18:16		20:12	47	19:45 (2)	21:04	21	20:35 (1)	21:51	
2	08:50	08:21	07:25		07:13		18:50 (3)	06:06		20:15 (1)	05:21	
	16:35	17:25	18:18		20:13	47	19:47 (2)	21:06	22	20:37 (1)	21:53	
3	08:50	08:19	07:23		07:10		18:51 (3)	06:05		20:14 (1)	05:20	
	16:36	17:27	18:20		20:15	46	19:48 (2)	21:08	25	20:39 (1)	21:54	
4	08:50	08:17	07:20		07:08		18:53 (3)	06:03		20:13 (1)	05:19	
	16:37	17:28	18:21		20:17	46	19:51 (2)	21:09	27	20:40 (1)	21:55	
5	08:49	08:15	07:18		07:05		18:55 (3)	06:01		20:13 (1)	05:18	
	16:38	17:30	18:23		20:19	44	19:53 (2)	21:11	28	20:41 (1)	21:56	
6	08:49	08:14	07:16		07:03		18:56 (3)	05:59		20:12 (1)	05:18	
	16:39	17:32	18:25		20:20	42	19:54 (2)	21:13	31	20:43 (1)	21:57	
7	08:49	08:12	07:14		07:01		19:00 (3)	05:57		20:12 (1)	05:17	
	16:41	17:34	18:27		20:22	35	19:56 (2)	21:14	33	20:45 (1)	21:58	
8	08:48	08:10	07:11		06:59		19:33 (2)	05:55		20:12 (1)	05:17	
	16:42	17:36	18:29		20:24	24	19:57 (2)	21:16	34	20:46 (1)	21:59	
9	08:48	08:08	07:09		06:56		19:33 (2)	05:53		20:12 (1)	05:16	
	16:43	17:38	18:31		20:26	24	19:57 (2)	21:18	35	20:47 (1)	22:00	
10	08:47	08:07	07:07		06:54		19:34 (2)	05:52		20:12 (1)	05:16	
	16:45	17:40	18:32		20:27	22	19:56 (2)	21:19	38	20:50 (1)	22:00	
11	08:47	08:05	07:04		18:03 (3)	06:52	19:35 (2)	05:50		20:12 (1)	05:15	
	16:46	17:42	18:34	5	18:08 (3)	20:29	19:55 (2)	21:21	39	20:51 (1)	22:01	
12	08:46	08:03	07:02		18:00 (3)	06:49	19:37 (2)	05:48		20:12 (1)	05:15	
	16:48	17:44	18:36	10	18:10 (3)	20:31	19:53 (2)	21:23	40	20:52 (1)	22:02	
13	08:45	08:01	07:00		17:58 (3)	06:47	19:38 (2)	05:46		20:12 (1)	05:15	
	16:49	17:46	18:38	14	18:12 (3)	20:33	19:50 (2)	21:24	40	20:52 (1)	22:03	
14	08:44	07:59	06:57		17:57 (3)	06:45		05:45		20:12 (1)	05:14	
	16:51	17:48	18:40	17	18:14 (3)	20:34		21:26	39	20:51 (1)	22:03	
15	08:43	07:57	06:55		17:54 (3)	06:43		05:43		20:13 (1)	05:14	
	16:53	17:49	18:41	21	18:15 (3)	20:36		21:28	39	20:52 (1)	22:04	
16	08:43	07:55	06:53		17:53 (3)	06:40		05:42		20:14 (1)	05:14	
	16:54	17:51	18:43	24	18:17 (3)	20:38		21:29	38	20:52 (1)	22:04	
17	08:42	07:53	06:50		17:52 (3)	06:38		05:40		20:14 (1)	05:14	
	16:56	17:53	18:45	28	18:20 (3)	20:40		21:31	37	20:51 (1)	22:05	
18	08:41	07:51	06:48		17:51 (3)	06:36		05:39		20:15 (1)	05:14	
	16:57	17:55	18:47	30	18:21 (3)	20:41		21:32	35	20:50 (1)	22:05	
19	08:40	07:49	06:46		17:50 (3)	06:34		05:37		20:16 (1)	05:14	
	16:59	17:57	18:49	33	18:23 (3)	20:43		21:34	34	20:50 (1)	22:06	
20	08:39	07:47	06:43		17:49 (3)	06:31		05:36		20:16 (1)	05:14	
	17:01	17:59	18:50	35	18:24 (3)	20:45		21:35	33	20:49 (1)	22:06	
21	08:37	07:45	06:41		17:48 (3)	06:29		05:34		20:17 (1)	05:14	
	17:03	18:01	18:52	38	18:26 (3)	20:47		21:37	32	20:49 (1)	22:06	
22	08:36	07:42	06:39		17:48 (3)	06:27		05:33		20:18 (1)	05:14	
	17:04	18:03	18:54	40	18:28 (3)	20:48		21:38	30	20:48 (1)	22:06	
23	08:35	07:40	06:36		17:47 (3)	06:25		05:32		20:19 (1)	05:15	
	17:06	18:05	18:56	43	18:30 (3)	20:50		21:40	29	20:48 (1)	22:06	
24	08:34	07:38	06:34		17:47 (3)	06:23		05:30		20:19 (1)	05:15	
	17:08	18:07	18:57	45	18:32 (3)	20:52		21:41	27	20:46 (1)	22:07	
25	08:32	07:36	06:31		17:46 (3)	06:21		20:22 (1)		20:20 (1)	05:15	
	17:10	18:08	18:59	46	18:32 (3)	20:54	3	20:25 (1)	21:43	25	20:45 (1)	22:07
26	08:31	07:34	06:29		17:47 (3)	06:19		20:20 (1)		20:21 (1)	05:16	
	17:12	18:10	19:01	45	18:32 (3)	20:55	7	20:27 (1)	21:44	24	20:45 (1)	22:07
27	08:30	07:32	06:27		17:47 (3)	06:17		20:19 (1)		20:22 (1)	05:16	
	17:13	18:12	19:03	44	18:31 (3)	20:57	10	20:29 (1)	21:45	22	20:44 (1)	22:07
28	08:28	07:29	06:24		17:47 (3)	06:14		20:18 (1)		20:23 (1)	05:17	
	17:15	18:14	19:05	43	18:30 (3)	20:59	12	20:30 (1)	21:47	20	20:43 (1)	22:06
29	08:27		07:22		18:47 (3)	06:12		20:16 (1)		20:26 (1)	05:17	
	17:17		20:06	43	19:30 (3)	21:01	16	20:32 (1)	21:48	16	20:42 (1)	22:06
30	08:25		07:20		18:48 (3)	06:10		20:15 (1)		20:27 (1)	05:18	
	17:19		20:08	45	19:42 (2)	21:02	18	20:33 (1)	21:49	14	20:41 (1)	22:06
31	08:24		07:17		18:48 (3)			05:23		20:30 (1)		
	17:21		20:10	46	19:43 (2)			21:50	8	20:38 (1)		
Hours	256	276	367		418			489			503	
Base			695		491			915				
ion			0.24		0.35			0.37				
ed.			1.00		1.00			1.00				
ed.			0.67		0.68			0.67				
ion			0.16		0.17			0.25				
real			114		114			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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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	08:26
	22:06		21:33	40 21:03 (1)	20:29	20	19:54 (2)	19:18	11	18:50 (3)	17:10	16:28
2	05:19		05:58	20:22 (1)	06:49		19:33 (2)	07:40		18:40 (3)	07:36	08:28
	22:05		21:31	38 21:00 (1)	20:26	22	19:55 (2)	19:15	7	18:47 (3)	17:08	16:27
3	05:20		05:59	20:22 (1)	06:51		19:31 (2)	07:42		18:43 (3)	07:37	08:29
	22:05		21:29	36 20:58 (1)	20:24	24	19:55 (2)	19:13	2	18:45 (3)	17:06	16:27
4	05:21		06:01	20:22 (1)	06:53		19:30 (2)	07:43			07:39	08:30
	22:05		21:27	35 20:57 (1)	20:22	25	19:55 (2)	19:11			17:04	16:26
5	05:21		06:03	20:22 (1)	06:54		18:58 (3)	07:45			07:41	08:32
	22:04		21:26	33 20:55 (1)	20:20	33	19:53 (2)	19:08			17:02	16:26
6	05:22		06:04	20:22 (1)	06:56		18:53 (3)	07:47			07:43	08:33
	22:03		21:24	32 20:54 (1)	20:17	40	19:50 (2)	19:06			17:01	16:25
7	05:23		06:06	20:22 (1)	06:58		18:50 (3)	07:49			07:45	08:34
	22:03		21:22	31 20:53 (1)	20:15	44	19:48 (2)	19:04			16:59	16:25
8	05:24		06:07	20:22 (1)	06:59		18:47 (3)	07:50			07:47	08:36
	22:02		21:20	28 20:50 (1)	20:12	46	19:45 (2)	19:01			16:57	16:24
9	05:25		06:09	20:23 (1)	07:01		18:45 (3)	07:52			07:48	08:37
	22:01		21:18	26 20:49 (1)	20:10	47	19:43 (2)	18:59			16:56	16:24
10	05:26		06:11	20:22 (1)	07:03		18:44 (3)	07:54			07:50	08:38
	22:01		21:16	25 20:47 (1)	20:08	47	19:41 (2)	18:57			16:54	16:24
11	05:27		06:12	20:23 (1)	07:04		18:41 (3)	07:56			07:52	08:39
	22:00		21:14	22 20:45 (1)	20:05	47	19:38 (2)	18:54			16:52	16:24
12	05:28		20:39 (1)	06:14	20:23 (1)	07:06	18:40 (3)	07:57			07:54	08:40
	21:59	5	20:44 (1)	21:12	20 20:43 (1)	20:03	47 19:36 (2)	18:52			16:51	16:23
13	05:30		20:37 (1)	06:16	20:24 (1)	07:08	18:38 (3)	07:59			07:56	08:41
	21:58	11	20:48 (1)	21:10	17 20:41 (1)	20:01	46 19:33 (2)	18:50			16:49	16:23
14	05:31		20:35 (1)	06:17	20:24 (1)	07:09	18:38 (3)	08:01			07:58	08:42
	21:57	15	20:50 (1)	21:08	15 20:39 (1)	19:58	43 19:31 (2)	18:48			16:48	16:23
15	05:32		20:34 (1)	06:19	20:25 (1)	07:11	18:37 (3)	08:03			07:59	08:43
	21:56	17	20:51 (1)	21:06	12 20:37 (1)	19:56	43 19:20 (3)	18:45			16:46	16:23
16	05:33		20:32 (1)	06:21	20:27 (1)	07:13	18:36 (3)	08:04			08:01	08:44
	21:55	21	20:53 (1)	21:04	9 20:36 (1)	19:53	44 19:20 (3)	18:43			16:45	16:24
17	05:34		20:31 (1)	06:22	20:27 (1)	07:14	18:35 (3)	08:06			08:03	08:45
	21:54	23	20:54 (1)	21:02	6 20:33 (1)	19:51	45 19:20 (3)	18:41			16:43	16:24
18	05:36		20:30 (1)	06:24	20:29 (1)	07:16	18:35 (3)	08:08			08:05	08:46
	21:53	25	20:55 (1)	21:00	3 20:32 (1)	19:49	45 19:20 (3)	18:39			16:42	16:24
19	05:37		20:30 (1)	06:26		07:18	18:34 (3)	08:10			08:06	08:46
	21:52	26	20:56 (1)	20:58		19:46	45 19:19 (3)	18:37			16:40	16:24
20	05:38		20:29 (1)	06:27		07:19	18:34 (3)	08:12			08:08	08:47
	21:50	28	20:57 (1)	20:56		19:44	43 19:17 (3)	18:34			16:39	16:25
21	05:40		20:28 (1)	06:29		07:21	18:34 (3)	08:13			08:10	08:47
	21:49	30	20:58 (1)	20:53		19:42	40 19:14 (3)	18:32			16:38	16:25
22	05:41		20:27 (1)	06:31		07:23	18:33 (3)	08:15			08:12	08:48
	21:48	31	20:58 (1)	20:51		19:39	38 19:11 (3)	18:30			16:37	16:25
23	05:43		20:27 (1)	06:32		07:25	18:33 (3)	08:17			08:13	08:49
	21:46	32	20:59 (1)	20:49		19:37	36 19:09 (3)	18:28			16:36	16:26
24	05:44		20:26 (1)	06:34		07:26	18:34 (3)	08:19			08:15	08:49
	21:45	34	21:00 (1)	20:47		19:34	33 19:07 (3)	18:26			16:35	16:27
25	05:45		20:26 (1)	06:36		07:28	18:33 (3)	07:21			08:17	08:49
	21:44	35	21:01 (1)	20:45		19:32	31 19:04 (3)	17:24			16:33	16:27
26	05:47		20:25 (1)	06:37		07:30	18:34 (3)	07:23			08:18	08:50
	21:42	36	21:01 (1)	20:42		19:30	28 19:02 (3)	17:22			16:32	16:28
27	05:48		20:24 (1)	06:39		07:31	18:35 (3)	07:24			08:20	08:50
	21:41	37	21:01 (1)	20:40		19:27	25 19:00 (3)	17:20			16:31	16:29
28	05:50		20:24 (1)	06:41		07:33	18:36 (3)	07:26			08:22	08:50
	21:39	38	21:02 (1)	20:38		19:25	22 18:58 (3)	17:18			16:31	16:30
29	05:51		20:23 (1)	06:43		07:35	18:36 (3)	07:28			08:23	08:50
	21:37	39	21:02 (1)	20:36		19:22	19 18:55 (3)	17:16			16:30	16:30
30	05:53		20:24 (1)	06:44		07:36	18:37 (3)	07:30			08:25	08:50
	21:36	39	21:03 (1)	20:33	12 19:51 (2)	19:20	15 18:52 (3)	17:14			16:29	16:31
31	05:55		20:23 (1)	06:46		07:32						08:50
	21:34	40	21:03 (1)	20:31	16 19:52 (2)			17:12				16:32
Potential sun hours	506			456		381		330		263		240
Total, worst case		562			456		1083		20			
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)	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: N - H14

Assumptions for shadow calculations

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

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

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
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	09:28 (1)	08:22	09:51 (1)	07:27	07:15	06:08	05:22	05:18	05:56	06:48	07:38	07:34	08:26	09:13 (1)	
2	16:34	48 10:16 (1)	17:23	21 10:12 (1)	18:16	20:12	21:04	21:52	22:06	21:33	20:29	19:18	17:10	16:28	49 10:02 (1)	
3	08:50	09:28 (1)	08:21	09:54 (1)	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:36	08:28	09:14 (1)	
4	16:35	49 10:17 (1)	17:25	14 10:08 (1)	18:18	20:13	21:06	21:53	22:05	21:31	20:27	19:15	17:08	16:27	49 10:03 (1)	
5	08:50	09:28 (1)	08:19		07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:29	09:14 (1)	
6	16:36	49 10:17 (1)	17:27		18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06	16:27	49 10:03 (1)	
7	08:50	09:29 (1)	08:17		07:21	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:31	09:15 (1)	
8	16:37	49 10:18 (1)	17:28		18:21	20:17	21:09	21:55	22:05	21:27	20:22	19:11	17:04	16:26	49 10:04 (1)	
9	08:50	09:29 (1)	08:16		07:18	07:06	06:01	05:19	05:21	06:03	06:54	07:45	07:41	08:32	09:15 (1)	
10	16:38	49 10:18 (1)	17:30		18:23	20:19	21:11	21:56	22:04	21:26	20:20	19:08	17:03	16:26	49 10:04 (1)	
11	08:49	09:30 (1)	08:14		07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:33	09:16 (1)	
12	16:39	49 10:19 (1)	17:32		18:25	20:20	21:13	21:57	22:04	21:24	20:17	19:06	17:01	16:25	49 10:05 (1)	
13	08:49	09:30 (1)	08:12		07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:34	09:16 (1)	
14	16:41	49 10:19 (1)	17:34		18:27	20:22	21:15	21:58	22:03	21:22	20:15	19:04	16:59	16:25	49 10:05 (1)	
15	08:48	09:31 (1)	08:10		07:11	06:59	05:55	05:17	05:24	06:07	06:59	07:50	07:47	08:36	09:16 (1)	
16	16:42	49 10:20 (1)	17:36		18:29	20:24	21:16	21:59	22:02	21:20	20:13	19:01	16:57	3 09:30 (1)	16:24	49 10:05 (1)
17	08:48	09:31 (1)	08:08		07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:49	08:37	09:17 (1)	
18	16:44	49 10:20 (1)	17:38		18:31	20:26	21:18	22:00	22:02	21:18	20:10	18:59	16:56	16 09:40 (1)	16:24	49 10:06 (1)
19	08:47	09:31 (1)	08:07		07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:38	09:17 (1)	
20	16:45	49 10:20 (1)	17:40		18:32	20:27	21:20	22:00	22:01	21:16	20:08	18:57	16:54	22 09:43 (1)	16:24	49 10:06 (1)
21	08:47	09:31 (1)	08:05		07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:39	09:18 (1)	
22	16:46	49 10:20 (1)	17:42		18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:55	16:52	26 09:45 (1)	16:24	48 10:06 (1)
23	08:46	09:32 (1)	08:03		07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:40	09:18 (1)	
24	16:48	48 10:20 (1)	17:44		18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51	29 09:47 (1)	16:24	49 10:07 (1)
25	08:45	09:32 (1)	08:01		07:00	06:47	05:46	05:15	05:30	06:16	07:08	07:59	07:56	08:41	09:18 (1)	
26	16:49	48 10:20 (1)	17:46		18:38	20:33	21:24	22:03	21:58	21:10	20:01	18:50	16:49	32 09:49 (1)	16:23	49 10:07 (1)
27	08:44	09:32 (1)	07:59		06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58	08:42	09:19 (1)	
28	16:51	49 10:21 (1)	17:48		18:40	20:35	21:26	22:03	21:57	21:08	19:58	18:48	16:48	34 09:50 (1)	16:23	48 10:07 (1)
29	08:44	09:33 (1)	07:57		06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	07:59	08:43	09:20 (1)	
30	16:53	48 10:21 (1)	17:50		18:41	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	36 09:51 (1)	16:23	48 10:08 (1)
31	08:43	09:34 (1)	07:55		06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:05	08:01	08:44	09:20 (1)	
32	16:54	47 10:21 (1)	17:51		18:43	20:38	21:29	22:04	21:55	21:04	19:54	18:43	16:45	39 09:53 (1)	16:24	48 10:08 (1)
33	08:42	09:34 (1)	07:53		06:50	06:38	05:40	05:14	05:34	06:22	07:14	08:06	08:03	08:44	09:21 (1)	
34	16:56	47 10:21 (1)	17:53		18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	40 09:54 (1)	16:24	48 10:09 (1)
35	08:41	09:35 (1)	07:51		06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05	08:46	09:21 (1)	
36	16:57	47 10:22 (1)	17:55		18:47	20:42	21:32	22:05	21:53	21:00	19:49	18:39	16:42	42 09:55 (1)	16:24	48 10:09 (1)
37	08:40	09:36 (1)	07:49		06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:07	08:47	09:21 (1)	
38	16:59	46 10:22 (1)	17:57		18:49	20:43	21:34	22:06	21:52	20:58	19:46	18:37	16:41	43 09:56 (1)	16:24	48 10:09 (1)
39	08:39	09:37 (1)	07:47		06:43	06:31	05:36	05:14	05:38	06:27	07:20	08:12	08:08	08:47	09:22 (1)	
40	17:01	45 10:22 (1)	17:59		18:50	20:45	21:35	22:06	21:51	20:56	19:44	18:34	16:39	44 09:57 (1)	16:25	48 10:10 (1)
41	08:37	09:37 (1)	07:45		06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:14	08:10	08:48	09:22 (1)	
42	17:03	44 10:21 (1)	18:01		18:52	20:47	21:37	22:06	21:49	20:54	19:42	18:32	16:38	44 09:57 (1)	16:25	48 10:10 (1)
43	08:36	09:38 (1)	07:43		06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:48	09:23 (1)	
44	17:04	44 10:22 (1)	18:03		18:54	20:49	21:38	22:06	21:48	20:51	19:39	18:30	16:37	45 09:58 (1)	16:26	48 10:11 (1)
45	08:35	09:38 (1)	07:40		06:36	06:25	05:32	05:15	05:43	06:32	07:25	08:17	08:13	08:49	09:23 (1)	
46	17:06	43 10:21 (1)	18:05		18:56	20:50	21:40	22:07	21:47	20:49	19:37	18:28	16:36	46 09:58 (1)	16:26	48 10:11 (1)
47	08:34	09:39 (1)	07:38		06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:49	09:24 (1)	
48	17:08	42 10:21 (1)	18:07		18:58	20:52	21:41	22:07	21:45	20:47	19:34	18:26	16:35	47 09:59 (1)	16:27	48 10:12 (1)
49	08:33	09:41 (1)	07:36		06:31	06:21	05:29	05:15	05:45	06:36	07:28	08:21	08:17	08:49	09:25 (1)	
50	17:10	40 10:21 (1)	18:08		18:59	20:54	21:43	22:07	21:44	20:45	19:32	17:24	16:33	48 10:00 (1)	16:27	48 10:13 (1)
51	08:31	09:41 (1)	07:34		06:29	06:19	05:28	05:16	05:47	06:38	07:30	07:23	08:18	09:13 (1)	08:50	09:25 (1)
52	17:12	39 10:20 (1)	18:10		19:01	20:56	21:44	22:07	21:42	20:43	19:30	17:22	16:32	47 10:00 (1)	16:28	48 10:13 (1)
53	08:30	09:42 (1)	07:32		06:27	06:17	05:27	05:16	05:48	06:39	07:31	07:25	08:20	09:13 (1)	08:50	09:25 (1)
54	17:13	37 10:19 (1)	18:12		19:03	20:57	21:45	22:07	21:41	20:40	19:27	17:20	16:32	48 10:01 (1)	16:29	48 10:13 (1)
55	08:28	09:44 (1)	07:29		06:24	06:15	05:26	05:17	05:50	06:41	07:33	07:26	08:22	09:12 (1)	08:50	09:25 (1)
56	17:15	34 10:18 (1)	18:14		19:05	20:59	21:47	22:07	21:39	20:38	19:25	17:18	16:31	49 10:01 (1)	16:30	49 10:14 (1)
57	08:27	09:45 (1)			07:22	06:13	05:25	05:17	05:51	06:43	07:35	07:28	08:23	09:13 (1)	08:50	09:26 (1)
58	17:17	32 10:17 (1)			20:06	21:01	21:48	22:06	21:38	20:36	19:23	17:16	16:30	49 10:02 (1)	16:30	48 10:14 (1)
59	08:25	09:47 (1)			07:20	06:10	05:24	05:18	05:53	06:44	07:37	07:30	08:25	09:14 (1)	08:50	09:26 (1)
60	17:19	29 10:16 (1)			20:08	21:03	21:49	22:06	21:36	20:33	19:20	17:14	16:29	48 10:02 (1)	16:31	49 10:15 (1)
61	08:24	09:49 (1)			07:17	06:05	05:23	05:15	05:55	06:46	07:32	07:25	08:20	09:10 (1)	08:50	09:27 (1)
62	17:21	25 10:14 (1)			20:10	21:05	21:50	22:06	21:34	20:31	19:17	17:12	16:27	48 10:03 (1)	16:32	48 10:15 (1)
Potential sun hours	256		276		367	418	489	503	506	456	381	330	263		240	
Total, worst case	1372		35										877		1502	
Sun reduction	0.16		0.21										0.19		0.14	
Oper. time red.	1.00		1.00										1.00		1.00	
Wind dir. red.	0.63		0.63										0.63		0.63	
Total reduction	0.10		0.13										0.12		0.09	
Total, real	137		5										104		131	

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	20:28 (1)	05:22	20:31 (1)
	16:34	17:23	18:16	20:12	43	19:43 (3)	21:04	7	20:35 (1)
2	08:50	08:21	07:25	07:13	19:00 (3)	06:06	20:28 (1)	05:21	24
	16:35	17:25	18:18	20:13	44	19:47 (2)	21:06	9	20:37 (1)
3	08:50	08:19	07:23	07:10	18:59 (3)	06:05	20:27 (1)	05:20	22
	16:36	17:27	18:20	20:15	46	19:48 (2)	21:08	12	20:39 (1)
4	08:50	08:17	07:20	07:08	19:00 (3)	06:03	20:25 (1)	05:19	20
	16:37	17:28	18:21	20:17	49	19:51 (2)	21:09	15	20:40 (1)
5	08:49	08:15	07:18	07:05	19:01 (3)	06:01	20:24 (1)	05:18	19
	16:38	17:30	18:23	20:19	50	19:53 (2)	21:11	17	20:41 (1)
6	08:49	08:14	07:16	07:03	19:01 (3)	05:59	20:23 (1)	05:18	16
	16:39	17:32	18:25	20:20	50	19:54 (2)	21:13	20	20:43 (1)
7	08:49	08:12	07:14	07:01	19:02 (3)	05:57	20:24 (1)	05:17	14
	16:41	17:34	18:27	20:22	51	19:56 (2)	21:14	21	20:45 (1)
8	08:48	08:10	07:11	06:59	19:03 (3)	05:55	20:23 (1)	05:17	12
	16:42	17:36	18:29	20:24	50	19:57 (2)	21:16	23	20:46 (1)
9	08:48	08:08	07:09	06:56	19:03 (3)	05:53	20:22 (1)	05:16	9
	16:43	17:38	18:31	20:26	50	19:58 (2)	21:18	25	20:47 (1)
10	08:47	08:07	07:07	06:54	19:05 (3)	05:52	20:23 (1)	05:16	4
	16:45	17:40	18:32	20:27	47	20:00 (2)	21:19	27	20:50 (1)
11	08:47	08:05	07:04	06:52	19:07 (3)	05:50	20:22 (1)	05:15	
	16:46	17:42	18:34	20:29	45	20:02 (2)	21:21	29	20:51 (1)
12	08:46	08:03	07:02	06:49	19:10 (3)	05:48	20:21 (1)	05:15	
	16:48	17:44	18:36	20:31	40	20:04 (2)	21:23	31	20:52 (1)
13	08:45	08:01	07:00	06:47	19:14 (3)	05:46	20:22 (1)	05:15	
	16:49	17:46	18:38	20:33	30	20:03 (2)	21:24	32	20:54 (1)
14	08:44	07:59	06:57	06:45	19:42 (2)	05:45	20:21 (1)	05:14	
	16:51	17:48	18:40	20:34	20	20:02 (2)	21:26	34	20:55 (1)
15	08:43	07:57	06:55	06:43	19:43 (2)	05:43	20:22 (1)	05:14	
	16:53	17:49	18:41	20:36	17	20:00 (2)	21:28	35	20:57 (1)
16	08:43	07:55	06:53	06:40	19:45 (2)	05:42	20:22 (1)	05:14	
	16:54	17:51	18:43	20:38	13	19:58 (2)	21:29	37	20:59 (1)
17	08:42	07:53	06:50	18:17 (3)	06:38	19:49 (2)	05:40	20:22 (1)	05:14
	16:56	17:53	18:45	3	18:20 (3)	20:40	6	19:55 (2)	21:31
18	08:41	07:51	06:48	18:13 (3)	06:36	05:39	20:23 (1)	05:14	37
	16:57	17:55	18:47	8	18:21 (3)	20:41	21:32	38	21:01 (1)
19	08:40	07:49	06:46	18:11 (3)	06:34	05:37	20:23 (1)	05:14	
	16:59	17:57	18:49	12	18:23 (3)	20:43	21:34	38	21:01 (1)
20	08:39	07:47	06:43	18:09 (3)	06:31	05:36	20:23 (1)	05:14	
	17:01	17:59	18:50	15	18:24 (3)	20:45	21:35	37	21:00 (1)
21	08:37	07:45	06:41	18:07 (3)	06:29	05:34	20:24 (1)	05:14	
	17:03	18:01	18:52	19	18:26 (3)	20:47	21:37	36	21:00 (1)
22	08:36	07:42	06:39	18:06 (3)	06:27	05:33	20:24 (1)	05:14	
	17:04	18:03	18:54	22	18:28 (3)	20:48	21:38	36	21:00 (1)
23	08:35	07:40	06:36	18:04 (3)	06:25	05:32	20:25 (1)	05:15	
	17:06	18:05	18:56	26	18:30 (3)	20:50	21:40	34	20:59 (1)
24	08:34	07:38	06:34	18:04 (3)	06:23	05:30	20:25 (1)	05:15	
	17:08	18:07	18:57	28	18:32 (3)	20:52	21:41	33	20:58 (1)
25	08:32	07:36	06:31	18:02 (3)	06:21	05:29	20:25 (1)	05:15	
	17:10	18:08	18:59	31	18:33 (3)	20:54	21:43	33	20:58 (1)
26	08:31	07:34	06:29	18:02 (3)	06:19	05:28	20:26 (1)	05:16	
	17:12	18:10	19:01	33	18:35 (3)	20:55	21:44	31	20:57 (1)
27	08:30	07:32	06:27	18:01 (3)	06:17	05:27	20:27 (1)	05:16	
	17:13	18:12	19:03	36	18:37 (3)	20:57	21:45	30	20:57 (1)
28	08:28	07:29	06:24	18:00 (3)	06:14	05:26	20:27 (1)	05:17	
	17:15	18:14	19:05	38	18:38 (3)	20:59	21:47	29	20:56 (1)
29	08:27		07:22	19:00 (3)	06:12	05:25	20:29 (1)	05:17	
	17:17		20:06	40	19:40 (3)	21:01	21:48	28	20:57 (1)
30	08:25		07:20	19:00 (3)	06:10	05:24	20:30 (1)	05:18	
	17:19		20:08	42	19:42 (3)	21:02	3	20:33 (1)	26
31	08:24		07:17	18:59 (3)		05:23	20:31 (1)		
	17:21		20:10	44	19:43 (3)		21:50	24	20:55 (1)
Potential sun hours	256	276	367	418		489		503	
Total, worst case			397		654		864		140
Sun reduction			0.24		0.35		0.37		0.30
Oper. time red.			1.00		1.00		1.00		1.00
Wind dir. red.			0.68		0.68		0.67		0.67
Total reduction			0.17		0.24		0.25		0.20
Total, real			66		157		213		28

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: 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		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		06:03		20:32 (1)	06:54		18:59 (3)	07:45	07:41	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		06:04		20:33 (1)	06:56		18:57 (3)	07:47	07:43	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		06:06		20:34 (1)	06:58		18:56 (3)	07:49	07:45	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		06:07		20:34 (1)	06:59		18:54 (3)	07:50	07:47	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		06:09		20:35 (1)	07:01		18:54 (3)	07:52	07:48	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		06:11		20:35 (1)	07:03		18:53 (3)	07:54	07:50	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		06:12		20:37 (1)	07:04		18:52 (3)	07:56	07:52	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		06:14		20:37 (1)	07:06		18:52 (3)	07:57	07:54	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		06:16		20:39 (1)	07:08		18:50 (3)	07:59	07:56	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		06:17		20:38 (1)	07:09		18:50 (3)	08:01	07:58	08:42
	21:57	27	21:05 (1)	21:08		19:58	41	19:31 (3)	18:48	16:48	16:23
15	05:32		06:19		07:11			18:50 (3)	08:03	07:59	08:43
	21:56	29	21:06 (1)	21:06		19:56	39	19:29 (3)	18:45	16:46	16:23
16	05:33		06:21		07:13			18:50 (3)	08:04	08:01	08:44
	21:55	29	21:06 (1)	21:04		19:53	36	19:26 (3)	18:43	16:45	16:24
17	05:34		06:22		07:14			18:50 (3)	08:06	08:03	08:45
	21:54	31	21:07 (1)	21:02		19:51	34	19:24 (3)	18:41	16:43	16:24
18	05:36		06:24		07:16			18:50 (3)	08:08	08:05	08:46
	21:53	32	21:07 (1)	21:00		19:49	32	19:22 (3)	18:39	16:42	16:24
19	05:37		06:26		07:18			18:50 (3)	08:10	08:06	08:46
	21:52	32	21:08 (1)	20:58		19:46	29	19:19 (3)	18:37	16:40	16:24
20	05:38		06:27		07:19			18:51 (3)	08:12	08:08	08:47
	21:50	34	21:09 (1)	20:56		19:44	26	19:17 (3)	18:34	16:39	16:25
21	05:40		06:29		07:21			18:52 (3)	08:13	08:10	08:47
	21:49	35	21:09 (1)	20:53		19:42	22	19:14 (3)	18:32	16:38	16:25
22	05:41		06:31		07:23			18:52 (3)	08:15	08:12	08:48
	21:48	35	21:09 (1)	20:51		19:39	19	19:11 (3)	18:30	16:37	16:25
23	05:43		06:32		07:25			18:53 (3)	08:17	08:13	08:49
	21:46	36	21:10 (1)	20:49		19:37	16	19:09 (3)	18:28	16:36	16:26
24	05:44		06:34		07:26			18:54 (3)	08:19	08:15	08:49
	21:45	37	21:10 (1)	20:47		19:34	13	19:07 (3)	18:26	16:35	16:27
25	05:45		06:36		07:28			18:55 (3)	07:21	08:17	08:49
	21:44	37	21:11 (1)	20:45		19:32	9	19:04 (3)	17:24	16:33	16:27
26	05:47		06:37		19:50 (2)	07:30		18:57 (3)	07:23	08:18	08:50
	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		06:39		19:47 (2)	07:31			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		06:41		19:45 (2)	07:33			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		06:43		19:42 (2)	07:35			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		06:44		19:14 (3)	07:36			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		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)	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: 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	08:22	07:27	07:15	19:35 (3)	06:08	05:22	20:45 (1)
	16:34	17:23	18:16	20:12	10	19:45 (3)	21:04	21:51
2	08:50	08:21	07:25	07:13	19:33 (3)	06:06	05:21	33
	16:35	17:25	18:18	20:13	14	19:47 (3)	21:06	21:53
3	08:50	08:19	07:23	07:10	19:31 (3)	06:05	05:20	34
	16:36	17:27	18:20	20:15	17	19:48 (3)	21:08	21:54
4	08:50	08:17	07:20	07:08	19:30 (3)	06:03	05:19	35
	16:37	17:28	18:21	20:17	21	19:51 (3)	21:09	21:55
5	08:49	08:15	07:18	07:05	19:29 (3)	06:01	05:18	35
	16:38	17:30	18:23	20:19	24	19:53 (3)	21:11	21:56
6	08:49	08:14	07:16	07:03	19:27 (3)	05:59	05:18	35
	16:39	17:32	18:25	20:20	27	19:54 (3)	21:13	21:57
7	08:49	08:12	07:14	07:01	19:26 (3)	05:57	05:17	35
	16:41	17:34	18:27	20:22	30	19:56 (3)	21:14	21:58
8	08:48	08:10	07:11	06:59	19:26 (3)	05:55	05:17	34
	16:42	17:36	18:29	20:24	31	19:57 (3)	21:16	21:59
9	08:48	08:08	07:09	06:56	19:25 (3)	05:53	05:16	33
	16:43	17:38	18:31	20:26	33	19:58 (3)	21:18	22:00
10	08:47	08:06	07:07	06:54	19:24 (3)	05:52	05:16	34
	16:45	17:40	18:32	20:27	36	20:00 (2)	21:19	22:00
11	08:47	08:05	07:04	06:52	19:24 (3)	05:50	05:15	33
	16:46	17:42	18:34	20:29	38	20:02 (2)	21:21	22:01
12	08:46	08:03	07:02	06:49	19:24 (3)	05:48	05:15	32
	16:48	17:44	18:36	20:31	40	20:04 (2)	21:23	22:02
13	08:45	08:01	07:00	06:47	19:23 (3)	05:46	05:15	33
	16:49	17:46	18:38	20:33	42	20:05 (2)	21:24	22:03
14	08:44	07:59	06:57	06:45	19:23 (3)	05:45	05:14	32
	16:51	17:48	18:40	20:34	44	20:07 (2)	21:26	22:03
15	08:43	07:57	06:55	06:43	19:23 (3)	05:43	05:14	32
	16:53	17:49	18:41	20:36	46	20:09 (2)	21:28	22:04
16	08:43	07:55	06:53	06:40	19:24 (3)	05:42	05:14	31
	16:54	17:51	18:43	20:38	47	20:11 (2)	21:29	22:04
17	08:42	07:53	06:50	06:38	19:24 (3)	05:40	05:14	31
	16:56	17:53	18:45	20:40	49	20:13 (2)	21:31	22:05
18	08:41	07:51	06:48	06:36	19:25 (3)	05:39	05:14	32
	16:57	17:55	18:47	20:41	49	20:14 (2)	21:32	22:05
19	08:40	07:49	06:46	06:34	19:24 (3)	05:37	05:14	32
	16:59	17:57	18:49	20:43	51	20:15 (2)	21:34	22:06
20	08:39	07:47	06:43	06:31	19:25 (3)	05:36	05:14	32
	17:01	17:59	18:50	20:45	52	20:17 (2)	21:35	22:06
21	08:37	07:45	06:41	06:29	19:26 (3)	05:34	05:14	32
	17:03	18:01	18:52	20:47	51	20:17 (2)	21:37	22:06
22	08:36	07:42	06:39	06:27	19:27 (3)	05:33	05:14	32
	17:04	18:03	18:54	20:48	49	20:16 (2)	21:38	22:06
23	08:35	07:40	06:36	06:25	19:29 (3)	05:32	05:15	32
	17:06	18:05	18:56	20:50	45	20:14 (2)	21:40	22:06
24	08:34	07:38	06:34	06:23	19:30 (3)	05:30	05:15	32
	17:08	18:07	18:57	20:52	39	20:13 (2)	21:41	22:07
25	08:32	07:36	06:31	06:21	19:32 (3)	05:29	05:15	32
	17:10	18:08	18:59	20:54	28	20:09 (2)	21:43	22:07
26	08:31	07:34	06:29	06:19	19:35 (3)	05:28	05:16	31
	17:12	18:10	19:01	20:55	15	19:50 (3)	21:44	22:07
27	08:30	07:32	06:27	06:17	19:41 (3)	05:27	05:16	32
	17:13	18:12	19:03	20:57	3	19:44 (3)	21:45	22:07
28	08:28	07:29	06:24	06:14		05:26	05:17	32
	17:15	18:14	19:05	20:59		21:47	22:06	32
29	08:27		07:22	06:12		05:25	05:17	33
	17:17		20:06	21:01		21:48	22:06	33
30	08:25		07:20	06:10		05:24	05:18	33
	17:19		20:08	21:02		21:49	22:06	33
31	08:24		07:17			05:23	20:45 (1)	
	17:21		20:10			21:50	21:17 (1)	
Potential sun hours	256	276	367	418		488	503	984
Total, worst case			8	931		411		0.30
Sun reduction			0.24	0.35		0.37		1.00
Oper. time red.			1.00	1.00		1.00		0.66
Wind dir. red.			0.68	0.68		0.66		0.20
Total reduction			0.17	0.24		0.24		194
Total, real			1	222		100		

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

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

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

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

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	
08:50	08:22	07:27	07:15							06:08	19:46 (3)	05:22		21:00 (1)	
16:34	17:23	18:16	20:12							21:04	35	20:21 (2)	21:51	18	21:18 (1)
08:50	08:21	07:25	07:13							06:06		19:48 (3)	05:21		21:00 (1)
16:35	17:25	18:18	20:13							21:06	30	20:18 (3)	21:53	19	21:19 (1)
08:50	08:19	07:23	07:10							06:05		19:49 (3)	05:20		21:00 (1)
16:36	17:27	18:20	20:15							21:08	28	20:17 (3)	21:54	21	21:21 (1)
08:50	08:17	07:20	07:08							06:03		19:50 (3)	05:19		21:00 (1)
16:37	17:28	18:21	20:17							21:09	25	20:15 (3)	21:55	21	21:21 (1)
08:49	08:15	07:18	07:05							06:01		19:52 (3)	05:18		21:00 (1)
16:38	17:30	18:23	20:19							21:11	21	20:13 (3)	21:56	22	21:22 (1)
08:49	08:14	07:16	07:03							05:59		19:53 (3)	05:18		21:00 (1)
16:39	17:32	18:25	20:20							21:13	18	20:11 (3)	21:57	23	21:23 (1)
08:49	08:12	07:14	07:01							05:57		19:57 (3)	05:17		21:00 (1)
16:41	17:34	18:27	20:22							21:14	12	20:09 (3)	21:58	24	21:24 (1)
08:48	08:10	07:11	06:59							05:55			05:17		21:01 (1)
16:42	17:36	18:29	20:24							21:16			21:59	24	21:25 (1)
08:48	08:08	07:09	06:56							05:53			05:16		21:01 (1)
16:43	17:38	18:31	20:26							21:18			22:00	25	21:26 (1)
08:47	08:06	07:07	06:54		19:56 (3)					05:52			05:16		21:01 (1)
16:45	17:40	18:32	20:27	4	20:00 (3)					21:19			22:00	25	21:26 (1)
08:47	08:05	07:04	06:52		19:54 (3)					05:50			05:15		21:01 (1)
16:46	17:42	18:34	20:29	8	20:02 (3)					21:21			22:01	26	21:27 (1)
08:46	08:03	07:02	06:49		19:53 (3)					05:48			05:15		21:02 (1)
16:48	17:44	18:36	20:31	11	20:04 (3)					21:23			22:02	26	21:28 (1)
08:45	08:01	07:00	06:47		19:50 (3)					05:46			05:15		21:01 (1)
16:49	17:46	18:38	20:33	15	20:05 (3)					21:24			22:03	27	21:28 (1)
08:44	07:59	06:57	06:45		19:49 (3)					05:45			05:14		21:02 (1)
16:51	17:48	18:40	20:34	18	20:07 (3)					21:26			22:03	27	21:29 (1)
08:43	07:57	06:55	06:43		19:48 (3)					05:43			05:14		21:02 (1)
16:53	17:49	18:41	20:36	21	20:09 (3)					21:28			22:04	27	21:29 (1)
08:43	07:55	06:53	06:40		19:47 (3)					05:42			05:14		21:02 (1)
16:54	17:51	18:43	20:38	24	20:11 (3)					21:29			22:04	28	21:30 (1)
08:42	07:53	06:50	06:38		19:47 (3)					05:40			05:14		21:03 (1)
16:56	17:53	18:45	20:40	26	20:13 (2)					21:31			22:05	27	21:30 (1)
08:41	07:51	06:48	06:36		19:46 (3)					05:39			05:14		21:03 (1)
16:57	17:55	18:47	20:41	28	20:14 (2)					21:32			22:05	28	21:31 (1)
08:40	07:49	06:46	06:34		19:45 (3)					05:37			05:14		21:03 (1)
16:59	17:57	18:49	20:43	30	20:15 (2)					21:34			22:06	28	21:31 (1)
08:39	07:47	06:43	06:31		19:44 (3)					05:36			05:14		21:03 (1)
17:01	17:59	18:50	20:45	33	20:17 (2)					21:35			22:06	28	21:31 (1)
08:37	07:45	06:41	06:29		19:44 (3)					05:34		21:03 (1)	05:14		21:04 (1)
17:03	18:01	18:52	20:47	35	20:19 (2)					21:37	2	21:05 (1)	22:06	28	21:32 (1)
08:36	07:42	06:39	06:27		19:44 (3)					05:33		21:03 (1)	05:14		21:04 (1)
17:04	18:03	18:54	20:48	36	20:20 (2)					21:38	4	21:07 (1)	22:06	28	21:32 (1)
08:35	07:40	06:36	06:25		19:44 (3)					05:32		21:02 (1)	05:15		21:04 (1)
17:06	18:05	18:56	20:50	38	20:22 (2)					21:40	6	21:08 (1)	22:06	28	21:32 (1)
08:34	07:38	06:34	06:23		19:44 (3)					05:30		21:01 (1)	05:15		21:04 (1)
17:08	18:07	18:57	20:52	40	20:24 (2)					21:41	7	21:08 (1)	22:07	28	21:32 (1)
08:32	07:36	06:31	06:21		19:44 (3)					05:29		21:01 (1)	05:15		21:05 (1)
17:10	18:08	18:59	20:54	41	20:25 (2)					21:43	9	21:10 (1)	22:07	27	21:32 (1)
08:31	07:34	06:29	06:19		19:44 (3)					05:28		21:00 (1)	05:16		21:04 (1)
17:12	18:10	19:01	20:55	43	20:27 (2)					21:44	11	21:11 (1)	22:07	28	21:32 (1)
08:30	07:32	06:27	06:17		19:44 (3)					05:27		21:00 (1)	05:16		21:05 (1)
17:13	18:12	19:03	20:57	45	20:29 (2)					21:45	12	21:12 (1)	22:07	27	21:32 (1)
08:28	07:29	06:24	06:14		19:45 (3)					05:26		21:00 (1)	05:17		21:05 (1)
17:15	18:14	19:05	20:59	42	20:27 (2)					21:47	13	21:13 (1)	22:06	27	21:32 (1)
08:27	07:22	06:12	06:02		19:45 (3)					05:25		21:01 (1)	05:17		21:05 (1)
17:17	18:16	19:07	21:01	41	20:26 (2)					21:48	14	21:15 (1)	22:06	27	21:32 (1)
08:25	07:20	06:10	06:00		19:46 (3)					05:24		21:00 (1)	05:18		21:05 (1)
17:19	18:18	19:09	21:02	38	20:24 (2)					21:49	16	21:16 (1)	22:06	26	21:31 (1)
08:24	07:17	06:07								05:23		21:00 (1)			
17:21	18:19	19:10								21:50	17	21:17 (1)			
256	276	367	418							488			503		
				617							280			768	
				0.35							0.37			0.30	
				1.00							1.00			1.00	
				0.67							0.67			0.65	
				0.24							0.24			0.19	
				147							68			149	

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: 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	26	21:32 (1)	21:33		20:29	8	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	26	21:32 (1)	21:31		20:26	4	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	25	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	24	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	24	21:30 (1)	21:26	6	20:15 (3)			19:08	17:02	16:26
11	05:22		21:07 (1)	06:04		20:05 (3)			07:47	07:43	08:33
12	22:03	23	21:30 (1)	21:24	14	20:19 (3)			19:06	17:01	16:25
13	05:23		21:07 (1)	06:06		20:03 (3)			07:49	07:45	08:34
14	22:03	22	21:29 (1)	21:22	19	20:22 (3)			19:04	16:59	16:25
15	05:24		21:07 (1)	06:07		20:01 (3)			07:50	07:47	08:36
16	22:02	22	21:29 (1)	21:20	23	20:24 (3)			19:01	16:57	16:24
17	05:25		21:07 (1)	06:09		19:59 (3)			07:52	07:48	08:37
18	22:01	20	21:27 (1)	21:18	26	20:25 (3)			18:59	16:56	16:24
19	05:26		21:07 (1)	06:11		19:57 (3)			07:54	07:50	08:38
20	22:01	20	21:27 (1)	21:16	29	20:26 (3)			18:57	16:54	16:24
21	05:27		21:07 (1)	06:12		19:56 (3)			07:56	07:52	08:39
22	22:00	19	21:26 (1)	21:14	31	20:27 (3)			18:54	16:52	16:24
23	05:28		21:07 (1)	06:14		19:55 (3)			07:57	07:54	08:40
24	21:59	18	21:25 (1)	21:12	36	20:31 (2)			18:52	16:51	16:24
25	05:30		21:09 (1)	06:16		19:54 (3)			07:59	07:56	08:41
26	21:58	16	21:25 (1)	21:10	39	20:33 (2)			18:50	16:49	16:23
27	05:31		21:09 (1)	06:17		19:53 (3)			08:01	07:58	08:42
28	21:57	15	21:24 (1)	21:08	41	20:34 (2)			18:48	16:48	16:23
29	05:32		21:09 (1)	06:19		19:52 (3)			08:03	07:59	08:43
30	21:56	14	21:23 (1)	21:06	43	20:35 (2)			18:45	16:46	16:23
31	05:33		21:09 (1)	06:21		19:52 (3)			08:04	08:01	08:44
32	21:55	13	21:22 (1)	21:04	44	20:36 (2)			18:43	16:45	16:24
33	05:34		21:10 (1)	06:22		19:51 (3)			08:06	08:03	08:45
34	21:54	11	21:21 (1)	21:02	42	20:33 (2)			18:41	16:43	16:24
35	05:36		21:10 (1)	06:24		19:51 (3)			08:08	08:05	08:45
36	21:53	10	21:20 (1)	21:00	41	20:32 (2)			18:39	16:42	16:24
37	05:37		21:11 (1)	06:26		19:50 (3)			08:10	08:06	08:46
38	21:52	9	21:20 (1)	20:58	39	20:29 (2)			18:37	16:40	16:24
39	05:38		21:12 (1)	06:27		19:50 (3)			08:12	08:08	08:47
40	21:50	6	21:18 (1)	20:56	37	20:27 (2)			18:34	16:39	16:25
41	05:40		21:12 (1)	06:29		19:49 (3)			08:13	08:10	08:47
42	21:49	5	21:17 (1)	20:53	36	20:25 (2)			18:32	16:38	16:25
43	05:41		21:12 (1)	06:31		19:49 (3)			08:15	08:12	08:48
44	21:48	3	21:15 (1)	20:51	34	20:23 (2)			18:30	16:37	16:25
45	05:43		21:14 (1)	06:32		19:49 (3)			08:17	08:13	08:48
46	21:46	1	21:15 (1)	20:49	32	20:21 (2)			18:28	16:36	16:26
47	05:44			06:34		19:48 (3)			08:19	08:15	08:49
48	21:45			20:47	31	20:19 (2)			18:26	16:35	16:27
49	05:45			06:36		19:49 (3)			07:21	08:17	08:49
50	21:44			20:45	28	20:17 (2)			17:24	16:33	16:27
51	05:47			06:37		19:49 (3)			07:23	08:18	08:50
52	21:42			20:42	25	20:14 (2)			17:22	16:32	16:28
53	05:48			06:39		19:49 (3)			07:24	08:20	08:50
54	21:41			20:40	23	20:12 (3)			17:20	16:31	16:29
55	05:50			06:41		19:50 (3)			07:26	08:22	08:50
56	21:39			20:38	21	20:11 (3)			17:18	16:31	16:30
57	05:51			06:43		19:50 (3)			07:28	08:23	08:50
58	21:37			20:36	18	20:08 (3)			17:16	16:30	16:30
59	05:53			06:44		19:51 (3)			07:30	08:25	08:50
60	21:36			20:33	15	20:06 (3)			17:14	16:29	16:31
61	05:55			06:46		19:51 (3)			07:32		08:50
62	21:34			20:31	12	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)	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
Assumptions for shadow calculations

Shadow receptor: T - H20

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

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	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	09:33 (3)	08:22	08:52 (1)	07:27	07:15	06:09	05:22	05:18	05:56	06:48	07:38	07:34	08:28 (1)	08:26	09:23 (3)			
2	16:34	26	09:59 (3)	17:23	37	09:29 (1)	18:16	20:12	21:04	21:52	22:06	21:33	20:29	19:18	18	09:41 (3)			
3	08:50	09:34 (3)	08:21	08:52 (1)	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40	07:36	08:27 (1)	08:28	09:23 (3)			
4	16:35	26	10:00 (3)	17:25	37	09:29 (1)	18:18	20:13	21:06	21:53	22:05	21:31	20:27	19:15	19	09:42 (3)			
5	08:50	09:34 (3)	08:19	08:53 (1)	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:37	08:26 (1)	08:29	09:22 (3)			
6	16:36	25	09:59 (3)	17:27	37	09:30 (1)	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	21	09:43 (3)			
7	08:50	09:35 (3)	08:17	08:54 (1)	07:21	07:08	06:03	05:19	05:21	06:01	06:53	07:43	07:39	08:25 (1)	08:31	09:22 (3)			
8	16:37	25	10:00 (3)	17:28	35	09:29 (1)	18:22	20:17	21:09	21:55	22:05	21:27	20:22	19:11	22	09:44 (3)			
9	08:50	09:35 (3)	08:16	08:54 (1)	07:18	07:06	06:01	05:19	05:21	06:03	06:54	07:45	07:41	08:24 (1)	08:32	09:22 (3)			
10	16:38	24	09:59 (3)	17:30	35	09:29 (1)	18:23	20:19	21:11	21:56	22:04	21:26	20:20	19:08	23	09:45 (3)			
11	08:49	09:36 (3)	08:14	08:55 (1)	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47	07:43	08:24 (1)	08:33	09:22 (3)			
12	16:39	24	10:00 (3)	17:32	33	09:28 (1)	18:25	20:20	21:13	21:57	22:04	21:24	20:17	19:06	24	09:46 (3)			
13	08:49	09:37 (3)	08:12	08:55 (1)	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49	07:45	08:23 (1)	08:35	09:22 (3)			
14	16:41	23	10:00 (3)	17:34	32	09:27 (1)	18:27	20:22	21:15	21:58	22:03	21:22	20:15	19:04	25	09:46 (3)			
15	08:48	09:38 (3)	08:10	08:56 (1)	07:11	06:59	05:55	05:17	05:24	06:07	06:59	07:50	07:47	08:23 (1)	08:36	09:22 (3)			
16	16:42	22	10:00 (3)	17:36	30	09:26 (1)	18:29	20:24	21:16	21:59	22:02	21:20	20:13	19:01	26	09:47 (3)			
17	08:48	09:39 (3)	08:08	08:58 (1)	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52	07:49	08:23 (1)	08:37	09:23 (3)			
18	16:44	21	10:00 (3)	17:38	27	09:25 (1)	18:31	20:26	21:18	22:00	22:02	21:18	20:10	18:59	27	09:48 (3)			
19	08:47	09:40 (3)	08:07	08:59 (1)	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	07:50	08:23 (1)	08:38	09:23 (3)			
20	16:45	19	09:59 (3)	17:40	25	09:24 (1)	18:32	20:27	21:20	22:01	22:01	21:16	20:08	18:57	28	09:49 (3)			
21	08:47	09:41 (3)	08:05	09:01 (1)	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52	08:23 (1)	08:39	09:23 (3)			
22	16:46	18	09:59 (3)	17:42	21	09:22 (1)	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:55	29	09:49 (3)			
23	08:46	09:42 (3)	08:03	09:03 (1)	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54	08:24 (1)	08:40	09:23 (3)			
24	16:48	16	09:58 (3)	17:44	16	09:19 (1)	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	30	09:50 (3)			
25	08:45	09:15 (1)	08:01	09:07 (1)	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59	07:56	08:26 (1)	08:41	09:23 (3)			
26	16:49	14	09:57 (3)	17:46	8	09:15 (1)	18:38	20:33	21:24	22:03	21:58	21:10	20:01	18:50	31	09:50 (3)			
27	08:44	09:15 (1)	07:59	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01	08:01	07:58	08:28 (1)	08:42	09:24 (3)			
28	16:51	12	09:56 (3)	17:48	18:40	20:35	21:26	22:03	21:57	21:08	19:58	18:48	16:48	33	09:01 (1)	16:23	27	09:51 (3)	
29	08:44	09:13 (1)	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	08:00	08:00	08:30 (1)	08:43	09:24 (3)			
30	16:53	8	09:52 (3)	17:50	18:42	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46	31	09:01 (1)	16:24	28	09:52 (3)	
31	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	08:01	08:32 (1)	08:44	09:25 (3)			
32	16:54	8	09:20 (1)	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:54	18:43	16:45	29	09:01 (1)	16:24	27	09:52 (3)	
33	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	08:03	08:34 (1)	08:45	09:25 (3)			
34	16:56	10	09:21 (1)	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43	27	09:01 (1)	16:24	28	09:53 (3)	
35	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	08:05	08:36 (1)	08:46	09:25 (3)			
36	16:57	12	09:22 (1)	17:55	18:47	20:42	21:32	22:05	21:53	21:00	19:49	18:39	16:42	25	09:01 (1)	16:24	28	09:53 (3)	
37	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	08:07	08:38 (1)	08:46	09:26 (3)			
38	16:59	14	09:23 (1)	17:57	18:49	20:43	21:34	22:06	21:52	20:58	19:46	18:37	16:41	23	09:01 (1)	16:24	28	09:54 (3)	
39	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	08:08	08:40 (1)	08:47	09:26 (3)			
40	17:01	17	09:25 (1)	17:59	18:50	20:45	21:35	22:06	21:51	20:56	19:44	18:35	16:39	21	09:01 (1)	16:25	28	09:54 (3)	
41	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	08:10	08:42 (1)	08:48	09:26 (3)			
42	17:03	19	09:25 (1)	18:01	18:52	20:47	21:37	22:06	21:49	20:54	19:42	18:32	16:38	19	09:01 (1)	16:25	28	09:54 (3)	
43	08:36	09:05 (1)	07:43	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	08:12	08:44 (1)	08:48	09:27 (3)			
44	17:04	21	09:26 (1)	18:03	18:54	20:49	21:38	22:06	21:48	20:51	19:39	18:30	16:37	17	09:01 (1)	16:26	28	09:55 (3)	
45	08:35	09:03 (1)	07:40	06:36	06:25	05:32	05:15	05:43	06:32	07:25	08:17	08:13	08:13	08:45 (1)	08:49	09:27 (3)			
46	17:06	23	09:26 (1)	18:05	18:56	20:50	21:40	22:07	21:47	20:49	19:37	18:28	16:36	14	08:59 (1)	16:26	28	09:55 (3)	
47	08:34	09:02 (1)	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	08:15	08:47 (1)	08:49	09:29 (3)			
48	17:08	25	09:27 (1)	18:07	18:58	20:52	21:41	22:07	21:45	20:47	19:34	18:26	16:35	12	08:59 (1)	16:27	27	09:56 (3)	
49	08:33	09:01 (1)	07:36	06:31	06:21	05:29	05:15	05:45	06:36	07:28	08:21	08:17	08:17	08:49 (1)	08:49	09:30 (3)			
50	17:10	27	09:28 (1)	18:08	18:59	20:54	21:43	22:07	21:44	20:45	19:32	18:24	16:33	10	08:59 (1)	16:27	28	09:57 (3)	
51	08:31	08:59 (1)	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:18	08:18	08:51 (1)	08:50	09:29 (3)			
52	17:12	29	09:28 (1)	18:10	19:01	20:56	21:44	22:07	21:42	20:43	19:30	18:22	16:32	8	08:59 (1)	16:28	28	09:57 (3)	
53	08:30	08:57 (1)	07:32	06:27	06:17	05:27	05:16	05:48	06:39	07:31	08:25	08:20	08:20	08:53 (1)	08:50	09:29 (3)			
54	17:13	31	09:28 (1)	18:12	19:03	20:57	21:45	22:07	21:41	20:40	19:27	18:20	16:32	6	08:59 (1)	16:29	28	09:57 (3)	
55	08:28	08:56 (1)	07:29	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:22	08:22	08:54 (1)	08:50	09:30 (3)			
56	17:15	33	09:29 (1)	18:14	19:05	20:59	21:47	22:07	21:39	20:38	19:25	18:18	16:31	12	09:35 (3)	16:30	27	09:57 (3)	
57	08:27	08:54 (1)	18:14	07:22	06:13	05:25	05:17	05:52	06:43	07:35	08:28	08:23	08:23	08:56 (1)	08:50	09:31 (3)			
58	17:17	35	09:29 (1)	18:14	20:06	21:01	21:48	22:06	21:38	20:36	19:23	18:16	16:31	14	09:38 (3)	16:30	27	09:58 (3)	
59	08:25	08:53 (1)	18:14	07:20	06:10	05:24	05:18	05:53	06:44	07:37	08:30	08:25	08:25	09:24 (3)	08:50	09:31 (3)			
60	17:19	37	09:30 (1)	20:08	21:03	21:49	22:06	21:36	20:33	19:20	18:14	17	08:49 (1)	16:29	16	09:40 (3)	16:31	27	09:58 (3)
61	08:24	08:52 (1)	18:14	07:17	06:07	05:23	05:15	05:55	06:46	07:39	08:32	08:27	08:27	09:00 (1)	08:50	09:32 (3)			
62	17:21	38	09:30 (1)	20:10	21:05	21:50	21:34	20:31	19:24	18:17	17:12	22	08:52 (1)	16:32	27	09:59 (3)			
Potential sun hours	256		276	367	418	489	503	506	456	381	330		263		240				
Total, worst case		682	373									50	757		804				
Sun reduction		0.16	0.21									0.24	0.19		0.14				
Oper. time red.		1.00	1.00									1.00	1.00		1.00				
Wind dir. red.		0.65	0.65									0.65	0.65		0.63				
Total reduction		0.10	0.14									0.16	0.12		0.09				
Total, real		69	51									8	92						

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		07:19 (5)	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		07:16 (5)	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		07:13 (5)	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		07:13 (5)	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		07:12 (5)	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		07:12 (5)	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		07:13 (5)	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		07:13 (5)	05:39	05:14					
	16:57			17:55	18:47	5	07:19 (4)	20:41	07:24 (5)	21:32	22:05					
19	08:40			07:49	06:46		07:12 (4)	06:34	07:14 (5)	05:37	05:14					
	16:59			17:57	18:49	9	07:21 (4)	20:43	07:21 (5)	21:34	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	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	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	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	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	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	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			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					05:23	05:18					
	17:21				20:10					21:50	22:06					
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)	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
Assumptions for shadow calculations

Shadow receptor: U - H21

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

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	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		07:56 (4)	08:10		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		07:55 (4)	08:12		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		07:55 (4)	08:13		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		07:54 (4)	08:15		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		07:54 (4)	08:17		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		07:17 (5)		07:55 (4)	08:19		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		07:16 (5)		07:56 (4)	07:21		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		07:14 (5)		07:23	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		07:14 (5)		07:24	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		07:14 (5)		07:26	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		07:14 (5)		07:28	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		07:14 (5)		07:30	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		07:15 (5)		07:32			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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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

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)	07:21		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)	07:23		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)	07:24		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)	07:26		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			07:28		08:23	
	21:38	19 07:00 (6)	20:36	13 07:31 (5)	19:22			17:16	3 15:23 (2)	08:50	14:42 (1)
30	05:53		06:44		07:36			07:30		08:25	
	21:36	18 07:00 (6)	20:33	13 07:31 (5)	19:20			17:14	10 15:30 (2)	08:50	14:44 (1)
31	05:55		06:46		07:17 (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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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

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: X - H24

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

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	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 (3)	08:22	08:49 (1)	07:27	07:15	06:09	05:22	05:18	05:56	06:48	07:38
2	16:34	43	10:40 (2)	17:23	18	09:07 (1)	18:16	20:12	21:04	21:52	22:06	21:33
3	08:50	09:23 (3)	08:21	08:47 (1)	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40
4	16:35	43	10:40 (2)	17:25	20	09:07 (1)	18:18	20:13	21:06	21:53	22:06	21:31
5	08:50	09:22 (3)	08:19	08:46 (1)	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42
6	16:36	44	10:40 (2)	17:27	22	09:08 (1)	18:20	20:15	21:08	21:54	22:05	21:29
7	08:50	09:22 (3)	08:17	08:44 (1)	07:21	07:08	06:03	05:19	05:21	06:01	06:53	07:43
8	16:37	43	10:40 (2)	17:28	24	09:08 (1)	18:22	20:17	21:09	21:55	22:05	21:27
9	08:50	09:21 (3)	08:16	08:42 (1)	07:18	07:06	06:01	05:19	05:21	06:03	06:54	07:45
10	16:38	42	10:39 (2)	17:30	27	09:09 (1)	18:23	20:19	21:11	21:56	22:04	21:26
11	08:49	09:21 (3)	08:14	08:40 (1)	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47
12	16:39	42	10:39 (2)	17:32	29	09:09 (1)	18:25	20:20	21:13	21:57	22:04	21:24
13	08:49	09:20 (3)	08:12	08:38 (1)	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49
14	16:41	40	10:38 (2)	17:34	31	09:09 (1)	18:27	20:22	21:15	21:58	22:03	21:22
15	08:48	09:20 (3)	08:10	08:36 (1)	07:11	06:59	05:55	05:17	05:24	06:07	06:59	07:50
16	16:42	38	10:37 (2)	17:36	33	09:09 (1)	18:29	20:24	21:16	21:59	22:02	21:20
17	08:48	09:19 (3)	08:08	08:35 (1)	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52
18	16:44	35	10:35 (2)	17:38	33	09:08 (1)	18:31	20:26	21:18	22:00	22:02	21:18
19	08:47	09:18 (3)	08:07	08:35 (1)	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54
20	16:45	29	10:32 (2)	17:40	33	09:08 (1)	18:32	20:28	21:20	22:01	22:01	21:16
21	08:47	09:17 (3)	08:05	08:36 (1)	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56
22	16:46	27	09:44 (3)	17:42	32	09:08 (1)	18:34	20:29	21:21	22:01	22:00	21:14
23	08:46	09:18 (3)	08:03	08:37 (1)	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57
24	16:48	26	09:44 (3)	17:44	30	09:07 (1)	18:36	20:31	21:23	22:02	21:59	21:12
25	08:45	09:18 (3)	08:01	08:37 (1)	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59
26	16:49	26	09:44 (3)	17:46	29	09:06 (1)	18:38	20:33	21:24	22:03	21:58	21:10
27	08:44	09:20 (3)	07:59	08:38 (1)	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01
28	16:51	25	09:45 (3)	17:48	28	09:06 (1)	18:40	20:35	21:26	22:03	21:57	21:08
29	08:44	09:20 (3)	07:57	08:40 (1)	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03
30	16:53	24	09:44 (3)	17:50	24	09:04 (1)	18:42	20:36	21:28	22:04	21:56	21:06
31	08:43	09:21 (3)	07:55	08:41 (1)	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:05
1	16:54	23	09:44 (3)	17:51	22	09:03 (1)	18:43	20:38	21:29	22:04	21:55	21:04
2	08:42	09:22 (3)	07:53	08:43 (1)	06:50	06:38	05:40	05:14	05:34	06:22	07:15	08:06
3	16:56	22	09:44 (3)	17:53	18	09:01 (1)	18:45	20:40	21:31	22:05	21:54	21:02
4	08:41	09:23 (3)	07:51	08:46 (1)	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08
5	16:58	21	09:44 (3)	17:55	12	08:58 (1)	18:47	20:42	21:32	22:05	21:53	21:00
6	08:40	09:24 (3)	07:49	08:46 (1)	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10
7	16:59	20	09:44 (3)	17:57	18:49	20:43	21:34	22:06	21:52	20:58	19:46	18:37
8	08:39	09:26 (3)	07:47	08:43	06:32	05:36	05:14	05:38	06:27	07:20	08:12	09:04
9	17:01	17	09:43 (3)	17:59	18:50	20:45	21:35	22:06	21:51	20:56	19:44	18:35
10	08:38	09:26 (3)	07:45	08:41	06:29	05:34	05:14	05:40	06:29	07:21	08:14	09:06
11	17:03	15	09:41 (3)	18:01	18:52	20:47	21:37	22:06	21:49	20:54	19:42	18:32
12	08:36	09:29 (3)	07:43	08:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	09:07
13	17:04	11	09:40 (3)	18:03	18:54	20:49	21:38	22:06	21:48	20:51	19:39	18:30
14	08:35	09:31 (3)	07:40	08:36	06:25	05:32	05:15	05:43	06:33	07:25	08:17	09:09
15	17:06	6	09:37 (3)	18:05	18:56	20:50	21:40	22:07	21:47	20:49	19:37	18:28
16	08:34	09:33 (3)	07:38	08:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	09:11
17	17:08	09:33 (3)	07:36	18:58	20:52	21:41	22:07	21:45	20:47	19:34	18:26	17:14
18	08:33	09:33 (3)	07:36	18:58	20:52	21:41	22:07	21:45	20:47	19:34	18:26	17:14
19	17:10	09:33 (3)	07:36	18:58	20:52	21:41	22:07	21:45	20:47	19:34	18:26	17:14
20	08:31	08:59 (1)	07:34	18:59	20:54	21:43	22:07	21:44	20:45	19:32	18:24	17:11
21	17:12	1	09:00 (1)	18:10	19:01	20:56	21:44	22:07	21:42	20:43	19:30	18:22
22	08:30	08:57 (1)	07:32	19:03	20:57	21:45	22:07	21:41	20:40	19:27	18:20	17:12
23	17:13	4	09:01 (1)	18:12	19:04	20:59	21:47	22:07	21:39	20:38	19:25	18:17
24	08:28	08:56 (1)	07:30	19:05	20:59	21:47	22:07	21:39	20:38	19:25	18:17	17:10
25	17:15	7	09:03 (1)	18:14	19:06	20:59	21:47	22:07	21:39	20:38	19:25	18:17
26	08:27	08:54 (1)	07:30	19:06	20:59	21:47	22:07	21:39	20:38	19:25	18:17	17:10
27	17:17	10	09:04 (1)	18:16	19:08	20:59	21:47	22:07	21:39	20:38	19:25	18:17
28	08:25	08:53 (1)	07:30	19:08	20:59	21:47	22:07	21:39	20:38	19:25	18:17	17:10
29	17:19	12	09:05 (1)	18:18	19:10	20:59	21:47	22:07	21:39	20:38	19:25	18:17
30	08:24	08:51 (1)	07:30	19:10	20:59	21:47	22:07	21:39	20:38	19:25	18:17	17:10
31	17:21	15	09:06 (1)	18:20	19:12	20:59	21:47	22:07	21:39	20:38	19:25	18:17
Potential sun hours	256	711	465	367	418	489	503	506	456	381	330	204
Total, worst case		0.16	0.21									0.24
Sun reduction		1.00	1.00									1.00
Oper. time red.		0.64	0.65									0.65
Wind dir. red.		0.10	0.14									0.16
Total reduction		72	63									32
Total, real												67

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:** Y - H25**Assumptions for shadow calculations**

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

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

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
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 (3) 07:00 (3)	05:22 21:52	05:51 (1) 06:00 (1)	05:18 22:06	05:50 (2) 06:07 (1)	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	06:35 (3) 07:00 (3)	05:21 21:53	05:50 (1) 06:00 (1)	05:19 22:05	05:51 (2) 06:08 (1)	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	06:36 (3) 06:59 (3)	05:20 21:54	05:50 (1) 06:01 (1)	05:20 22:05	05:51 (2) 06:07 (1)	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 17:29	07:21 18:22	07:08 20:17	06:03 21:09	06:37 (3) 06:57 (3)	05:19 21:55	05:49 (1) 06:01 (1)	05:21 22:05	05:52 (2) 06:07 (1)	06:01 21:27	06:53 (3) 06:54 (3)	07:43 07:45	07:39 07:41	08:30 08:32
5	08:50 16:38	08:16 17:30	07:18 18:23	07:06 20:19	06:01 21:11	06:37 (3) 06:56 (3)	05:19 21:56	05:49 (2) 06:02 (1)	05:22 22:04	05:53 (2) 06:08 (1)	06:03 21:26	06:54 (3) 06:50 (3)	07:45 07:47	07:41 07:43	08:32 08:33
6	08:49 16:40	08:14 17:32	07:16 18:25	07:03 20:20	05:59 21:13	06:39 (3) 06:54 (3)	05:18 21:57	05:48 (2) 06:02 (1)	05:22 22:04	06:04 (1) 06:08 (1)	06:04 21:24	06:50 (3) 07:03 (3)	06:56 20:17	07:47 19:06	07:43 17:01
7	08:49 16:41	08:12 17:34	07:15 18:27	07:01 20:22	05:57 21:15	06:41 (3) 06:52 (3)	05:17 21:58	05:47 (2) 06:02 (1)	05:23 22:03	05:55 (2) 06:08 (1)	06:06 21:22	06:48 (3) 07:05 (3)	06:58 20:15	07:45 19:04	08:34 16:59
8	08:48 16:42	08:10 17:36	07:11 18:29	06:59 20:24	05:55 21:16	06:45 (3) 06:47 (3)	05:17 21:59	05:47 (2) 06:02 (1)	05:24 22:02	05:56 (2) 06:09 (1)	06:08 21:20	06:46 (3) 07:06 (3)	06:59 20:13	07:50 19:01	08:36 16:57
9	08:48 16:44	08:08 17:38	07:09 18:31	06:56 20:26	05:53 21:18	06:47 (3) 22:00	05:15 05:16	05:47 (2) 06:03 (1)	05:25 22:02	05:57 (1) 06:09 (1)	06:09 21:18	06:46 (3) 07:07 (3)	07:01 20:10	07:52 18:59	08:37 16:56
10	08:47 16:45	08:07 17:40	07:07 18:33	06:54 20:28	05:52 21:20	06:47 (3) 22:00	05:16 05:15	05:46 (2) 06:02 (1)	05:26 22:01	05:58 (1) 06:09 (1)	06:11 21:16	06:44 (3) 07:07 (3)	07:03 20:08	07:54 18:57	08:38 16:54
11	08:47 16:46	08:05 17:42	07:04 18:34	06:52 20:29	05:50 21:21	06:47 (3) 22:01	05:15 05:15	05:46 (2) 06:03 (1)	05:27 22:00	05:59 (1) 06:09 (1)	06:12 21:14	06:44 (3) 07:08 (3)	07:04 20:05	07:56 18:55	08:39 16:52
12	08:46 16:48	08:03 17:44	07:02 18:36	06:49 20:31	05:48 21:23	06:47 (3) 22:01	05:15 05:15	05:46 (2) 06:03 (1)	05:28 22:02	06:00 (1) 06:09 (1)	06:14 21:12	06:42 (3) 06:44 (3)	07:06 20:03	07:57 18:52	08:40 16:51
13	08:45 16:50	08:01 17:46	07:00 18:38	06:47 20:33	05:47 21:24	06:47 (3) 22:03	05:15 05:14	05:46 (2) 06:04 (1)	05:30 21:58	06:01 (1) 06:09 (1)	06:16 21:10	06:44 (3) 07:09 (3)	07:08 20:01	07:59 18:50	08:41 16:49
14	08:44 16:51	07:59 17:48	06:57 18:40	06:45 20:35	05:45 21:26	06:47 (3) 22:03	05:14 05:14	05:45 (2) 06:03 (1)	05:31 21:57	06:02 (1) 06:08 (1)	06:17 21:08	06:46 (3) 07:10 (3)	07:10 19:58	08:01 18:48	07:58 16:48
15	08:44 16:53	07:57 17:50	06:55 18:42	06:43 20:36	05:43 21:28	06:47 (3) 22:04	05:14 05:14	05:45 (2) 06:03 (1)	05:32 21:56	06:03 (1) 06:08 (1)	06:19 21:06	06:47 (3) 07:09 (3)	07:11 19:56	08:03 18:46	07:59 16:43
16	08:43 16:54	07:55 17:52	06:53 18:43	06:40 20:38	05:42 21:29	06:47 (3) 22:04	05:14 05:14	05:45 (2) 06:04 (1)	05:33 21:55	06:04 (1) 06:07 (1)	06:21 21:04	06:49 (3) 07:09 (3)	07:13 19:54	08:05 18:43	08:01 16:44
17	08:42 16:56	07:53 17:53	06:50 18:45	06:38 20:40	05:40 21:31	06:47 (3) 22:05	05:14 05:14	05:45 (2) 06:04 (1)	05:35 21:54	06:05 (1) 06:07 (1)	06:22 21:02	06:50 (3) 07:08 (3)	07:15 19:51	08:06 18:41	08:03 16:43
18	08:41 16:58	07:51 17:55	06:48 18:47	06:36 20:42	05:39 21:32	06:47 (3) 22:05	05:14 05:14	05:45 (2) 06:04 (1)	05:36 21:53	06:05 (1) 06:04 (1)	06:24 21:00	06:52 (3) 07:08 (3)	07:16 19:49	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	06:47 (3) 22:06	05:14 05:14	05:45 (2) 06:04 (1)	05:37 21:52	06:05 (1) 06:04 (1)	06:26 21:52	06:53 (3) 07:07 (3)	07:18 19:46	08:10 18:37	08:07 16:42
20	08:39 17:01	07:47 17:59	06:43 18:50	06:32 20:45	05:36 21:35	06:47 (3) 22:06	05:14 05:14	05:45 (2) 06:04 (1)	05:38 21:50	06:05 (1) 06:04 (1)	06:28 21:50	06:55 (3) 07:07 (3)	07:20 19:44	08:12 18:35	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	06:47 (3) 22:06	05:14 05:14	05:46 (2) 06:05 (1)	05:40 21:49	06:06 (1) 06:05 (1)	06:29 21:49	06:57 (3) 07:07 (3)	07:21 19:42	08:14 18:32	08:10 16:38
22	08:36 17:04	07:43 18:03	06:39 18:54	06:27 20:49	05:33 21:38	06:47 (3) 22:06	05:14 05:14	05:46 (2) 06:05 (1)	05:41 21:48	06:06 (1) 06:05 (1)	06:29 21:47	06:58 (3) 20:51	07:23 07:05	08:15 19:39	08:12 18:30
23	08:35 17:06	07:40 18:05	06:36 18:56	06:25 20:50	05:32 21:40	06:47 (3) 22:07	05:15 05:15	05:46 (2) 06:05 (1)	05:43 21:47	06:06 (1) 06:05 (1)	06:29 21:46	07:00 (3) 20:49	07:25 07:04	08:17 19:37	08:13 18:28
24	08:34 17:08	07:38 18:07	06:34 18:58	06:23 20:52	05:30 21:41	06:47 (3) 22:07	05:15 05:15	05:47 (2) 06:06 (1)	05:44 21:45	06:07 (1) 06:06 (1)	06:26 21:45	07:01 (3) 20:47	07:26 07:02	08:19 19:34	08:15 18:26
25	08:32 17:10	07:36 18:09	06:32 18:59	06:21 20:54	05:29 21:43	06:47 (3) 22:07	05:15 05:15	05:47 (2) 06:06 (1)	05:46 21:44	06:07 (1) 06:06 (1)	06:26 21:44	06:36 20:45	07:28 19:32	08:17 17:24	08:17 16:34
26	08:31 17:12	07:34 18:10	06:29 19:01	06:19 20:56	05:28 21:44	06:47 (3) 22:07	05:16 05:16	05:47 (2) 06:06 (1)	05:47 21:42	06:07 (1) 06:06 (1)	06:28 21:41	06:38 20:43	07:29 19:30	08:18 17:23	08:50 16:33
27	08:30 17:13	07:32 18:12	06:27 19:03	06:17 20:57	05:27 21:45	06:47 (3) 22:07	05:16 05:15	05:48 (2) 06:06 (1)	05:49 21:41	06:07 (1) 06:06 (1)	06:29 21:41	06:39 20:40	07:31 19:27	08:20 17:20	08:50 16:32
28	08:28 17:15	07:30 18:14	06:24 19:05	06:15 20:59	05:26 21:47	06:47 (3) 22:07	05:17 05:15	05:48 (2) 06:06 (1)	05:50 21:39	06:07 (1) 06:06 (1)	06:30 21:39	06:41 20:38	07:33 19:25	08:22 17:18	08:50 16:30
29	08:27 17:17	07:22 18:06	06:13 19:01	06:03 21:01	05:25 21:48	06:47 (3) 22:07	05:17 05:14	05:49 (2) 06:07 (1)	05:52 21:38	06:07 (1) 06:07 (1)	06:30 21:38	06:43 20:36	07:35 19:23	08:23 17:16	08:50 16:30
30	08:25 17:19	07:20 18:08	06:11 19:03	06:01 21:03	05:24 21:49	06:47 (3) 22:07	05:18 05:15	05:49 (2) 06:06 (1)	05:53 21:36	06:07 (1) 06:06 (1)	06:30 21:36	06:44 20:33	07:37 19:20	08:25 17:14	08:50 16:29
31	08:24 17:21	07:17 18:10	06:08 19:01	05:58 21:05	05:23 21:50	06:47 (3) 22:07	05:19 05:14	05:50 (1) 06:00 (1)	05:55 21:34	06:07 (1) 21:34	06:30 20:31	06:46 20:31	07:32 17:12	08:50 16:32	08:50 16:32
Potential sun hours	256	276	367	418	488		503		506	456		381	330	263	240
Total, worst case				177	170		499		186	324					
Sun reduction				0.35	0.37		0.30		0.26	0.20					
Oper. time red.				1.00	1.00		1.00		1.00	1.00					
Wind dir. red.				0.66	0.66		0.62		0.62	0.66					
Total reduction				0.23	0.24		0.19		0.17	0.20					
Total, real				41	41		93		31	63					

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:** Z - H26**Assumptions for shadow calculations**

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

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

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
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	06:44 (3)	05:22	05:51 (2)	05:18	06:48 (1)	07:38	07:34
2	16:34	17:23	18:16	20:12	21:04	18 07:02 (3)	21:52	06:08 (1)	22:06	06:14 (2)	19:18	17:10
3	08:50	08:21	07:25	07:13	06:07	06:46 (3)	05:21	05:50 (2)	05:19	05:51 (2)	06:49	07:36
4	16:35	17:25	18:18	20:13	21:06	15 07:01 (3)	21:53	06:08 (1)	22:05	06:15 (2)	19:15	17:08
5	08:50	08:19	07:23	07:10	06:05	06:48 (3)	05:20	05:50 (2)	05:20	05:51 (2)	06:51	07:42
6	16:36	17:27	18:20	20:15	21:08	10 06:58 (3)	21:54	06:08 (1)	22:05	06:14 (2)	19:13	17:06
7	08:50	08:17	07:21	07:08	06:03	06:49 (3)	05:19	05:49 (2)	05:21	05:52 (2)	06:53	07:43
8	16:37	17:29	18:22	20:17	21:09	19 06:08 (1)	22:05	06:08 (1)	22:05	06:14 (2)	19:11	17:04
9	08:50	08:16	07:18	07:06	06:01	05:49 (2)	05:22	05:49 (2)	05:22	05:53 (2)	06:54	07:45
10	16:38	17:30	18:23	20:19	21:11	20 06:09 (1)	22:04	06:09 (1)	22:04	06:15 (2)	19:08	17:03
11	08:49	08:14	07:16	07:03	05:59	05:48 (2)	05:22	05:48 (2)	05:22	05:54 (2)	06:56	07:47
12	16:40	17:32	18:25	20:20	21:13	21 06:08 (2)	22:04	06:08 (2)	22:04	06:15 (2)	19:06	17:01
13	08:49	08:12	07:14	07:01	05:57	05:47 (2)	05:23	05:47 (2)	05:23	05:55 (2)	06:58	07:49
14	16:41	17:34	18:27	20:22	21:15	21 06:08 (2)	22:03	06:08 (2)	22:03	06:15 (2)	19:04	16:59
15	08:48	08:10	07:11	06:59	05:55	05:47 (2)	05:24	05:47 (2)	05:24	05:56 (2)	06:59	07:50
16	16:42	17:36	18:29	20:24	21:16	22 06:09 (2)	22:02	06:09 (2)	22:02	06:15 (2)	19:01	16:57
17	08:48	08:08	07:09	06:56	05:53	05:47 (2)	05:25	05:47 (2)	05:25	05:57 (2)	07:01	07:52
18	16:44	17:38	18:31	20:26	21:18	23 06:10 (2)	22:02	06:10 (2)	22:02	06:16 (1)	19:00	16:56
19	08:47	08:07	07:07	06:54	05:52	05:46 (2)	05:26	05:46 (2)	05:26	05:58 (2)	07:03	07:54
20	16:45	17:40	18:33	20:28	21:20	24 06:10 (2)	22:01	06:10 (2)	22:01	06:16 (1)	19:00	16:54
21	08:47	08:05	07:04	06:52	05:50	05:46 (2)	05:27	05:46 (2)	05:27	05:59 (2)	07:04	07:56
22	16:46	17:42	18:34	20:29	21:21	25 06:10 (2)	22:00	06:10 (2)	22:00	06:16 (1)	19:00	16:52
23	08:46	08:03	07:02	06:49	05:48	05:46 (2)	05:28	05:46 (2)	05:28	06:00 (2)	07:06	07:57
24	16:48	17:44	18:36	20:31	21:23	24 06:11 (2)	21:59	06:11 (2)	21:59	06:16 (1)	19:00	16:51
25	08:45	08:01	07:00	06:47	05:47	05:46 (2)	05:30	05:46 (2)	05:30	06:01 (2)	07:08	07:59
26	16:50	17:46	18:38	20:33	21:24	25 06:11 (2)	21:58	06:11 (2)	21:58	06:16 (1)	19:00	16:50
27	08:44	07:59	06:57	06:45	05:45	05:45 (2)	05:31	05:45 (2)	05:31	06:02 (2)	07:10	08:01
28	16:51	17:48	18:40	20:35	21:26	26 06:11 (2)	21:57	06:11 (2)	21:57	06:16 (1)	19:00	16:48
29	08:44	07:57	06:55	06:43	05:43	05:45 (2)	05:32	05:45 (2)	05:32	06:03 (2)	07:11	08:03
30	16:53	17:50	18:42	20:36	21:28	26 06:11 (2)	21:56	06:11 (2)	21:56	06:16 (1)	19:00	16:46
31	08:43	07:55	06:53	06:40	05:42	05:45 (2)	05:33	05:45 (2)	05:33	06:04 (2)	07:13	08:05
1	16:54	17:52	18:43	20:38	21:29	26 06:11 (2)	21:55	06:11 (2)	21:55	06:16 (1)	19:00	16:45
2	08:42	07:53	06:50	06:38	05:40	27 06:12 (2)	21:54	06:12 (2)	21:54	06:16 (1)	19:00	16:43
3	16:56	17:53	18:45	20:40	21:31	27 06:12 (2)	21:54	06:12 (2)	21:54	06:16 (1)	19:00	16:42
4	08:41	07:51	06:48	06:36	05:39	27 06:12 (2)	21:53	06:12 (2)	21:53	06:16 (1)	19:00	16:42
5	16:58	17:55	18:47	20:42	21:32	27 06:12 (2)	21:53	06:12 (2)	21:53	06:16 (1)	19:00	16:42
6	08:40	07:49	06:46	06:34	05:37	27 06:12 (2)	21:52	06:12 (2)	21:52	06:16 (1)	19:00	16:42
7	16:59	17:57	18:49	20:43	21:34	27 06:12 (2)	21:52	06:12 (2)	21:52	06:16 (1)	19:00	16:42
8	08:39	07:47	06:43	06:32	05:36	27 06:12 (2)	21:51	06:12 (2)	21:51	06:16 (1)	19:00	16:42
9	17:01	17:59	18:50	20:45	21:35	27 06:12 (2)	21:50	06:12 (2)	21:50	06:16 (1)	19:00	16:42
10	08:37	07:45	06:41	06:29	05:34	27 06:12 (2)	21:50	06:12 (2)	21:50	06:16 (1)	19:00	16:42
11	17:03	18:01	18:52	20:47	21:37	27 06:12 (2)	21:49	06:12 (2)	21:49	06:16 (1)	19:00	16:42
12	08:36	07:43	06:39	06:27	05:33	27 06:12 (2)	21:48	06:12 (2)	21:48	06:16 (1)	19:00	16:42
13	17:04	18:03	18:54	20:49	21:38	27 06:12 (2)	21:47	06:12 (2)	21:47	06:16 (1)	19:00	16:42
14	08:35	07:40	06:36	06:25	05:32	27 06:12 (2)	21:46	06:12 (2)	21:46	06:16 (1)	19:00	16:42
15	17:06	18:05	18:56	20:50	21:39	27 06:12 (2)	21:45	06:12 (2)	21:45	06:16 (1)	19:00	16:42
16	08:34	07:38	06:34	06:23	05:30	27 06:12 (2)	21:44	06:12 (2)	21:44	06:16 (1)	19:00	16:42
17	17:08	18:07	18:58	20:52	21:41	27 06:12 (2)	21:43	06:12 (2)	21:43	06:16 (1)	19:00	16:42
18	08:32	07:36	06:32	06:21	05:29	27 06:12 (2)	21:42	06:12 (2)	21:42	06:16 (1)	19:00	16:42
19	17:10	18:09	18:59	20:54	21:43	27 06:12 (2)	21:41	06:12 (2)	21:41	06:16 (1)	19:00	16:42
20	08:31	07:34	06:29	06:19	05:28	27 06:12 (2)	21:40	06:12 (2)	21:40	06:16 (1)	19:00	16:42
21	17:12	18:10	19:01	20:56	21:44	27 06:12 (2)	21:39	06:12 (2)	21:39	06:16 (1)	19:00	16:42
22	08:30	07:32	06:27	06:17	05:27	27 06:12 (2)	21:38	06:12 (2)	21:38	06:16 (1)	19:00	16:42
23	17:13	18:12	19:03	20:57	21:45	27 06:12 (2)	21:37	06:12 (2)	21:37	06:16 (1)	19:00	16:42
24	08:28	07:30	06:24	06:15	05:26	27 06:12 (2)	21:36	06:12 (2)	21:36	06:16 (1)	19:00	16:42
25	17:15	18:14	19:05	20:59	21:47	27 06:12 (2)	21:35	06:12 (2)	21:35	06:16 (1)	19:00	16:42
26	08:27	07:28	06:22	06:13	05:25	27 06:12 (2)	21:34	06:12 (2)	21:34	06:16 (1)	19:00	16:42
27	17:17	18:16	19:07	21:01	21:48	27 06:12 (2)	21:33	06:12 (2)	21:33	06:16 (1)	19:00	16:42
28	08:25	07:26	06:20	06:11	05:24	27 06:12 (2)	21:32	06:12 (2)	21:32	06:16 (1)	19:00	16:42
29	17:19	18:18	19:09	21:03	21:49	27 06:12 (2)	21:31	06:12 (2)	21:31	06:16 (1)	19:00	16:42
30	08:24	07:25	06:19	06:10	05:23	27 06:12 (2)	21:30	06:12 (2)	21:30	06:16 (1)	19:00	16:42
31	17:21	18:20	19:11	21:05	21:50	27 06:12 (2)	21:29	06:12 (2)	21:29	06:16 (1)	19:00	16:42
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)

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		05:20		
	16:36	17	15:42 (2)	17:26		18:20			20:15	6		07:47 (7)	21:08	9	06:45 (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)	06:47		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)	22:03	
14	08:44			07:59		06:57			07:23 (4)	06:45		07:26 (5)	05:45		06:40 (6)	05:14	
	16:51			17:48		18:40	9		07:32 (4)	20:34	5	07:31 (5)	21:26	17	06:57 (6)	22:03	
15	08:44			07:57		06:55			07:21 (4)	06:43			05:43		06:41 (6)	05:14	
	16:52			17:49		18:41	12		07:33 (4)	20:36			21:28	16	06:57 (6)	22:04	
16	08:43			07:55		06:53			07:21 (4)	06:40			05:42		06:42 (6)	05:14	
	16:54			17:51		18:43	12		07:33 (4)	20:38			21:29	14	06:56 (6)	22:04	
17	08:42			07:53		06:50			07:21 (4)	06:38			05:40		06:42 (6)	05:14	
	16:56			17:53		18:45	13		07:34 (4)	20:40			21:31	13	06:55 (6)	22:05	
18	08:41			07:51		06:48			07:20 (4)	06:36			05:39		06:43 (6)	05:14	
	16:57			17:55		18:47	13		07:33 (4)	20:42			21:32	11	06:54 (6)	22:05	
19	08:40			07:49		06:46			07:21 (4)	06:34			05:37		06:44 (6)	05:14	
	16:59			17:57		18:49	11		07:32 (4)	20:43			21:34	8	06:52 (6)	22:06	
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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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)		07:23 (5)		07:38		08:26
	22:06		21:33	19	07:08 (6)		20:29	12	07:35 (5)		16:28
2	05:19		05:58		06:50 (6)		06:49		07:23 (5)		08:28
	22:05		21:31	19	07:09 (6)		20:27	12	07:35 (5)		16:27
3	05:20		05:59		06:49 (6)		06:51		07:22 (5)		08:29
	22:05		21:29	19	07:08 (6)		20:24	12	07:34 (5)		16:27
4	05:21		06:01		06:50 (6)		06:53		07:23 (5)		08:30
	22:05		21:27	18	07:08 (6)		20:22	11	07:34 (5)		16:26
5	05:21		06:03		06:49 (6)		06:54		07:24 (5)		08:32
	22:04		21:26	19	07:08 (6)		20:20	9	07:33 (5)		16:26
6	05:22		06:04		06:50 (6)		06:56		07:25 (5)		08:33
	22:04		21:24	17	07:07 (6)		20:17	4	07:29 (5)		16:25
7	05:23		06:06		06:51 (6)		06:58		07:49		08:34
	22:03		21:22	16	07:07 (6)		20:15		19:04		16:59
8	05:24		06:07		06:51 (6)		06:59		07:50		08:36
	22:02		21:20	15	07:06 (6)		20:12		19:01		16:57
9	05:25		06:09		06:53 (6)		07:01		07:52		08:37
	22:02		21:18	12	07:05 (6)		20:10	5	07:41 (7)		16:56
10	05:26		06:11		06:54 (6)		07:03		07:54		08:38
	22:01		21:16	8	07:02 (6)		20:08	9	07:43 (7)		16:54
11	05:27		06:12				07:04		07:56		08:39
	22:00		21:14				20:05	10	07:43 (7)		16:52
12	05:28		06:14				07:06		07:57		08:40
	21:59		21:12				20:03	11	07:43 (7)		16:51
13	05:29		06:16				07:08		07:59		08:41
	21:58		21:10				20:01	8	07:41 (7)		16:50
14	05:31		06:17				07:09		08:01		08:42
	21:57		21:08				19:58	5	07:40 (7)		16:48
15	05:32		06:19				07:11		08:03		08:43
	21:56		21:06				19:56	1	07:38 (7)		16:45
16	05:33		06:21				07:13		08:04		08:44
	21:55		21:04				19:53		18:43		16:45
17	05:34		06:22				07:14		08:06		08:45
	21:54		21:02				19:51		18:41		16:43
18	05:36		06:24				07:16		08:08		08:46
	21:53		21:00				19:49		18:39		16:42
19	05:37		06:26				07:18		08:10		08:46
	21:52		20:58				19:46		18:37		16:40
20	05:38		06:27				07:19		08:12		08:47
	21:50		20:56				19:44		18:34		16:39
21	05:40		06:29				07:21		08:13		08:48
	21:49		20:53				19:42		18:32		16:38
22	05:41		06:31				07:23		08:15		08:48
	21:48		20:51				19:39		18:30		16:37
23	05:43		06:32				07:25		08:17		08:49
	21:47		20:49				19:37	7	08:14 (4)		16:36
24	05:44		06:34				07:26		08:19		08:49
	21:45	4	07:01 (6)		20:47		19:34	10	08:15 (4)		16:34
25	05:45		06:36				07:28		08:21		08:49
	21:44	9	07:03 (6)		20:45		19:32	12	08:15 (4)		16:33
26	05:47		06:37				07:30		08:24		08:50
	21:42	12	07:05 (6)		20:42		19:30	13	08:15 (4)		16:32
27	05:48		06:39				07:31		08:26		08:50
	21:41	14	07:06 (6)		20:40		19:27	13	08:15 (4)		16:31
28	05:50		06:41				07:33		08:28		08:50
	21:39	15	07:07 (6)		20:38		19:25	12	08:15 (4)		16:31
29	05:51		06:43				07:35		08:30		08:50
	21:38	16	07:07 (6)		20:36	5	07:32 (5)	10	08:13 (4)		16:30
30	05:53		06:44				07:36		08:34		08:50
	21:36	17	07:08 (6)		20:33	9	07:34 (5)	7	08:11 (4)		16:29
31	05:55		06:46				07:35 (5)		07:32		08:50
	21:34	18	07:08 (6)		20:31	12	07:35 (5)		17:12		16:32
Potential sun hours	506		456				381		330		263
Total, worst case							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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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	06:31 (5)
	16:35	30	15:50 (3)	17:25	16:54 (2)	18:18	20:13		21:06		21:53	10
3	08:50		15:21 (3)	08:19	16:39 (1)	07:23	07:10		06:04		05:20	06:21 (5)
	16:36	30	15:51 (3)	17:26	16:56 (2)	18:20	20:15		21:08		21:54	10
4	08:50		15:22 (3)	08:17	16:38 (1)	07:20	07:08		06:03		05:19	06:22 (5)
	16:37	29	15:51 (3)	17:28	16:58 (2)	18:21	20:17		21:09		21:55	8
5	08:50		15:22 (3)	08:16	16:37 (1)	07:18	07:05		06:01		05:18	06:23 (5)
	16:38	29	15:51 (3)	17:30	17:00 (2)	18:23	20:19		21:11		21:56	5
6	08:49		15:23 (3)	08:14	16:37 (1)	07:16	07:03		05:59		05:18	06:25 (5)
	16:39	29	15:52 (3)	17:32	17:02 (2)	18:25	20:20		21:13		21:57	2
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	06:20 (5)	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	06:18 (5)	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	06:18 (5)	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	06:16 (5)	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	06:16 (5)	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	06:16 (5)	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	06:16 (5)	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	06:16 (5)	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	06:16 (5)	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	06:16 (5)	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	06:16 (5)	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	06:16 (5)	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	06:17 (5)	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	06:17 (5)	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	06:18 (5)	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: 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

	July		August		September		October		November		December		
1	05:18		05:56		06:48	07:27 (4)	07:38		07:34	16:06 (1)	08:26	15:09 (3)	
	22:06		21:33		20:29	11 07:38 (4)	19:18		17:10	34 16:40 (2)	16:28	24 15:33 (3)	
2	05:19		05:58		06:49		07:40		07:36		16:06 (1)	08:28	15:09 (3)
	22:05		21:31		20:26	5 07:35 (4)	19:15		17:08	32 16:38 (2)	16:27	26 15:35 (3)	
3	05:20		05:59		06:51		07:42		07:37		16:06 (1)	08:29	15:09 (3)
	22:05		21:29		20:24		19:13		17:06	30 16:36 (2)	16:27	26 15:35 (3)	
4	05:21		06:01		06:53		07:43		07:39		16:07 (1)	08:30	15:09 (3)
	22:05		21:27		20:22		19:11		17:04	27 16:34 (2)	16:26	27 15:36 (3)	
5	05:21		06:03		06:54		07:45		07:41		16:07 (1)	08:32	15:09 (3)
	22:04		21:26		20:20		19:08		17:02	25 16:32 (2)	16:26	28 15:37 (3)	
6	05:22		06:04		06:56		07:47		07:43		16:07 (1)	08:33	15:09 (3)
	22:03		21:24		20:17		19:06		17:01	23 16:30 (2)	16:25	29 15:38 (3)	
7	05:23		06:06		06:58		07:49		07:45		16:08 (1)	08:34	15:09 (3)
	22:03	4 06:35 (5)	21:22		20:15		19:04		16:59	20 16:28 (2)	16:25	29 15:38 (3)	
8	05:24		06:07		06:59		07:50		07:47		16:08 (1)	08:36	15:09 (3)
	22:02	6 06:35 (5)	21:20		20:12		19:01		16:57	18 16:26 (2)	16:24	29 15:38 (3)	
9	05:25		06:09		07:01		07:52		07:48		16:09 (1)	08:37	15:10 (3)
	22:02	9 06:37 (5)	21:18		20:10		18:59		16:55	15 16:24 (2)	16:24	30 15:40 (3)	
10	05:26		06:11		07:03		07:54		07:50		16:10 (1)	08:38	15:10 (3)
	22:01	11 06:38 (5)	21:16		20:08		18:57		16:54	12 16:22 (1)	16:24	30 15:40 (3)	
11	05:27		06:12		07:04		07:56		07:52		16:11 (1)	08:39	15:10 (3)
	22:00	11 06:38 (5)	21:14	4 07:05 (7)	20:05		18:54		16:52	10 16:21 (1)	16:24	31 15:41 (3)	
12	05:28		06:14		07:06		07:57		07:54		16:12 (1)	08:40	15:10 (3)
	21:59	13 06:39 (5)	21:12	9 07:07 (7)	20:03		18:52		16:51	7 16:19 (1)	16:23	31 15:41 (3)	
13	05:29		06:16		07:08		07:59		07:56		16:14 (1)	08:41	15:11 (3)
	21:58	14 06:41 (5)	21:10	10 07:08 (7)	20:01		18:50		16:49	3 16:17 (1)	16:23	31 15:42 (3)	
14	05:31		06:17		07:09		08:01		07:58		16:15 (1)	08:42	15:11 (3)
	21:57	14 06:41 (5)	21:08	12 07:08 (7)	19:58		18:48		16:48	1 16:16 (1)	16:23	31 15:42 (3)	
15	05:32		06:19		07:11		08:03		07:59		08:43		15:12 (3)
	21:56	15 06:41 (5)	21:06	13 07:09 (7)	19:56		18:45		16:46		16:23	31 15:43 (3)	
16	05:33		06:21		07:13		08:04		08:01		08:44		15:12 (3)
	21:55	16 06:42 (5)	21:04	13 07:09 (7)	19:53		18:43		16:45		16:24	31 15:43 (3)	
17	05:34		06:22		07:14		08:06		08:03		08:45		15:13 (3)
	21:54	16 06:42 (5)	21:02	13 07:08 (7)	19:51		18:41		16:43		16:24	31 15:44 (3)	
18	05:36		06:24		07:16		08:08		08:05		08:46		15:12 (3)
	21:53	17 06:42 (5)	21:00	12 07:08 (7)	19:49		18:39		16:42		16:24	32 15:44 (3)	
19	05:37		06:26		07:18		08:10		08:07		08:46		15:13 (3)
	21:52	17 06:43 (5)	20:58	10 07:06 (7)	19:46		18:37	2 17:28 (1)	16:40		16:24	32 15:45 (3)	
20	05:38		06:27		07:19		08:12		08:08		08:47		15:14 (3)
	21:50	17 06:43 (5)	20:56	7 07:05 (7)	19:44		18:34	14 17:33 (1)	16:39		16:25	31 15:45 (3)	
21	05:40		06:29		07:21		08:13		08:10		08:48		15:14 (3)
	21:49	16 06:42 (5)	20:53	8 07:39 (4)	19:42		18:32	20 17:36 (1)	16:38		16:25	31 15:45 (3)	
22	05:41		06:31		07:23		08:15		08:12		08:48		15:15 (3)
	21:48	16 06:42 (5)	20:51	12 07:41 (4)	19:39		18:30	24 17:38 (1)	16:37		16:25	31 15:46 (3)	
23	05:43		06:32		07:25		08:17		08:13		08:49		15:15 (3)
	21:46	15 06:42 (5)	20:49	14 07:42 (4)	19:37		18:28	27 17:39 (1)	16:36		16:26	31 15:46 (3)	
24	05:44		06:34		07:26		08:19		08:15		08:49		15:15 (3)
	21:45	15 06:42 (5)	20:47	16 07:42 (4)	19:34		18:26	29 17:40 (1)	16:34	5 15:22 (3)	16:27	32 15:47 (3)	
25	05:45		06:36		07:28		07:21		08:17		08:49		15:16 (3)
	21:44	14 06:41 (5)	20:45	17 07:43 (4)	19:32		17:24	31 16:41 (1)	16:33	11 15:25 (3)	16:27	32 15:48 (3)	
26	05:47		06:37		07:30		07:23		08:18		08:50		15:17 (3)
	21:42	13 06:41 (5)	20:42	18 07:43 (4)	19:30		17:22	33 16:42 (1)	16:32	15 15:28 (3)	16:28	31 15:48 (3)	
27	05:48		06:39		07:31		07:24		08:20		08:50		15:17 (3)
	21:41	11 06:40 (5)	20:40	18 07:43 (4)	19:27		17:20	34 16:42 (2)	16:31	17 15:29 (3)	16:29	31 15:48 (3)	
28	05:50		06:41		07:33		07:26		08:22		08:50		15:17 (3)
	21:39	8 06:39 (5)	20:38	18 07:43 (4)	19:25		17:18	36 16:43 (2)	16:31	20 15:30 (3)	16:29	32 15:49 (3)	
29	05:51		06:43		07:35		07:28		08:23		08:50		15:18 (3)
	21:38	1 06:35 (5)	20:36	18 07:42 (4)	19:22		17:16	37 16:44 (2)	16:30	22 15:32 (3)	16:30	31 15:49 (3)	
30	05:53		06:44		07:36		07:30		08:25		08:50		15:18 (3)
	21:36		20:33	16 07:41 (4)	19:20		17:14	37 16:44 (2)	16:29	23 15:33 (3)	16:31	31 15:49 (3)	
31	05:55		06:46		07:37		07:32		08:26		08:50		15:19 (3)
	21:34		20:31	14 07:39 (4)			17:12	36 16:42 (2)			16:32	31 15:50 (3)	
Potential sun hours	506		456		381		330		263		240		
Total, worst case	289		272		16		360		370		934		
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	50		54		3		54		43		78		

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
Assumptions for shadow calculations

Shadow receptor: AC - H29

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

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	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 (3)	08:22	08:49 (1)	07:27	07:15	06:09	05:22	05:18	05:56	06:48	07:38
2	16:34	41	10:28 (2)	17:23	08:56 (1)	18:16	20:12	21:04	21:52	22:06	21:33	20:29
3	08:50	09:23 (3)	08:21	08:47 (1)	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40
4	16:35	42	10:29 (2)	17:25	10	08:57 (1)	18:18	20:13	21:06	21:53	22:06	21:31
5	08:50	09:22 (3)	08:19	08:46 (1)	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42
6	16:36	42	10:28 (2)	17:27	13	08:59 (1)	18:20	20:15	21:08	21:54	22:05	21:29
7	08:50	09:22 (3)	08:17	08:44 (1)	07:21	07:08	06:03	05:19	05:21	06:01	06:53	07:43
8	16:37	42	10:29 (2)	17:28	15	08:59 (1)	18:22	20:17	21:09	21:55	22:05	21:27
9	08:50	09:21 (3)	08:16	08:42 (1)	07:18	07:06	06:01	05:19	05:21	06:03	06:54	07:45
10	16:38	42	10:28 (2)	17:30	18	09:00 (1)	18:23	20:19	21:11	21:56	22:04	21:26
11	08:49	09:21 (3)	08:14	08:40 (1)	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47
12	16:40	43	10:29 (2)	17:32	20	09:00 (1)	18:25	20:20	21:13	21:57	22:04	21:24
13	08:49	09:20 (3)	08:12	08:38 (1)	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49
14	16:41	42	10:28 (2)	17:34	22	09:00 (1)	18:27	20:22	21:15	21:58	22:03	21:22
15	08:48	09:20 (3)	08:10	08:36 (1)	07:11	06:59	05:55	05:15	05:24	06:07	06:59	07:50
16	16:42	43	10:29 (2)	17:36	25	09:01 (1)	18:29	20:24	21:16	21:59	22:02	21:20
17	08:48	09:19 (3)	08:08	08:34 (1)	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52
18	16:44	42	10:28 (2)	17:38	27	09:01 (1)	18:31	20:26	21:18	22:00	22:02	21:18
19	08:47	09:18 (3)	08:07	08:32 (1)	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54
20	16:45	41	10:27 (2)	17:40	29	09:01 (1)	18:32	20:28	21:20	22:01	22:01	21:16
21	08:47	09:17 (3)	08:05	08:30 (1)	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56
22	16:46	42	10:27 (2)	17:42	30	09:00 (1)	18:34	20:29	21:21	22:01	22:00	21:14
23	08:46	09:16 (3)	08:03	08:29 (1)	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57
24	16:48	40	10:26 (2)	17:44	31	09:00 (1)	18:36	20:31	21:23	22:02	21:59	21:12
25	08:45	09:16 (3)	08:01	08:30 (1)	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59
26	16:49	39	10:26 (2)	17:46	30	09:00 (1)	18:38	20:33	21:24	22:03	21:58	21:10
27	08:44	09:15 (3)	07:59	08:30 (1)	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01
28	16:51	37	10:24 (2)	17:48	29	08:59 (1)	18:40	20:35	21:26	22:03	21:57	21:08
29	08:44	09:13 (3)	07:57	08:31 (1)	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03
30	16:53	33	10:21 (2)	17:50	28	08:59 (1)	18:42	20:36	21:28	22:04	21:56	21:06
31	08:43	09:12 (3)	07:55	08:32 (1)	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:05
1	16:54	25	09:37 (3)	17:51	26	08:58 (1)	18:43	20:38	21:29	22:04	21:55	21:04
2	08:42	09:12 (3)	07:53	08:33 (1)	06:50	06:38	05:40	05:14	05:34	06:22	07:15	08:06
3	16:56	25	09:37 (3)	17:53	24	08:57 (1)	18:45	20:40	21:31	22:05	21:54	21:02
4	08:41	09:13 (3)	07:51	08:35 (1)	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08
5	16:58	24	09:37 (3)	17:55	20	08:55 (1)	18:47	20:42	21:32	22:05	21:53	21:00
6	08:40	09:14 (3)	07:49	08:37 (1)	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10
7	16:59	24	09:38 (3)	17:57	16	08:53 (1)	18:49	20:43	21:34	22:06	21:52	20:58
8	08:39	09:15 (3)	07:47	08:39 (1)	06:43	06:32	05:36	05:14	05:38	06:27	07:20	08:12
9	17:01	23	09:38 (3)	17:59	10	08:49 (1)	18:50	20:45	21:35	22:06	21:51	20:56
10	08:38	09:16 (3)	07:45	08:41	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:14
11	17:03	21	09:37 (3)	18:01	18:52	20:47	21:37	22:06	21:49	22:04	21:49	21:42
12	08:36	09:17 (3)	07:43	08:39	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15
13	17:04	20	09:37 (3)	18:03	18:54	20:49	21:38	22:06	21:48	22:01	21:49	21:42
14	08:35	09:18 (3)	07:40	08:36	06:36	06:25	05:32	05:15	05:43	06:33	07:25	08:17
15	17:06	17	09:35 (3)	18:05	18:56	20:50	21:40	22:07	21:47	22:01	21:49	21:42
16	08:34	09:19 (3)	07:38	08:34	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19
17	17:08	16	09:35 (3)	18:07	18:58	20:52	21:41	22:07	21:45	22:01	21:49	21:42
18	08:33	09:22 (3)	07:36	08:32	06:32	06:21	05:29	05:15	05:45	06:36	07:28	08:21
19	17:10	12	09:34 (3)	18:09	18:59	20:54	21:43	22:07	21:44	22:04	21:49	21:42
20	08:31	09:24 (3)	07:34	08:29	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23
21	17:12	7	09:31 (3)	18:10	19:01	20:56	21:44	22:07	21:42	22:04	21:49	21:42
22	08:30		07:32	18:12	19:03	20:57	21:45	22:07	21:41	22:04	21:49	21:42
23	17:13		18:12	06:24	19:05	20:59	21:47	22:07	21:39	22:04	21:49	21:42
24	08:28		07:30	06:24	19:05	20:59	21:47	22:07	21:39	22:04	21:49	21:42
25	17:15		18:14	07:22	19:05	20:59	21:47	22:07	21:39	22:04	21:49	21:42
26	08:27		17:17	07:22	19:05	20:59	21:47	22:07	21:39	22:04	21:49	21:42
27	17:17		17:17	07:22	19:05	20:59	21:47	22:07	21:39	22:04	21:49	21:42
28	08:25		17:19	07:22	19:05	20:59	21:47	22:07	21:39	22:04	21:49	21:42
29	17:19	1	08:54 (1)	07:20	19:05	20:59	21:47	22:07	21:39	22:04	21:49	21:42
30	08:24		08:51 (1)	07:20	19:05	20:59	21:47	22:07	21:39	22:04	21:49	21:42
31	17:21	4	08:55 (1)	07:17	19:05	20:59	21:47	22:07	21:39	22:04	21:49	21:42
Potential sun hours	256		276	367	418	489	503	506	456	381	330	252
Total, worst case	830		430									550
Sun reduction	0.16		0.21									0.19
Oper. time red.	1.00		1.00									1.00
Wind dir. red.	0.64		0.66									0.65
Total reduction	0.10		0.14									0.09
Total, real	83		59									106

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
Assumptions for shadow calculations

Shadow receptor: AD - H30

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

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	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 37	09:23 (3) 10:21 (2) 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	23	08:02 (1) 08:25 (1) 16:28	08:26 16:28	41	08:59 (3) 10:03 (2)
2	08:50 16:35 38	09:23 (3) 10:22 (2) 17:25	2	08:47 (1) 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	20	08:04 (1) 08:24 (1) 16:27	08:28 16:27	42	09:01 (3) 10:05 (2)
3	08:50 16:36 38	09:22 (3) 10:21 (2) 17:27	5	08:46 (1) 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	07:37 17:06	18	08:06 (1) 08:24 (1) 16:27	08:29 16:27	42	09:02 (3) 10:05 (2)
4	08:50 16:37 39	09:22 (3) 10:22 (2) 17:28	8	08:44 (1) 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	16	08:08 (1) 08:24 (1) 16:26	08:31 16:26	40	09:04 (3) 10:06 (2)
5	08:50 16:38 39	09:21 (3) 10:21 (2) 17:30	11	08:42 (1) 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	13	08:10 (1) 08:23 (1) 16:26	08:32 16:26	41	09:05 (3) 10:07 (2)
6	08:49 16:40 39	09:21 (3) 10:22 (2) 17:32	13	08:40 (1) 18:25	07:16 20:20	06:03 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	10	08:12 (1) 08:22 (1) 16:25	08:33 16:25	40	09:07 (3) 10:08 (2)
7	08:49 16:41 41	09:20 (3) 10:22 (2) 17:34	16	08:38 (1) 18:27	07:14 20:22	06:01 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	8	08:14 (1) 08:22 (1) 16:25	08:35 16:25	39	09:08 (3) 10:09 (2)
8	08:48 16:42 41	09:20 (3) 10:22 (2) 17:36	19	08:36 (1) 18:29	07:11 20:24	06:05 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	5	08:16 (1) 08:21 (1) 16:24	08:36 16:24	39	09:09 (3) 10:09 (2)
9	08:48 16:44 41	09:19 (3) 10:22 (2) 17:38	19	08:54 (1) 18:31	07:09 20:26	06:56 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	2	08:18 (1) 08:20 (1) 16:24	08:37 16:24	38	09:11 (3) 10:10 (2)
10	08:47 16:45 42	09:18 (3) 10:22 (2) 17:40	21	08:55 (1) 18:32	07:07 20:28	06:54 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	2	08:18 (1) 08:24 (1) 16:24	08:38 16:24	38	09:12 (3) 10:11 (2)
11	08:47 16:46 42	09:17 (3) 10:21 (2) 17:42	23	08:50 (1) 18:34	07:04 20:29	06:52 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	18	08:30 (1) 08:34 (1) 16:24	08:39 16:24	38	09:13 (3) 10:11 (2)
12	08:46 16:48 43	09:16 (3) 10:21 (2) 17:44	25	08:55 (1) 18:02	07:04 20:31	06:49 21:23	05:15 22:02	05:28 22:02	06:14 21:12	07:06 20:03	07:57 18:52	07:54 16:51	20	08:36 (1) 08:40 (1) 16:24	08:40 16:24	37	09:14 (3) 10:12 (2)
13	08:45 16:49 42	09:16 (3) 10:21 (2) 17:46	27	08:55 (1) 18:38	07:00 20:33	06:47 21:24	05:15 22:03	05:30 22:03	06:16 21:10	07:08 20:01	07:59 18:50	07:56 16:49	21	08:41 (1) 08:45 (1) 16:23	08:41 16:23	36	09:15 (3) 10:12 (2)
14	08:44 16:51 41	09:15 (3) 10:21 (2) 17:48	29	08:56 (1) 18:40	06:57 20:35	06:45 21:26	05:14 22:03	05:31 22:03	06:17 21:08	07:09 19:58	08:01 18:48	07:58 16:48	6	08:52 (3) 08:58 (3) 16:23	08:42 16:23	37	09:16 (3) 10:13 (2)
15	08:44 16:53 41	09:13 (3) 10:20 (2) 17:50	31	08:55 (1) 18:42	06:55 20:36	06:43 21:28	05:14 22:04	05:32 22:04	06:19 21:06	07:11 19:56	08:03 18:46	08:00 16:46	12	08:49 (3) 09:01 (3) 16:24	08:43 16:24	37	09:17 (3) 10:13 (2)
16	08:43 16:54 39	09:12 (3) 10:18 (2) 17:51	33	08:54 (1) 18:43	06:53 20:38	06:40 21:29	05:14 22:04	05:33 22:04	06:21 21:04	07:13 19:54	08:05 18:43	08:01 16:45	15	08:48 (3) 09:03 (3) 16:24	08:44 16:24	37	09:18 (3) 10:14 (2)
17	08:42 16:56 38	09:11 (3) 10:17 (2) 17:53	35	08:53 (1) 18:45	06:50 20:40	06:38 21:31	05:14 22:05	05:34 22:05	06:22 21:02	07:15 19:51	08:06 18:41	08:03 16:43	18	08:47 (3) 09:05 (3) 16:24	08:45 16:24	37	09:19 (3) 10:15 (2)
18	08:41 16:58 35	09:10 (3) 10:15 (2) 17:55	37	08:52 (1) 18:47	06:48 20:42	06:36 21:32	05:14 22:05	05:36 22:05	06:24 21:00	07:16 19:49	08:08 18:39	08:05 16:42	20	08:48 (3) 09:06 (3) 16:24	08:46 16:24	37	09:20 (3) 10:15 (2)
19	08:40 16:59 26	09:09 (3) 10:14 (2) 17:57	39	08:51 (1) 18:49	06:46 20:43	06:34 21:34	05:14 22:06	05:37 22:06	06:26 21:52	07:18 19:46	08:10 18:37	08:07 16:41	21	08:49 (3) 09:07 (3) 16:24	08:46 16:24	37	09:21 (3) 10:15 (2)
20	08:39 17:01 25	09:09 (3) 10:13 (3) 17:59	41	08:50 (1) 18:50	06:43 20:45	06:32 21:35	05:14 22:06	05:38 22:06	06:27 21:51	07:20 19:44	08:12 18:35	08:08 16:39	22	08:50 (3) 09:08 (3) 16:23	08:47 16:23	37	09:22 (3) 10:16 (2)
21	08:38 17:03 24	09:08 (3) 10:12 (3) 18:01	43	08:49 (1) 18:52	06:41 20:47	06:31 21:37	05:14 22:06	05:40 22:06	06:29 21:49	07:21 19:42	08:14 18:32	08:10 16:38	23	08:51 (3) 09:09 (3) 16:23	08:48 16:23	37	09:23 (3) 10:16 (2)
22	08:36 17:04 22	09:11 (3) 10:11 (3) 18:03	45	08:46 (1) 18:54	06:39 20:49	06:27 21:38	05:14 22:06	05:41 22:06	06:31 21:48	07:23 19:37	08:15 18:30	08:15 16:37	24	08:52 (3) 09:10 (3) 16:23	08:49 16:23	37	09:24 (3) 10:17 (2)
23	08:35 17:06 21	09:11 (3) 10:10 (3) 18:05	47	08:45 (1) 18:56	06:36 20:50	06:25 21:40	05:15 22:07	05:43 22:07	06:33 21:47	07:25 19:37	08:17 18:28	08:17 16:36	25	08:53 (3) 09:11 (3) 16:23	08:49 16:23	37	09:25 (3) 10:17 (2)
24	08:34 17:08 20	09:12 (3) 10:09 (3) 18:07	49	08:44 (1) 18:58	06:34 20:52	06:23 21:41	05:15 22:07	05:44 22:07	06:34 21:45	07:26 19:34	08:19 18:26	08:19 16:35	26	08:54 (3) 09:12 (3) 16:23	08:49 16:23	37	09:26 (3) 10:18 (2)
25	08:33 17:10 18	09:13 (3) 10:08 (3) 18:09	51	08:43 (1) 18:59	06:32 20:54	06:21 21:43	05:15 22:07	05:45 22:07	06:36 21:44	07:28 19:32	08:21 18:24	08:21 16:34	27	08:55 (3) 09:13 (3) 16:23	08:49 16:23	37	09:27 (3) 10:18 (2)
26	08:31 17:12 15	09:15 (3) 10:07 (3) 18:10	53	08:42 (1) 19:01	06:29 20:56	06:20 21:44	05:16 22:07	05:47 22:07	06:38 21:42	07:30 19:30	08:23 18:22	08:23 16:32	28	08:56 (3) 09:14 (3) 16:23	08:50 16:23	37	09:28 (3) 10:19 (2)
27	08:30 17:13 12	09:16 (3) 10:06 (3) 18:12	55	08:41 (1) 19:03	06:27 20:57	06:17 21:45	05:17 22:07	05:48 22:07	06:39 21:41	07:31 19:27	08:25 18:20	08:25 16:32	29	08:57 (3) 09:15 (3) 16:23	08:51 16:23	37	09:29 (3) 10:19 (2)
28	08:28 17:15 6	09:20 (3) 10:05 (3) 18:14	57	08:40 (1) 19:05	06:24 20:59	06:15 21:47	05:17 22:07	05:50 22:07	06:41 21:39	07:33 19:25	08:26 18:18	08:26 16:30	30	08:58 (3) 09:16 (3) 16:23	08:52 16:23	36	09:30 (3) 10:19 (2)
29	08:27 17:17 30	09:21 (3) 10:04 (3) 18:17	59	08:39 (1) 19:06	06:22 20:56	06:13 21:48	05:17 22:06	05:52 22:06	06:43 21:38	07:35 19:23	08:27 18:16	08:27 16:30	31	08:59 (3) 09:17 (3) 16:23	08:53 16:23	37	09:31 (3) 10:20 (2)
30	08:25 17:19 31	09:22 (3) 10:03 (3) 18:19	61	08:38 (1) 19:07	06:20 20:58	06:11 21:03	05:18 22:06	05:53 22:06	06:44 21:36	07:37 19:20	08:28 18:14	08:28 16:32	32	09:00 (3) 09:18 (3) 16:23	08:54 16:23	36	09:32 (3) 10:20 (2)
31	08:24 17:21	09:23 (3) 10:06 (3) 18:21	63	08:37 (1) 19:08	06:19 20:59	06:10 21:04	05:19 22:06	05:55 22:06	06:46 21:34	07:39 19:21	08:29 18:15	08:29 16:32	33	09:01 (3) 09:19 (3) 16:23	08:55 16:23	36	09:33 (3) 10:20 (2)
Potential sun hours	256	276	367	418	489	503	506	456	381	330	263	240	1172				
Total, worst case	905	396											287	582			1172
Sun reduction	0.16	0.21											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											0.66	0.65			0.62
Total reduction	0.10	0.14											0.16	0.12			0.09
Total, real	91	54											45	70			100

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		

6778 Moanmore Lower WF

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

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

Calculation: 6778 Moanmore Lower Worst Case
Assumptions for shadow calculations

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

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

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		09:32 (2)	08:22		07:27	07:15	06:09	05:22	05:18	05:56	06:48	07:38			07:34			08:02 (1)	08:26		08:59 (3)		
	16:34	38	10:10 (2)	17:23		18:16	20:12	21:04	21:52	22:06	21:33	20:29	19:18			17:15	15		08:17 (1)	16:28	39	09:54 (2)		
2	08:50		09:33 (2)	08:21		07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40			07:36			08:04 (1)	08:28		09:01 (3)		
	16:35	38	10:11 (2)	17:25		18:18	20:13	21:06	21:53	22:06	21:31	20:27	19:15			17:08	12		08:16 (1)	16:27	37	09:55 (2)		
3	08:50		09:33 (2)	08:19		07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42			07:37			08:06 (1)	08:29		09:02 (3)		
	16:36	37	10:10 (2)	17:27		18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13			17:06	9		08:15 (1)	16:27	37	09:55 (2)		
4	08:50		09:34 (2)	08:17		07:21	07:08	06:03	05:19	05:21	06:01	06:53	07:43			07:39			08:08 (1)	08:31		09:21 (2)		
	16:37	37	10:11 (2)	17:28		18:22	20:17	21:09	21:55	22:05	21:27	20:22	19:11			17:04	6		08:14 (1)	16:26	35	09:56 (2)		
5	08:50		09:34 (2)	08:16		07:18	07:06	06:01	05:19	05:21	06:03	06:54	07:45			07:41			08:10 (1)	08:32		09:20 (2)		
	16:38	37	10:11 (2)	17:30		18:23	20:19	21:11	21:56	22:04	21:26	20:20	19:08			17:03	3	08:13 (1)	16:26	36	09:56 (2)			
6	08:49		09:35 (2)	08:14		07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47			07:43				08:33		09:21 (2)		
	16:40	37	10:12 (2)	17:32	4	08:44 (1)	18:25	20:20	21:13	21:57	22:04	21:24	19:06			17:01				16:25	37	09:58 (2)		
7	08:49		09:35 (2)	08:12		07:18	07:01	05:57	05:17	05:23	06:06	06:58	07:49			07:45				08:35		09:21 (2)		
	16:41	36	10:11 (2)	17:34	7	08:45 (1)	18:27	20:22	21:15	21:58	22:03	21:22	19:05			16:59				16:25	37	09:58 (2)		
8	08:48		09:37 (2)	08:10		06:36 (1)	07:11	06:59	05:55	05:17	05:24	06:07	06:59	07:50		07:47				08:36		09:21 (2)		
	16:42	35	10:12 (2)	17:36	10	08:46 (1)	18:29	20:24	21:16	21:59	22:02	21:20	19:01			16:57				16:24	37	09:58 (2)		
9	08:48		09:19 (3)	08:08		06:34 (1)	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52		07:49				08:37		09:22 (2)		
	16:44	36	10:12 (2)	17:38	12	08:46 (1)	18:31	20:26	21:18	22:00	22:02	21:18	20:10	18:59		16:56				16:24	37	09:59 (2)		
10	08:47		09:18 (3)	08:07		06:32 (1)	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54		07:50				08:38		09:22 (2)		
	16:45	38	10:12 (2)	17:40	15	08:47 (1)	18:33	20:28	21:20	22:01	22:01	21:16	20:08	18:57		16:54				16:24	38	10:00 (2)		
11	08:47		09:17 (3)	08:05		06:30 (1)	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56		07:52			08:46 (3)	08:39		09:23 (2)		
	16:46	39	10:12 (2)	17:42	18	08:48 (1)	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:55		16:52	3	08:49 (3)	16:24	37	10:00 (2)			
12	08:46		09:16 (3)	08:03		06:28 (1)	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57		07:54				08:43 (3)		09:23 (2)		
	16:48	39	10:13 (2)	17:44	20	08:48 (1)	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52		16:51	10	08:53 (3)	16:24	37	10:00 (2)			
13	08:45		09:13 (3)	08:01		06:26 (1)	06:59	06:40	05:39	05:15	05:28	06:10	07:02	07:56		07:56				08:41		09:23 (2)		
	16:49	41	10:12 (2)	17:46	22	08:48 (1)	18:38	20:33	21:25	22:03	21:58	21:10	20:01	18:50		16:49	14	08:55 (3)	16:23	38	10:01 (2)			
14	08:44		09:15 (3)	07:59		06:24 (1)	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01		07:58				08:40 (3)		09:24 (2)		
	16:51	41	10:12 (2)	17:48	24	08:48 (1)	18:40	20:35	21:26	22:03	21:57	21:08	19:58	18:48		16:48	17	08:57 (3)	16:23	37	10:01 (2)			
15	08:44		09:13 (3)	07:57		06:22 (1)	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03		08:00				08:39 (3)		09:24 (2)		
	16:53	41	10:11 (2)	17:50	26	08:48 (1)	18:42	20:36	21:28	22:04	21:56	21:06	19:56	18:46		16:46	19	08:58 (3)	16:24	38	10:02 (2)			
16	08:43		09:12 (3)	07:55		06:20 (1)	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:05		08:01				08:38 (3)		09:25 (2)		
	16:54	42	10:11 (2)	17:51	28	08:48 (1)	18:43	20:38	21:29	22:04	21:55	21:04	19:54	18:43		16:45	21	08:59 (3)	16:24	37	10:02 (2)			
17	08:42		09:11 (3)	07:53		06:19 (1)	06:50	06:38	05:40	05:14	05:34	06:22	07:15	08:06		08:03				08:38 (3)		09:25 (2)		
	16:56	42	10:11 (2)	17:53	29	08:48 (1)	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41		16:43	22	09:00 (3)	16:24	38	10:03 (2)			
18	08:41		09:10 (3)	07:51		06:20 (1)	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08		08:05			09:00 (1)	08:05		09:25 (2)		
	16:58	41	10:10 (2)	17:55	27	08:47 (1)	18:47	20:42	21:32	22:05	21:53	21:00	19:49	18:39	9	09:09 (1)	16:42	23	09:09 (1)	16:42	38	10:03 (2)		
19	08:40		09:09 (3)	07:49		06:21 (1)	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10		08:12				08:38 (3)		09:26 (2)		
	16:59	42	10:12 (2)	17:57	26	08:47 (1)	18:49	20:43	21:33	22:06	21:57	21:04	19:53	18:43	16	09:12 (1)	16:47	31	09:37 (2)	16:24	38	10:04 (2)		
20	08:39		09:07 (2)	07:47		06:17 (1)	06:43	06:32	05:36	05:14	05:38	06:27	07:20	08:12		08:10				08:40 (3)		09:27 (2)		
	17:01	40	10:09 (2)	17:59	24	08:45 (1)	18:50	20:45	21:35	22:06	21:51	20:56	19:44	18:35	20	09:14 (1)	16:39	36	09:41 (2)	16:25	38	10:05 (2)		
21	08:38		09:06 (3)	07:45		06:22 (1)	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:14		08:52 (1)	08:10			08:42 (3)		09:27 (2)		
	17:03	39	10:07 (2)	18:01	21	08:43 (1)	18:52	20:47	21:37	22:06	21:49	20:54	19:42	18:32	22	09:14 (1)	16:38	39	09:43 (2)	16:25	37	10:04 (2)		
22	08:36		09:05 (3)	07:43		06:24 (1)	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15		08:51 (1)	08:12			08:44 (3)		09:28 (2)		
	17:04	36	10:06 (2)	18:03	18	08:42 (1)	18:54	20:49	21:38	22:06	21:48	20:51	19:39	18:30	24	09:15 (1)	16:37	40	09:45 (2)	16:26	37	10:05 (2)		
23	08:35		09:03 (3)	07:40		06:26 (1)	06:36	06:25	05:32	05:15	05:43	06:33	07:25	08:17		08:50 (1)	08:14			08:45 (3)		09:28 (2)		
	17:06	31	10:02 (2)	18:05	14	08:40 (1)	18:56	20:50	21:40	22:07	21:47	20:49	19:37	18:28	26	09:16 (1)	16:36	42	09:46 (2)	16:26	37	10:05 (2)		
24	08:34		09:04 (3)	07:38		06:31 (1)	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19		08:49 (1)	08:15			08:47 (3)		09:29 (2)		
	17:08	23	09:27 (3)	18:07	4	08:35 (1)	18:58	20:52	21:41	22:07	21:45	20:47	19:34	18:26	28	09:17 (1)	16:35	41	09:47 (2)	16:27	38	10:07 (2)		
25	08:33		09:05 (3)	07:36		06:32	06:21	05:29	05:15	05:46	06:36	07:28	07:21			07:48 (1)	08:17			08:47 (3)		09:29 (2)		
	17:10	22	09:27 (3)	18:09		18:59	20:54	21:43	22:07	21:44	20:45	19:32	17:24	29	08:17 (1)	16:34	42	09:49 (2)	16:27	38	10:07 (2)			
26	08:31		09:05 (3)	07:34		06:29	06:19	05:28	05:16	05:47	06:38	07:30	07:23			07:50 (1)	08:18			08:51 (3)		09:29 (2)		
	17:12	21	09:26 (3)	18:10		18:01	20:56	21:44	22:07	21:42	20:43	19:30	17:22	28	08:18 (1)	16:33				08:50 (3)		10:07 (2)		
27	08:30		09:06 (3)	07:32		06:27	06:17	05:27	05:16	05:48	06:39	07:31	07:25			07:52 (1)	08:20			08:53 (3)		09:30 (2)		
	17:13	19	09:25 (3)	18:12		19:03	20:57	21:45	22:07	21:41	20:40	19:27	17:20	26	08:18 (1)	16:32	41	09:51 (2)	16:29	37	10:07 (2)			
28	08:28		09:08 (3)	07:30		06:24	06:15	05:26	05:17	05:50	06:41	07:33	07:26			07:54 (1)	08:22			08:54 (3)		09:30 (2)		
	17:15	17	09:25 (3)	18:14		19:05	20:59	21:47	22:07	21:39	20:38	19:25	17:18	24	08:18 (1)	16:31	42	09:52 (2)	16:30	38	10:08 (2)			
29	08:27		09:09 (3)			07:22	06:13	05:25	05:17	05:52	06:43	07:35	07:28			07:56 (1)	08:23			08:56 (3)		09:30 (2)		
	17:17	14	09:23 (3)			20:06	21:01	21:48	22:06	21:38	20:36	19:23	17:16	22	08:18 (1)	16:30	41	09:53 (2)	16:30	38	10:08 (2)			
30	08:25		09:12 (3)			07:20	06:11	05:24	05:18	05:53	06:44	07:37	07:30			07:58 (1)	08:25			08:58 (3)		09:31 (2)		
	17:19	10	09:22 (3)			20:08	21:03	21:49	22:06	21:36	20:33	19:20	17:14	19	08:17 (1)	16:29	39	09:54 (2)	16:31	38	10:09 (2)			
31	08:24					07:17		05:23		05:55	06:46		07:32			08:00 (1)				08:50		0		

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	
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		
31		

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:** AF - H32**Assumptions for shadow calculations**

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

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	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	17:28	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	05:22	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	05:34	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	20:42	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	18:08	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	20:56	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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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:** AG - H33**Assumptions for shadow calculations**

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

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

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
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	05:34	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	20:42	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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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:** AH - H34

Assumptions for shadow calculations

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

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

Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum
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	21:26	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
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	07:19	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	16:34	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	16:32	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)
	Minutes with flicker		

6778 Moanmore Lower WF

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

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

Calculation: 6778 Moanmore Lower Worst Case
Assumptions for shadow calculations

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

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

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

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: AJ - H36

Assumptions for shadow calculations

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

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

Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum
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	05:18 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 22:05	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	07:37 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	06:53 20:22	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	05:22 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 22:03	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	06:59 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	08:08 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 16:56	08:37 16:24
10	08:47 16:45	08:07 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 18:55	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	07:57 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	05:47 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	06:57 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 16:48	08:42 16:24
15	08:44 16:53	07:57 17:50	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	07:59 16:46	08:43 16:24
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	08:04 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	05:35 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 16:58	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	05:38 21:50	06:27 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 20:53	07:21 19:42	08:13 18:32	08:10 16:38	08:48 16:25
22	08:36 17:04	07:42 18:03	06:39 18:54	06:27 20:49	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 16:26
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	05:43 21:46	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	08:32 17:10	07:36 18:09	06:31 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 17:24	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 20:42	07:30 19:30	07:23 17:22	08:18 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	07:24 17:20	08:20 16:32	08:50 16:29
28	08:28 17:15	07:29 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	07:26 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	07:28 17:16	08:23 16:30	08:50 16:30
30	08:25 17:19		07:20 20:08	06:11 21:02	05:24 21:49	05:18 22:06	05:53 21:36	06:44 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 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	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:** 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
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	21:26	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	05:46	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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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 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 22:05	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	07:37 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	06:53 20:22	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	05:22 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 22:03	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	06:59 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	08:08 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 16:56	08:37 16:24
10	08:47 16:45	08:07 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 18:55	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	07:57 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	05:47 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	06:57 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 16:48	08:42 16:24
15	08:44 16:53	07:57 17:50	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 18:46	07:59 16:46	08:43 16:24
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	08:04 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	05:35 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 16:58	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	05:38 21:50	06:27 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 20:53	07:21 19:42	08:13 18:32	08:10 16:38	08:48 16:25
22	08:36 17:04	07:42 18:03	06:39 18:54	06:27 20:49	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 16:26
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	05:43 21:46	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	08:32 17:10	07:36 18:09	06:31 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 17:24	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 20:42	07:30 19:30	07:23 17:22	08:18 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	07:24 17:20	08:20 16:32	08:50 16:29
28	08:28 17:15	07:29 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	07:26 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	07:28 17:16	08:23 16:30	08:50 16:30
30	08:25 17:19		07:20 20:08	06:11 21:02	05:24 21:49	05:18 22:06	05:53 21:36	06:44 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 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	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: AM - H39

Assumptions for shadow calculations

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

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

Operational time

N NNE NE ENE E ESE SE SSE S SSW SW WSW W WNW NW NNW Sum
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	20:29 (3) 20:35 (2)	05:22 21:51	05:18 22:06	21:30 (1) 21:31 (1)	05:56 21:33	20:37 (3) 21:02 (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	07:13 20:13	06:06 21:06	20:29 (3) 20:37 (2)	05:21 21:53	05:19 22:05	21:31 (1) 21:32 (1)	05:58 21:31	20:36 (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 17:27	07:23 18:20	07:10 20:15	06:05 21:08	20:28 (3) 20:39 (2)	05:20 21:54	05:20 22:05	21:32 (1) 21:29	05:59 21:29	20:36 (3) 20:58 (2)	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	20:27 (3) 20:40 (2)	05:19 21:55	05:21 22:04	21:32 (1) 21:27	06:01 21:27	20:36 (3) 20:57 (2)	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	20:27 (3) 20:41 (2)	05:18 21:56	05:21 22:04	21:32 (1) 21:25	06:03 21:25	20:35 (3) 20:55 (2)	06:54 20:19	07:45 19:08	07:41 17:02	08:32 16:26
6	08:49 16:39	08:14 17:31	07:16 18:25	07:03 20:20	05:59 21:13	20:26 (3) 20:43 (2)	05:18 21:57	05:22 22:03	21:32 (1) 21:24	06:04 21:24	20:36 (3) 20:54 (2)	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	20:26 (3) 20:45 (2)	05:17 21:58	05:23 22:03	21:32 (1) 21:22	06:06 21:22	20:36 (3) 20:53 (2)	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	20:26 (3) 20:46 (2)	05:17 21:59	05:24 22:02	21:32 (1) 21:20	06:07 21:20	20:36 (3) 20:50 (2)	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	20:26 (3) 20:47 (2)	05:16 22:00	05:25 22:01	21:32 (1) 21:18	06:09 21:18	20:37 (3) 20:49 (2)	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	20:26 (3) 20:50 (3)	05:16 22:00	05:26 22:01	21:32 (1) 21:16	06:11 21:16	20:37 (3) 20:47 (2)	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	20:26 (3) 20:51 (3)	05:15 22:01	05:27 22:00	21:32 (1) 21:27 (1)	06:12 21:24	20:38 (3) 20:45 (2)	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	20:26 (3) 20:52 (3)	05:15 22:02	05:28 21:59	21:32 (1) 21:18 (1)	06:14 21:12	20:48 (3) 20:43 (2)	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	05:47 21:24	20:27 (3) 20:54 (3)	05:14 22:03	06:00 21:58	21:32 (1) 21:28 (1)	06:10 21:10	20:48 (3) 20:41 (2)	07:08 20:01	07:59 18:50	08:41 16:49	08:47 16:23
14	08:44 16:51	07:59 17:48	06:57 18:40	06:45 20:34	05:45 21:26	20:26 (3) 20:55 (3)	05:14 22:03	06:17 21:57	21:32 (1) 21:26 (1)	06:17 06:19	20:41 (2) 20:52	07:09 20:19	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	20:27 (3) 20:56 (3)	05:14 22:04	06:19 21:56	21:32 (1) 21:29 (1)	06:19 21:06	20:48 (3) 20:51	07:08 20:16	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	20:28 (3) 20:56 (3)	05:14 22:04	06:21 21:55	21:32 (1) 21:30 (1)	06:21 21:04	20:53 21:04	07:03 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	20:28 (3) 20:55 (3)	05:14 22:05	06:22 21:54	21:32 (1) 21:30 (1)	06:22 21:02	20:54 20:41	07:04 18:41	08:06 18:43	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	20:29 (3) 20:55 (3)	05:15 22:05	06:24 21:53	21:32 (1) 21:31 (1)	06:24 21:00	20:56 20:48 (3)	07:06 07:18	08:08 18:10	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	20:31 (3) 20:54 (3)	05:14 22:05	06:26 21:52	21:32 (1) 21:31 (1)	06:26 21:52	20:48 (3) 20:58	07:08 19:46	08:10 18:33	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	20:34 (3) 20:53 (3)	05:14 22:06	06:27 21:50	21:32 (1) 21:31 (1)	06:27 20:56	20:46 (3) 20:59 (3)	07:09 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	20:32 (3) 20:52 (3)	05:14 22:06	06:29 21:49	21:32 (1) 21:32 (1)	20:44 (3) 21:00 (3)	20:43 (3) 20:53	07:08 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	20:34 (3) 20:51 (3)	05:14 22:06	06:31 21:48	21:32 (1) 21:32 (1)	20:43 (3) 21:01 (3)	20:31 20:51	07:08 19:39	08:15 18:30	08:12 16:37	08:48 16:25
23	08:35 17:05	07:40 18:04	06:36 18:54	06:25 20:48	05:32 21:38	20:35 (3) 20:51 (3)	05:15 22:06	06:32 21:43	21:32 (1) 21:32 (1)	20:42 (3) 21:02 (3)	20:32 20:51	07:08 19:39	08:17 18:30	08:13 16:37	08:48 16:25
24	08:34 17:06	07:38 18:05	06:34 18:56	06:23 20:50	05:30 21:40	20:36 (3) 20:50 (3)	05:15 22:06	06:34 21:46	21:32 (1) 21:32 (1)	20:41 (3) 21:03 (3)	20:39 20:49	07:06 19:37	08:19 18:28	08:15 16:36	08:49 16:26
25	08:32 17:10	07:36 18:08	06:31 18:59	06:21 20:54	05:29 21:42	20:39 (3) 20:45 (3)	05:15 22:07	06:36 21:44	21:32 (1) 21:32 (1)	20:41 (3) 21:05 (3)	20:36 20:45	07:08 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	20:38 (3) 20:55 (3)	05:16 22:07	06:37 21:42	21:32 (1) 21:32 (1)	20:40 (3) 20:52	20:37 20:42	07:09 19:30	08:22 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	20:37 (3) 20:52 (3)	05:16 22:06	06:39 21:41	21:32 (1) 21:32 (1)	20:38 (3) 21:06 (3)	20:39 20:40	07:09 19:27	08:23 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	20:36 (3) 20:52 (3)	05:17 22:06	06:41 21:39	21:32 (1) 21:32 (1)	20:38 (3) 21:07 (3)	20:41 20:38	07:09 19:25	08:24 17:18	08:21 16:31	08:50 16:30
29	08:27 17:17	07:22 18:06	06:12 20:01	06:02 21:01	05:25 21:48	20:37 (3) 20:51 (3)	05:17 22:06	06:43 21:37	21:32 (1) 21:32 (1)	20:38 (3) 21:06 (3)	20:43 20:36	07:09 19:22	08:25 17:16	08:23 16:30	08:50 16:30
30	08:25 17:19	07:20 18:08	06:10 20:08	06:00 21:02	05:24 21:49	20:38 (3) 20:52 (3)	05:18 22:06	06:44 21:36	21:32 (1) 21:31 (1)	20:38 (3) 21:05 (3)	20:44 20:33	07:09 19:36	08:26 17:14	08:25 16:29	08:50 16:31
31	08:24 17:21	07:17 18:10	06:07 20:10	05:57 21:50	05:23 21:50	20:37 (3) 20:50 (3)	05:19 22:06	06:46 21:34	21:32 (1) 21:32 (1)	20:37 (3) 21:04 (3)	20:46 20:31	07:10 20:31	08:27 17:12	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				3	484		59	289		197					
Sun reduction				0.35	0.37		0.30	0.26		0.30					
Oper. time red.				1.00	1.00		1.00	1.00		1.00					
Wind dir. red.				0.67	0.67		0.65	0.67		0.67					
Total reduction				0.24	0.25		0.19	0.18		0.20					
Total, real				1	120		11	52		39					

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: 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 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 22:05	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	07:37 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	06:53 20:22	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	05:22 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 22:03	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	06:59 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	08:08 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 16:56	08:37 16:24
10	08:47 16:45	08:07 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 18:55	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	07:57 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	05:47 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	06:57 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 16:48	08:42 16:24
15	08:44 16:53	07:57 17:50	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	07:59 16:46	08:43 16:24
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	08:04 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	05:35 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 16:58	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	05:38 21:50	06:27 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 20:53	07:21 19:42	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 20:49	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 16:26
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	05:43 21:46	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	08:32 17:10	07:36 18:09	06:31 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 17:24	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 20:42	07:30 19:30	07:23 17:22	08:18 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	07:24 17:20	08:20 16:32	08:50 16:29
28	08:28 17:15	07:29 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	07:26 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	07:28 17:16	08:23 16:30	08:50 16:30
30	08:25 17:19		07:20 20:08	06:11 21:02	05:24 21:49	05:18 22:06	05:53 21:36	06:44 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 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	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: 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 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 22:05	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	07:37 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	06:53 20:22	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	05:22 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 22:03	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	06:59 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	08:08 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 16:56	08:37 16:24
10	08:47 16:45	08:07 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 18:55	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	07:57 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	05:47 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	06:57 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 16:48	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 17:51	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	08:04 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	05:35 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 16:58	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	05:38 21:50	06:27 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 20:53	07:21 19:42	08:13 18:32	08:10 16:38	08:48 16:25
22	08:36 17:04	07:42 18:03	06:39 18:54	06:27 20:49	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 16:26
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	05:43 21:46	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	08:32 17:10	07:36 18:09	06:31 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 17:24	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 20:42	07:30 19:30	07:23 17:22	08:18 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	07:24 17:20	08:20 16:32	08:50 16:29
28	08:28 17:15	07:29 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	07:26 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	07:28 17:16	08:23 16:30	08:50 16:30
30	08:25 17:19		07:20 20:08	06:11 21:02	05:24 21:49	05:18 22:06	05:53 21:36	06:44 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 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	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) 08:22	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 (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) 08:21	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 (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) 08:19	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	08:06 (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) 08:17	07:21 18:22	07:08 20:17	06:03 21:09	05:19 21:55	05:21 22:05	06:01 21:27	06:53 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) 08:16	07:18 18:23	07:06 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	08:10 (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) 08:14	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	08:12 (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) 08:12	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	08:14 (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) 08:10	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	08:16 (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) 08:08	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	08:18 (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) 10:05 (2) 08:07	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	08:19 (1) 08:23 (1) 16:24	08:38 16:24 31	09:22 (2) 09:53 (2)
11	08:47 16:46 33	09:37 (1) 10:05 (2) 08:05	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 18:55	07:52 16:52	08:24 (1) 08:25 (1) 16:24	08:39 16:24 32	09:22 (2) 09:54 (2)
12	08:46 16:48 34	09:38 (1) 10:05 (2) 08:03	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	08:26 (1) 08:27 (1) 16:24	08:40 16:24 32	09:22 (2) 09:54 (2)
13	08:45 16:49 33	09:38 (1) 10:05 (2) 08:01	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	08:28 (1) 08:29 (1) 16:23	08:41 16:23 32	09:23 (2) 09:55 (2)
14	08:44 16:51 34	09:39 (1) 10:05 (2) 07:59	06:57 18:40	06:45 20:35	05:45 21:26	05:14 22:03	05:31 21:57	06:17 21:08	07:09 20:08	08:01 19:58	07:58 16:48	08:29 (1) 08:30 (1) 16:23	08:42 16:23 32	09:23 (2) 09:55 (2)
15	08:44 16:53 33	09:41 (1) 10:04 (2) 07:57	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 20:06	08:03 19:56	08:00 16:46	08:31 (1) 08:32 (1) 16:24	08:43 16:24 32	09:24 (2) 09:56 (2)
16	08:43 16:54 33	09:42 (1) 10:03 (2) 07:55	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 20:05	08:05 19:54	08:01 16:45	08:33 (1) 08:34 (1) 16:24	08:44 16:24 32	09:24 (2) 09:56 (2)
17	08:42 16:56 32	09:41 (1) 10:02 (2) 07:53	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 20:06	08:06 19:51	08:03 16:43	08:34 (1) 08:35 (1) 16:24	08:45 16:24 32	09:25 (2) 09:57 (2)
18	08:41 16:58 31	09:42 (1) 10:01 (2) 07:51	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 20:09	08:08 19:39	08:05 16:42	08:35 (1) 08:36 (1) 16:24	08:46 16:24 33	09:25 (2) 09:57 (2)
19	08:40 16:59 27	09:43 (1) 09:59 (2) 07:49	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	08:36 (1) 08:37 (1) 16:24	08:47 16:24 33	09:25 (2) 09:58 (2)
20	08:39 17:01 19	09:44 (1) 09:59 (2) 07:47	06:43 18:50	06:32 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	08:38 (1) 08:39 (1) 16:25	08:47 16:25 33	09:26 (2) 09:59 (2)
21	08:38 17:03 21	09:45 (1) 09:59 (2) 07:45	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	08:39 (1) 08:40 (1) 16:25	08:48 16:25 32	09:26 (2) 09:58 (2)
22	08:36 17:04 20	09:47 (1) 09:59 (2) 07:43	06:39 18:54	06:27 20:49	05:33 21:38	05:14 22:06	05:41 21:48	06:31 20:51	07:23 19:37	08:15 18:30	08:12 16:37	08:41 (1) 08:42 (1) 16:26	08:49 16:26 32	09:27 (2) 09:59 (2)
23	08:35 17:06 19	09:48 (1) 09:59 (2) 07:40	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	09:07 (1) 09:12 (1) 16:36	08:43 (1) 08:44 (1) 16:26	08:49 16:26 33	09:27 (2) 10:00 (2)
24	08:34 17:08 18	09:49 (1) 09:59 (2) 07:38	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	09:03 (1) 09:16 (1) 16:35	08:45 (1) 08:46 (1) 16:27	08:49 16:27 33	09:28 (2) 10:01 (2)
25	08:33 17:10 16	09:50 (1) 09:59 (2) 07:36	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	09:04 (1) 09:18 (1) 16:34	08:47 (1) 08:48 (1) 16:27	08:49 16:27 32	09:28 (2) 10:01 (2)
26	08:31 17:12 13	09:51 (1) 09:59 (2) 07:34	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 18:22	09:05 (1) 09:19 (1) 16:33	08:49 (1) 08:50 (1) 16:28	08:50 16:28 32	09:29 (2) 10:02 (2)
27	08:30 17:13 10	09:52 (1) 09:59 (2) 07:32	06:27 19:03	06:17 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	09:06 (1) 09:21 (1) 16:32	08:51 (1) 08:52 (1) 16:29	08:50 16:29 32	09:29 (2) 10:02 (2)
28	08:28 17:15 3	09:53 (1) 09:59 (2) 07:30	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 18:18	09:07 (1) 09:22 (1) 16:31	08:53 (1) 08:54 (1) 16:30	08:50 16:30 34	09:29 (2) 10:02 (2)
29	08:27 17:17 30	09:54 (1) 09:59 (2) 07:28	06:22 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	08:27 18:16	09:08 (1) 09:23 (1) 16:30	08:55 (1) 08:56 (1) 16:30	08:50 16:30 32	09:30 (2) 10:03 (2)
30	08:25 17:19 31	09:55 (1) 09:59 (2) 07:26	06:20 19:08	06:11 21:03	05:24 21:49	05:18 22:06	05:53 21:36	06:44 20:33	07:37 19:20	08:28 18:14	09:09 (1) 09:24 (1) 16:29	08:57 (1) 08:58 (1) 16:31	08:50 16:31 33	09:31 (2) 10:03 (2)
31	08:24 17:21	09:56 (1) 09:59 (2) 07:24	06:19 19:10	06:10 21:05	05:23 21:50	05:19 22:07	05:55 21:34	06:46 20:31	07:38 18:12	08:29 17:02	09:10 (1) 09:25 (1) 16:28	08:59 (1) 09:00 (1) 16:32	08:50 16:32 32	09:32 (2) 10:03 (2)
Potential sun hours	256	276	367	418	489	503	506	456	381	330	263	240	990	
Total, worst case	738	273									174		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									0.66		0.63	
Total reduction	0.10	0.14									0.12		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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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 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 21:33	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 22:05	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 17:27	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	07:37 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	07:06 20:19	06:01 21:11	05:19 21:56	05:21 22:04	06:03 21:25	06:54 20:20	07:45 19:08	07:41 17:03	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	06:59 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 16:44	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 16:56	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	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 16:24
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	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	08:44 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 16:48	08:42 16:23
15	08:43 16:53	07:57 17:50	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	07:59 16:46	08:43 16:24
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	05:39 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	08:45 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	05:37 21:52	06:26 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	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	07:45 18:01	06:41 18:52	06:29 20:47	05:34 21:37	05:14 22:06	05:40 21:49	06:29 20:53	07:21 19:42	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	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 22:06	05:43 21:46	06:32 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 22:07	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	08:32 17:10	07:36 18:08	06:31 18:59	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	08:17 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	05:47 21:42	06:38 20:42	07:30 19:30	07:23 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	05:48 21:41	06:39 20:40	07:31 19:27	07:24 17:20	08:20 16:32	08:50 16:29
28	08:28 17:15	07:29 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	07:26 17:18	08:22 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	05:52 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	05:53 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		05:55 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												
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: 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 16:34	08:22 17:23	07:27 18:16		07:15 20:12	8	07:38 (1) 07:46 (1)	06:09 21:04	05:22 21:52	05:18 22:06	05:56 21:33	06:48 20:29	07:38 19:18	12	08:04 (3) 08:16 (3)	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	10	07:36 (1) 07:46 (1)	06:07 21:06	05:21 21:53	05:19 22:06	05:58 21:31	06:49 20:27	6	07:28 (1) 07:34 (1)	07:40 19:15	08:06 (3) 08:16 (3)	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	12	07:33 (1) 07:45 (1)	06:05 21:08	05:20 21:54	05:20 22:05	05:59 21:29	06:51 20:24	12	07:24 (1) 07:36 (1)	07:42 19:13	8	08:07 (3) 08:15 (3)	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	14	07:31 (1) 07:45 (1)	06:03 21:09	05:19 21:55	05:21 22:05	06:01 21:27	06:53 20:22	16	07:22 (1) 07:38 (1)	07:43 19:11	5	08:09 (3) 08:14 (3)	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	16	07:29 (1) 07:45 (1)	06:01 21:11	05:19 21:56	05:22 22:04	06:03 21:26	06:54 20:20	18	07:21 (1) 07:39 (1)	07:45 19:08	2	08:11 (3) 08:13 (3)	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	17	07:26 (1) 07:43 (1)	05:59 21:13	05:18 21:57	05:22 22:04	06:04 21:24	06:56 20:17	17	07:22 (1) 07:39 (1)	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	18	07:24 (1) 07:42 (1)	05:57 21:15	05:17 21:58	05:23 22:03	06:06 21:22	06:58 20:15	16	07:24 (1) 07:40 (1)	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	1	07:35 (3) 07:36 (3)		06:59 20:24	07:25 (1) 21:16	05:55 21:59	05:17 22:02	06:08 21:20	06:59 20:13	14	07:25 (1) 07:39 (1)	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	4	07:33 (3) 07:37 (3)		06:56 20:26	07:27 (1) 21:18	05:53 22:00	05:16 22:02	06:09 21:18	07:01 20:10	12	07:27 (1) 07:39 (1)	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	7	07:30 (3) 07:37 (3)		06:54 20:28	07:29 (1) 21:20	05:52 22:01	05:16 22:01	06:11 21:16	07:03 20:08	10	07:29 (1) 07:39 (1)	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	9	07:28 (3) 07:37 (3)		06:52 20:29	07:28 (1) 21:21	05:50 22:01	05:15 22:00	06:12 21:14	07:04 20:05	8	07:30 (1) 07:38 (1)	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	12	07:26 (3) 07:38 (3)		06:49 20:31	07:26 (1) 21:23	05:48 22:02	05:15 21:59	06:14 21:12	07:06 20:03	16	07:32 (1) 08:06 (2)	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	14	07:23 (3) 07:37 (3)		06:47 20:33	07:23 (1) 21:25	05:47 22:03	05:30 21:58	06:16 21:10	07:08 20:01	19	07:34 (1) 08:09 (2)	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	15	07:21 (3) 07:36 (3)		06:45 20:35	07:21 (1) 21:26	05:45 22:03	05:31 21:57	06:17 21:08	07:10 19:58	21	07:49 (2) 08:10 (2)	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	17	07:18 (2) 07:35 (3)		06:43 20:36	07:18 (2) 21:28	05:43 22:04	05:32 21:56	06:19 21:06	07:11 19:56	23	07:48 (2) 08:11 (2)	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	18	07:16 (2) 07:34 (3)		06:40 20:38	07:16 (2) 21:29	05:42 22:04	05:33 21:55	06:21 21:04	07:13 19:54	25	07:47 (2) 08:12 (2)	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	19	07:14 (2) 07:33 (3)		06:38 20:40	07:14 (2) 21:31	05:40 22:05	05:35 21:54	06:22 21:02	07:15 19:51	27	07:45 (2) 08:12 (2)	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	18	07:11 (2) 07:29 (3)		06:36 20:42	07:11 (2) 21:32	05:39 22:05	05:36 21:53	06:24 21:00	07:16 19:49	28	07:44 (2) 08:12 (2)	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	17	07:09 (2) 07:26 (2)		06:34 20:43	07:09 (2) 21:34	05:37 22:06	05:37 21:52	06:26 20:58	07:18 19:46	29	07:43 (2) 08:12 (2)	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	20	07:07 (2) 07:27 (2)		06:32 20:45	07:07 (2) 21:35	05:36 22:06	05:38 21:51	06:28 20:56	07:20 19:44	27	07:45 (2) 08:12 (2)	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	22	07:04 (2) 07:26 (2)		06:29 20:47	07:04 (2) 21:37	05:40 22:06	05:40 21:49	06:29 20:54	07:21 19:42	25	07:47 (2) 08:12 (2)	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	25	07:02 (2) 07:27 (2)		06:27 20:49	07:02 (2) 21:38	05:41 22:06	05:41 21:48	06:31 20:51	07:23 19:39	23	07:48 (2) 08:11 (2)	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	27	06:59 (2) 07:26 (2)		06:25 20:50	06:59 (2) 21:40	05:43 22:07	05:43 21:47	06:33 20:49	07:25 19:37	21	07:50 (2) 08:11 (2)	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	28	06:57 (2) 07:25 (2)		06:23 20:52	06:57 (2) 21:41	05:44 22:07	05:44 21:45	06:34 20:47	07:26 19:34	18	07:52 (2) 08:10 (2)	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	28	06:57 (2) 07:25 (2)		06:21 20:54	06:57 (2) 21:43	05:45 22:07	05:45 21:44	06:36 20:45	07:28 19:32	18	07:54 (2) 08:12 (3)	08:21 17:24		08:17 16:34	08:49 16:27	
26	08:31 17:12	07:34 18:10	06:29 19:01	28	06:56 (2) 07:24 (2)		06:19 20:56	06:56 (2) 21:44	05:47 22:07	05:47 21:42	06:38 20:40	07:30 19:30	19	07:55 (2) 08:14 (3)	07:23 17:22		08:18 16:33	08:50 16:28	
27	08:30 17:13	07:32 18:12	06:27 19:03	26	06:57 (2) 07:23 (2)		06:17 20:57	06:57 (2) 21:45	05:49 22:07	05:49 21:41	06:39 20:40	07:31 19:27	18	07:56 (3) 08:15 (3)	07:25 17:20		08:20 16:32	08:56 16:29	
28	08:28 17:15	07:30 18:14	06:24 19:05	24	06:57 (2) 07:21 (2)		06:15 20:59	06:57 (2) 21:47	05:17 22:07	05:50 21:39	06:41 20:38	07:33 19:25	17	07:59 (2) 08:16 (3)	07:26 17:18		08:22 16:31	08:50 16:30	
29	08:27 17:17	07:22 18:06	07:05 21:00	21	07:58 (2) 08:19 (2)		06:13 21:01	07:58 (2) 21:48	05:17 22:06	05:52 21:38	06:43 20:36	07:35 19:23	16	08:00 (2) 08:16 (3)	07:28 17:16		08:23 16:30	08:50 16:30	
30	08:25 17:19	07:20 18:08	07:00 20:08	20	07:43 (1) 08:18 (2)		06:11 21:03	07:43 (1) 21:49	05:18 22:06	05:53 21:36	06:44 20:34	07:37 19:20	14	08:02 (3) 08:16 (3)	07:30 17:14		08:25 16:29	08:50 16:31	
31	08:24 17:21	07:17 18:10	07:00 20:10	17	07:40 (1) 08:14 (2)			07:40 (1) 21:50	05:55 21:50	06:46 21:34				07:32 17:12			08:50 16:32		
Potential sun hours	256	276	367		418		489	503	506	456	381	330		263	240				
Total, worst case			437		129							533		37					
Sun reduction			0.24		0.35							0.28		0.24					
Oper. time red.			1.00		1.00							1.00		1.00					
Wind dir. red.			0.68		0.68							0.68		0.67					
Total reduction			0.17		0.24							0.19		0.16					
Total, real			72		31							102		6					

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

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

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:** AV - H48

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	July	August	September	October	November	December
1	08:50	09:23 (3)	08:22	08:49 (1)	07:27	07:15	06:09	05:22	05:18	05:56	06:48	07:38
2	16:34	30	10:13 (2)	17:23	14	09:03 (1)	18:16	20:12	21:04	21:52	22:06	21:33
3	08:50	09:23 (3)	08:21	08:47 (1)	07:25	07:13	06:07	05:21	05:19	05:58	06:49	07:40
4	16:35	31	10:14 (2)	17:25	16	09:03 (1)	18:18	20:13	21:06	21:53	22:06	21:31
5	08:50	09:22 (3)	08:19	08:46 (1)	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42
6	16:36	31	10:13 (2)	17:27	18	09:04 (1)	18:20	20:15	21:08	21:54	22:05	21:29
7	08:50	09:22 (3)	08:17	08:44 (1)	07:21	07:08	06:03	05:19	05:21	06:01	06:53	07:43
8	16:37	31	10:13 (2)	17:28	20	09:04 (1)	18:22	20:17	21:09	21:55	22:05	21:27
9	08:50	09:21 (3)	08:16	08:42 (1)	07:18	07:06	06:01	05:19	05:21	06:03	06:54	07:45
10	16:38	31	10:13 (2)	17:30	22	09:04 (1)	18:23	20:19	21:11	21:56	22:04	21:26
11	08:49	09:21 (3)	08:14	08:40 (1)	07:16	07:03	05:59	05:18	05:22	06:04	06:56	07:47
12	16:40	31	10:13 (2)	17:32	24	09:04 (1)	18:25	20:20	21:13	21:57	22:04	21:27
13	08:49	09:20 (3)	08:12	08:38 (1)	07:14	07:01	05:57	05:17	05:23	06:06	06:58	07:49
14	16:41	30	10:12 (2)	17:34	25	09:03 (1)	18:27	20:22	21:15	21:58	22:03	21:22
15	08:48	09:20 (3)	08:10	08:38 (1)	07:11	06:59	05:55	05:15	05:24	06:07	06:59	07:50
16	16:42	30	10:13 (2)	17:36	25	09:03 (1)	18:29	20:24	21:16	21:59	22:02	21:20
17	08:48	09:19 (3)	08:08	08:38 (1)	07:09	06:56	05:53	05:16	05:25	06:09	07:01	07:52
18	16:44	30	10:12 (2)	17:38	24	09:02 (1)	18:31	20:26	21:18	22:00	22:02	21:18
19	08:47	09:18 (3)	08:07	08:39 (1)	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54
20	16:45	29	10:11 (2)	17:40	23	09:02 (1)	18:33	20:28	21:20	22:01	22:01	21:16
21	08:47	09:17 (3)	08:05	08:40 (1)	07:04	06:52	05:50	05:15	05:27	06:12	07:04	07:56
22	16:46	26	10:09 (2)	17:42	21	09:01 (1)	18:34	20:29	21:21	22:01	22:00	21:14
23	08:46	09:16 (3)	08:03	08:42 (1)	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57
24	16:48	20	10:06 (2)	17:44	17	08:59 (1)	18:36	20:31	21:23	22:02	21:59	21:12
25	08:45	09:16 (3)	08:01	08:43 (1)	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59
26	16:49	18	09:34 (3)	17:46	14	08:57 (1)	18:38	20:33	21:25	22:03	21:58	21:10
27	08:44	09:15 (3)	07:59	08:47 (1)	06:57	06:45	05:45	05:14	05:31	06:17	07:09	08:01
28	16:51	20	09:35 (3)	17:48	7	08:54 (1)	18:40	20:35	21:26	22:03	21:57	21:08
29	08:44	09:14 (3)	07:57		06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03
30	16:53	21	09:35 (3)	17:50		18:42	20:36	21:28	22:04	21:56	21:06	19:56
31	08:43	09:13 (3)	07:55		06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:05
32	16:54	21	09:34 (3)	17:51		18:43	20:38	21:29	22:04	21:55	21:04	19:54
33	08:42	09:14 (3)	07:53		06:50	06:38	05:40	05:14	05:34	06:22	07:15	08:06
34	16:56	20	09:34 (3)	17:53		18:45	20:40	21:31	22:05	21:54	21:02	19:51
35	08:41	09:15 (3)	07:51		06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08
36	16:58	19	09:34 (3)	17:55		18:47	20:42	21:32	22:05	21:53	21:00	19:49
37	08:40	09:16 (3)	07:49		06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10
38	16:59	18	09:34 (3)	17:57		18:49	20:43	21:34	22:06	21:52	20:58	19:46
39	08:39	09:17 (3)	07:47		06:43	06:32	05:36	05:14	05:38	06:27	07:20	08:12
40	17:01	17	09:34 (3)	17:59		18:50	20:45	21:35	22:06	21:51	20:56	19:44
41	08:38	09:18 (3)	07:45		06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:14
42	17:03	14	09:32 (3)	18:01		18:52	20:47	21:37	22:06	21:49	20:54	19:42
43	08:36	09:20 (3)	07:43		06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15
44	17:04	11	09:31 (3)	18:03		18:54	20:49	21:38	22:06	21:48	20:51	19:39
45	08:35	09:23 (3)	07:40		06:36	06:25	05:32	05:15	05:43	06:33	07:25	08:17
46	17:06	7	09:30 (3)	18:05		18:56	20:50	21:40	22:07	21:47	20:49	19:37
47	08:34		07:38		06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19
48	17:08		18:07		18:58	20:52	21:41	22:07	21:45	20:47	19:34	18:26
49	08:33		07:36		06:32	06:21	05:29	05:15	05:45	06:36	07:28	08:21
50	17:10		18:09		18:59	20:54	21:43	22:07	21:44	20:45	19:32	18:24
51	08:31		07:34		06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23
52	17:12		18:10		19:01	20:56	21:44	22:07	21:42	20:43	19:30	18:22
53	08:30	08:57 (1)	07:32		06:27	06:17	05:27	05:16	05:48	06:39	07:31	08:25
54	17:13	1	08:58 (1)	18:12		19:03	20:57	21:45	22:07	21:41	20:40	19:27
55	08:28	08:56 (1)	07:30		06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:27
56	17:15	4	09:00 (1)	18:14		19:05	20:59	21:47	22:07	21:39	20:38	19:25
57	08:27	08:54 (1)			07:22	06:13	05:25	05:17	05:52	06:43	07:35	08:28
58	17:17	6	09:00 (1)		20:06	21:01	21:48	22:06	21:38	20:36	19:23	18:10
59	08:25	08:53 (1)			07:20	06:11	05:24	05:18	05:53	06:44	07:37	08:30
60	17:19	9	09:02 (1)		20:08	21:03	21:49	22:06	21:36	20:33	19:20	18:08
61	08:24	08:51 (1)			07:17	06:08	05:23	05:16	05:55	06:46	07:38	08:31
62	17:21	11	09:02 (1)		20:10	21:05	21:50	22:07	21:34	20:31	19:18	18:06
Potential sun hours	256		276		367	418	489	503	506	456	381	330
Total, worst case	567		270									
Sun reduction	0.16		0.21									
Oper. time red.	1.00		1.00									
Wind dir. red.	0.64		0.65									
Total reduction	0.10		0.14									
Total, real	57		37									

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:** 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 16:34	08:22 17:23	07:27 18:16	07:15 20:12	06:08 21:04	05:22 21:51	20:52 (3) 21:18 (3)	05:18 22:06	21:01 (3) 21:25 (3)	05:56 21:33	20:58 (2) 21:02 (2)	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	20:52 (3) 21:19 (3)	05:19 22:05	21:01 (3) 21:26 (3)	05:58 21:31	20:57 (2) 21:00 (2)	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	20:53 (3) 21:21 (3)	05:20 22:05	21:00 (3) 21:26 (3)	05:59 21:29	20:57 (2) 20:58 (2)	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	20:53 (3) 21:21 (3)	05:21 22:04	21:01 (3) 21:27 (3)	06:01 21:27	06:01 21:22	06:01 20:22	06:03 19:11	06:03 17:04	06:03 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	20:53 (3) 21:21 (3)	05:21 22:04	21:01 (3) 21:27 (3)	06:03 21:25	06:03 21:25	06:03 20:19	06:03 19:08	06:03 17:02	06:03 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	20:54 (3) 21:22 (3)	05:22 22:03	21:01 (3) 21:28 (3)	06:04 21:24	06:04 21:24	06:04 20:17	06:04 19:06	06:04 17:01	06:04 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	20:54 (3) 21:21 (3)	05:23 22:03	21:01 (3) 21:28 (3)	06:06 21:22	06:06 21:22	06:06 20:15	06:06 19:04	06:06 16:59	06:06 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	20:55 (3) 21:21 (3)	05:24 22:02	21:01 (3) 21:29 (3)	06:07 21:20	06:07 21:20	06:07 20:12	06:07 19:01	06:07 16:57	06:07 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	20:56 (3) 21:22 (3)	05:25 22:01	21:00 (3) 21:27 (3)	06:09 21:18	06:09 21:18	06:09 20:10	06:09 18:59	06:09 16:56	06:09 16:24
10	08:47 16:45	08:06 17:40	07:07 18:32	06:54 20:27	05:52 21:19	2 05:16 20:50 (2)	20:56 (3) 21:21 (3)	05:26 22:01	21:00 (3) 21:27 (3)	06:11 21:16	06:11 21:16	06:11 20:08	06:11 18:57	06:11 16:54	06:11 16:24
11	08:47 16:46	08:05 17:42	07:04 18:34	06:52 20:29	05:50 21:21	4 05:15 20:51 (2)	20:57 (3) 21:21 (3)	05:27 22:00	21:00 (3) 21:26 (3)	06:12 21:14	06:12 21:14	06:12 20:05	06:12 18:54	06:12 16:52	06:12 16:24
12	08:46 16:48	08:03 17:44	07:02 18:36	06:49 20:31	05:48 21:23	6 05:15 20:52 (2)	20:57 (3) 21:22 (3)	05:28 21:59	21:00 (3) 21:25 (3)	06:14 21:12	06:14 21:12	06:14 20:03	06:14 18:52	06:14 16:51	06:14 16:24
13	08:45 16:49	08:01 17:46	07:00 18:38	06:47 20:33	05:46 21:24	7 05:15 20:54 (2)	20:57 (3) 21:21 (3)	05:30 21:58	21:00 (3) 21:25 (3)	06:16 21:10	06:16 21:10	06:16 20:01	06:16 18:50	06:16 16:49	06:16 16:23
14	08:44 16:51	07:59 17:48	06:57 18:40	06:45 20:34	05:45 21:26	8 05:14 20:55 (2)	20:57 (3) 21:21 (3)	05:31 21:57	21:00 (3) 21:24 (3)	06:17 21:08	06:17 21:08	06:17 20:00	06:17 18:48	06:17 16:48	06:17 16:23
15	08:43 16:53	07:57 17:49	06:55 18:41	06:43 20:36	05:43 21:28	10 05:14 20:57 (2)	20:58 (3) 21:21 (3)	05:32 21:56	21:00 (3) 21:23 (3)	06:19 21:06	06:19 21:06	06:19 20:00	06:19 18:45	06:19 16:46	06:19 16:23
16	08:43 16:54	07:55 17:51	06:53 18:43	06:40 20:38	05:42 21:29	10 05:14 20:58 (2)	20:58 (3) 21:21 (3)	05:33 21:55	21:00 (3) 21:22 (3)	06:21 21:04	06:21 21:04	06:21 20:00	06:21 18:43	06:21 16:45	06:21 16:24
17	08:42 16:56	07:53 17:53	06:50 18:45	06:38 20:40	05:40 21:31	11 05:14 20:59 (2)	20:59 (3) 21:21 (3)	05:34 21:54	21:00 (3) 21:21 (3)	06:22 21:02	06:22 21:02	06:22 20:00	06:22 18:41	06:22 16:43	06:22 16:24
18	08:41 16:57	07:51 17:55	06:48 18:47	06:36 20:41	05:39 21:32	12 05:14 21:01 (2)	20:59 (3) 21:21 (3)	05:36 21:53	21:00 (3) 21:20 (3)	06:24 21:00	06:24 21:00	06:24 20:00	06:24 18:39	06:24 16:42	06:24 16:24
19	08:40 16:59	07:49 17:57	06:46 18:49	06:34 20:43	05:37 21:34	13 05:14 21:03 (2)	20:59 (3) 21:21 (3)	05:37 21:52	21:00 (3) 21:20 (3)	06:26 20:58	06:26 20:58	06:26 20:00	06:26 18:37	06:26 16:41	06:26 16:24
20	08:38 17:01	07:47 17:59	06:43 18:50	06:31 20:45	05:36 21:35	13 05:14 21:03 (2)	20:59 (3) 21:21 (3)	05:38 21:50	21:00 (3) 21:18 (3)	06:27 20:56	06:27 20:56	06:27 20:00	06:27 18:34	06:27 16:39	06:27 16:25
21	08:37 17:03	07:45 18:01	06:41 18:52	06:29 20:47	05:34 21:37	15 05:14 21:05 (3)	21:00 (3) 21:22 (3)	05:40 21:49	21:00 (3) 21:17 (3)	06:29 20:59	06:29 20:59	06:29 20:00	06:29 18:32	06:29 16:38	06:29 16:25
22	08:36 17:04	07:42 18:03	06:39 18:54	06:27 20:48	05:33 21:38	17 05:14 21:07 (3)	21:00 (3) 21:22 (3)	05:41 21:48	21:00 (3) 21:15 (3)	06:31 20:51	06:31 20:51	06:31 20:00	06:31 18:30	06:31 16:37	06:31 16:26
23	08:35 17:06	07:40 18:05	06:36 18:56	06:25 20:50	05:32 21:40	17 05:15 21:08 (3)	21:00 (3) 21:22 (3)	05:43 21:46	21:00 (3) 21:15 (2)	06:32 20:49	06:32 20:49	06:32 20:00	06:32 18:28	06:32 16:36	06:32 16:26
24	08:34 17:08	07:38 18:07	06:34 18:57	06:23 20:52	05:30 21:41	18 05:15 21:08 (3)	21:00 (3) 21:22 (3)	05:44 21:45	21:00 (3) 21:13 (2)	06:34 20:47	06:34 20:47	06:34 20:00	06:34 18:26	06:34 16:35	06:34 16:27
25	08:32 17:10	07:36 18:08	06:31 18:59	06:21 20:54	05:29 21:42	20 05:15 21:10 (3)	21:01 (3) 21:23 (3)	05:45 21:44	21:00 (2) 21:13 (2)	06:36 20:45	06:36 20:45	06:36 20:00	06:36 18:24	06:36 16:33	06:36 16:27
26	08:31 17:12	07:34 18:10	06:29 19:01	06:19 20:55	05:28 21:44	21 05:16 21:11 (3)	21:01 (3) 21:23 (3)	05:47 21:42	21:00 (3) 21:11 (2)	06:37 20:42	06:37 20:42	06:37 20:00	06:37 18:22	06:37 16:32	06:37 16:28
27	08:30 17:13	07:32 18:12	06:27 19:03	06:17 20:57	05:27 21:45	22 05:16 21:12 (3)	21:01 (3) 21:24 (3)	05:48 21:41	21:00 (3) 21:09 (2)	06:39 20:40	06:39 20:40	06:39 20:00	06:39 18:20	06:39 16:31	06:39 16:29
28	08:28 17:15	07:29 18:14	06:24 19:04	06:14 20:59	05:26 21:47	22 05:17 21:13 (3)	21:01 (3) 21:24 (3)	05:50 21:39	21:00 (3) 21:08 (2)	06:41 20:38	06:41 20:38	06:41 20:00	06:41 18:18	06:41 16:31	06:41 16:30
29	08:27 17:17	07:22 18:06	06:12 19:01	05:25 21:01	05:25 21:48	23 05:17 21:15 (3)	21:01 (3) 21:25 (3)	05:51 21:37	21:00 (3) 21:06 (2)	06:43 20:36	06:43 20:36	06:43 20:00	06:43 18:16	06:43 16:30	06:43 16:30
30	08:25 17:19	07:20 18:08	06:10 19:02	05:24 21:02	05:24 21:49	24 05:18 21:16 (3)	21:01 (3) 21:25 (3)	05:53 21:36	21:00 (3) 21:05 (2)	06:44 20:33	06:44 20:33	06:44 20:00	06:44 18:14	06:44 16:29	06:44 16:31
31	08:24 17:21	07:17 18:10	06:07 19:04	05:23 20:59	05:23 21:50	25 05:17 21:17 (3)	21:01 (3) 21:24 (3)	05:55 21:34	21:00 (3) 21:04 (2)	06:46 20:31	06:46 20:31	06:46 20:00	06:46 18:12	06:46 16:29	06:46 16:32
Potential sun hours	256	276	367	418	488	503	726	614	456	381	330	263	240		
Total, worst case					320		726	614	8						
Sun reduction					0.37		0.30	0.26	0.30						
Oper. time red.					1.00		1.00	1.00	1.00						
Wind dir. red.					0.66		0.66	0.66	0.67						
Total reduction					0.24		0.20	0.18	0.20						
Total, real					78		143	108	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:** 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	08:22	07:27	07:15		19:38 (3)	06:08		20:28 (1)	05:22
	16:34	17:23	18:16	20:12	7	19:45 (3)	21:04	7	20:35 (1)	21:51
2	08:50	08:20	07:25	07:13		19:38 (3)	06:06		20:29 (1)	05:21
	16:35	17:25	18:18	20:13	9	19:47 (3)	21:06	8	20:37 (1)	21:53
3	08:50	08:19	07:23	07:10		19:36 (3)	06:05		20:28 (1)	05:20
	16:36	17:26	18:20	20:15	12	19:48 (3)	21:08	11	20:39 (1)	21:54
4	08:50	08:17	07:20	07:08		19:36 (3)	06:03		20:28 (1)	05:19
	16:37	17:28	18:21	20:17	15	19:51 (3)	21:09	12	20:40 (1)	21:55
5	08:49	08:15	07:18	07:05		19:36 (3)	06:01		20:28 (1)	05:18
	16:38	17:30	18:23	20:19	17	19:53 (3)	21:11	13	20:41 (1)	21:56
6	08:49	08:14	07:16	07:03		19:35 (3)	05:59		20:27 (1)	05:18
	16:39	17:32	18:25	20:20	19	19:54 (3)	21:13	16	20:43 (1)	21:57
7	08:49	08:12	07:14	07:01		19:35 (3)	05:57		20:28 (1)	05:17
	16:41	17:34	18:27	20:22	21	19:56 (3)	21:14	17	20:45 (1)	21:58
8	08:48	08:10	07:11	06:59		19:35 (3)	05:55		20:28 (1)	05:17
	16:42	17:36	18:29	20:24	22	19:57 (3)	21:16	18	20:46 (1)	21:59
9	08:48	08:08	07:09	06:56		19:35 (3)	05:53		20:29 (1)	05:16
	16:43	17:38	18:31	20:26	23	19:58 (2)	21:18	18	20:47 (1)	22:00
10	08:47	08:06	07:07	06:54		19:36 (3)	05:52		20:30 (1)	05:16
	16:45	17:40	18:32	20:27	24	20:00 (2)	21:19	20	20:50 (1)	22:00
11	08:47	08:05	07:04	06:52		19:37 (3)	05:50		20:30 (1)	05:15
	16:46	17:42	18:34	20:29	25	20:02 (2)	21:21	20	20:50 (1)	22:01
12	08:46	08:03	07:02	06:49		19:38 (3)	05:48		20:31 (1)	05:15
	16:48	17:44	18:36	20:31	26	20:04 (2)	21:23	18	20:49 (1)	22:02
13	08:45	08:01	07:00	06:47		19:39 (3)	05:46		20:33 (1)	05:15
	16:49	17:46	18:38	20:33	26	20:05 (2)	21:24	15	20:48 (1)	22:03
14	08:44	07:59	06:57	06:45		19:41 (3)	05:45		20:34 (1)	05:14
	16:51	17:48	18:40	20:34	23	20:07 (2)	21:26	12	20:46 (1)	22:03
15	08:43	07:57	06:55	06:43		19:57 (2)	05:43		20:37 (1)	05:14
	16:53	17:49	18:41	20:36	12	20:09 (2)	21:28	7	20:44 (1)	22:04
16	08:43	07:55	06:53	06:40		19:59 (2)	05:42			05:14
	16:54	17:51	18:43	20:38	11	20:10 (2)	21:29			22:04
17	08:42	07:53	06:50	06:38		20:01 (2)	05:40			05:14
	16:56	17:53	18:45	20:40	6	20:07 (2)	21:31			22:05
18	08:41	07:51	06:48	06:36			05:39			05:14
	16:57	17:55	18:47	20:41			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			22:05
20	08:38	07:47	06:43	06:31			05:36			05:14
	17:01	17:59	18:50	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	06:38	06:27			05:33			05:14
	17:04	18:03	18:54	20:48			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			22:06
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	20:55			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			22:06
28	08:28	07:29	06:24	06:14			05:26			05:17
	17:15	18:14	19:04	20:59			21:47			22:06
29	08:27		07:22	06:12		20:29 (1)	05:25			05:17
	17:17		20:06	21:01	3	20:32 (1)	21:48			22:06
30	08:25		07:20	06:10		20:29 (1)	05:24			05:18
	17:19		20:08	21:02	4	20:33 (1)	21:49			22:06
31	08:24		07:17				05:23			
	17:21		20:10	4	19:43 (3)		21:50			
hrs	256	276	367	418			488			503
use			5	305			212			
on			0.24	0.35			0.37			
ed.			1.00	1.00			1.00			
ed.			0.68	0.68			0.67			
on			0.17	0.24			0.25			
real			1	73			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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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

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	17:10		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	17:08		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	17:06		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	17:04		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	17:02		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	17:01		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	16:59		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	16:57		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	16:56		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	16:54		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	16:52		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	16:51		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	16:49		16:23
14	05:31		06:17		20:37 (1)	07:09			08:01	07:58		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		20:03 (2)	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
Hours	506		456				381		330	263		240
Use	39		287				205					
on	0.26		0.30				0.28					
ed.	1.00		1.00				1.00					
ed.	0.67		0.67				0.68					
on	0.18		0.20				0.19					
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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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

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

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 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 22:05	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	07:37 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	06:53 20:22	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	05:22 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 22:03	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	06:59 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	08:08 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 16:56	08:37 16:24
10	08:47 16:45	08:07 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 18:55	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	07:57 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	05:47 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	06:57 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 16:48	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 17:51	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	08:01 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 18:50	06:32 20:45	05:36 21:35	05:14 22:06	05:38 21:50	06:27 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 20:53	07:21 19:42	08:13 18:32	08:10 16:38	08:48 16:25
22	08:36 17:04	07:42 18:03	06:39 18:54	06:27 20:49	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 16:26
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	05:43 21:46	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	08:32 17:10	07:36 18:09	06:31 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 17:24	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 20:42	07:30 19:30	07:23 17:22	08:18 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	07:24 17:20	08:20 16:32	08:50 16:29
28	08:28 17:15	07:29 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	07:26 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	07:28 17:16	08:23 16:30	08:50 16:30
30	08:25 17:19		07:20 20:08	06:11 21:02	05:24 21:49	05:18 22:06	05:53 21:36	06:44 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 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	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: 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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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
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	07:19	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	21:43	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 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 22:05	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	07:37 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	06:53 20:22	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	05:22 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 22:03	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	06:59 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	05:53 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 18:32	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 18:55	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	07:57 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	06:57 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 16:48	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 17:51	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	08:01 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 18:50	06:32 20:45	05:36 21:35	05:14 22:06	05:38 21:50	06:27 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 20:53	07:21 19:42	08:14 18:32	08:10 16:38	08:48 16:25
22	08:36 17:04	07:42 18:03	06:39 18:54	06:27 20:49	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 16:26
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	05:43 21:46	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	08:32 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	06:36 20:45	07:28 19:32	07:21 17:24	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 20:42	07:30 19:30	07:23 17:22	08:18 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	07:24 17:20	08:20 16:32	08:50 16:29
28	08:28 17:15	07:29 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	07:26 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	07:28 17:16	08:23 16:30	08:50 16:30
30	08:25 17:19		07:20 20:08	06:11 21:02	05:24 21:49	05:18 22:06	05:53 21:36	06:44 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 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	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:** 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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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		08:26	08:59 (1)		
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	17:10		16:28	28	09:27 (1)	
	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		08:28		09:01 (1)	
	16:35	19	09:42 (1)	17:25	18:18	20:13	21:06	21:53	22:06	21:31	20:27	19:15	17:08		16:27	27	09:28 (1)	
3	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		08:29		09:02 (1)	
	16:36	20	09:42 (1)	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06		16:27	26	09:28 (1)	
	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		08:31		09:04 (1)	
4	16:37	21	09:43 (1)	17:28	18:22	20:17	21:09	21:55	22:05	21:27	20:22	19:11	17:04		16:26	25	09:29 (1)	
	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		08:32		09:05 (1)	
	16:38	22	09:43 (1)	17:30	18:23	20:19	21:11	21:56	22:04	21:26	20:20	19:08	17:03		16:26	24	09:29 (1)	
6	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		08:33		09:07 (1)	
	16:39	23	09:44 (1)	17:32	18:25	20:20	21:13	21:57	22:04	21:24	20:17	19:06	17:01		16:25	23	09:30 (1)	
	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		08:35		09:08 (1)	
7	16:41	24	09:44 (1)	17:34	18:27	20:22	21:15	21:58	22:03	21:22	20:15	19:04	16:59		16:25	22	09:30 (1)	
	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		08:36		09:09 (1)	
	16:42	25	09:45 (1)	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:13	19:01	16:57		16:24	21	09:30 (1)	
9	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		08:37		09:11 (1)	
	16:44	26	09:45 (1)	17:38	18:31	20:26	21:18	22:00	22:02	21:18	20:10	18:59	16:56		16:24	20	09:31 (1)	
	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		08:38		09:12 (1)	
10	16:45	27	09:45 (1)	17:40	18:32	20:28	21:20	22:01	22:01	21:16	20:08	18:57	16:54		16:24	19	09:31 (1)	
	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		08:39		09:13 (1)	
	16:46	28	09:45 (1)	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:55	16:52		16:24	19	09:32 (1)	
12	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		08:40		09:14 (1)	
	16:48	28	09:45 (1)	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51		16:24	18	09:32 (1)	
	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		08:41		09:15 (1)	
13	16:49	27	09:46 (1)	17:46	18:38	20:33	21:25	22:03	21:58	21:10	20:01	18:50	16:49		16:23	17	09:32 (1)	
	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		08:42		09:16 (1)	
	16:51	27	09:46 (1)	17:48	18:40	20:35	21:26	22:03	21:57	21:08	19:58	18:48	16:48		16:23	17	09:33 (1)	
15	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		08:43		09:17 (1)	
	16:53	26	09:46 (1)	17:50	18:42	20:36	21:28	22:04	21:56	21:06	19:56	18:45	16:46		16:23	16	09:33 (1)	
	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		08:44		09:18 (1)	
16	16:54	25	09:45 (1)	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:54	18:43	16:45		16:24	16	09:34 (1)	
	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		08:45		09:19 (1)	
	16:56	24	09:45 (1)	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43		16:24	15	09:34 (1)	
18	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	09:07 (1)	08:46		09:19 (1)	
	16:57	23	09:45 (1)	17:55	18:47	20:42	21:32	22:05	21:53	21:00	19:49	18:39	16:42	5	09:12 (1)	16:24	15	09:34 (1)
	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		09:04 (1)	08:46		09:20 (1)
19	16:59	22	09:45 (1)	17:57	18:49	20:43	21:34	22:06	21:52	20:58	19:46	18:37	16:41	11	09:15 (1)	16:24	15	09:35 (1)
	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		09:02 (1)	08:47		09:21 (1)
	17:01	20	09:45 (1)	17:59	18:50	20:45	21:35	22:06	21:51	20:56	19:44	18:35	16:39	16	09:18 (1)	16:25	15	09:36 (1)
21	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		09:02 (1)	08:48		09:21 (1)
	17:03	18	09:43 (1)	18:01	18:52	20:47	21:37	22:06	21:49	20:54	19:42	18:32	16:38	17	09:19 (1)	16:25	15	09:36 (1)
	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		09:01 (1)	08:48		09:22 (1)
22	17:04	16	09:43 (1)	18:03	18:54	20:49	21:38	22:06	21:48	20:51	19:39	18:30	16:37	20	09:21 (1)	16:26	14	09:36 (1)
	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		08:59 (1)	08:49		09:22 (1)
	17:06	11	09:41 (1)	18:05	18:56	20:50	21:40	22:07	21:47	20:49	19:37	18:28	16:36	22	09:21 (1)	16:26	15	09:37 (1)
24	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		08:59 (1)	08:49		09:23 (1)
	17:08	4	09:37 (1)	18:07	18:58	20:52	21:41	22:07	21:45	20:47	19:34	18:26	16:35	23	09:22 (1)	16:27	15	09:38 (1)
	08:33		07:36	06:32	06:21	05:29	05:15	05:45	06:36	07:28	08:21	08:17	08:49		08:59 (1)	08:49		09:23 (1)
25	17:10		18:08	18:59	20:54	21:43	22:07	21:44	20:45	19:32	17:24	16:33	16:27	24	09:23 (1)	16:27	15	09:38 (1)
	08:31		07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:18	08:49		08:59 (1)	08:50		09:23 (1)
	17:12		18:10	19:01	20:56	21:44	22:07	21:42	20:43	19:30	17:22	16:32	16:28	25	09:24 (1)	16:28	15	09:38 (1)
27	08:30		07:32	06:27	06:17	05:27	05:16	05:48	06:39	07:31	08:25	08:20	08:49		08:59 (1)	08:50		09:23 (1)
	17:13		18:12	19:03	20:57	21:45	22:07	21:41	20:40	19:27	17:20	16:32	16:28	26	09:25 (1)	16:29	16	09:39 (1)
	08:28		07:30	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:22	08:49		08:59 (1)	08:50		09:23 (1)
28	17:15		18:14	19:05	20:59	21:47	22:07	21:39	20:38	19:25	17:18	16:31	16:30	26	09:25 (1)	16:30	16	09:39 (1)
	08:27		07:22	06:13	05:25	05:17	05:52	06:43	07:35	08:27	09:20	08:23	08:49		08:59 (1)	08:50		09:23 (1)
	17:17		07:22	06:13	05:25	05:17	05:52	06:43	07:35	08:27	09:20	08:23	08:49		08:59 (1)	08:50		09:23 (1)
30	08:25		07:20	06:10	05:24	05:18	05:53	06:44	07:37	08:30	09:23	08:25	08:49	27	09:26 (1)	16:30	16	09:39 (1)
	17:19		07:20	06:10	05:24	05:18	05:53	06:44	07:37	08:30	09:23	08:25	08:49		08:59 (1)	08:50		09:23 (1)
	08:24		07:17	06:08	05:21	05:15	05:50	06:41	07:34	08:27	09:20	08:23	08:49	28	09:27 (1)	16:31	17	09:40 (1)
31	17:21		07:17	06:08	05:21	05:15	05:50	06:41	07:34	08:27	09:20	08:23	08:49		08:50		09:23 (1)	
	08:24		07:17	06:08	05:21	05:15	05:50	06:41	07:34	08:27	09:20	08:23	08:49		08:50		09:23 (1)	
	17:21		07:17	06:08	05:21	05:15	05:50	06:41	07:34	08:27	09:20	08:23	08:49		08:50		09:23 (1)	
Potential sun hours	256		276	367	418	489	503	506	456	381	330	263	270		240	570		
Total, worst case	525												0.19			0.14		
Sun reduction	0.16												1.00			1.00		
Oper. time red.	1.00												0.65			0.65		
Wind dir. red.	0.65												0.12			0.09		
Total reduction	0.10												0.12			0.09		

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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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 16:34	08:22 17:23	07:27 18:16	07:15 20:12	06:09 21:04	05:22 21:51	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 22:05	05:58 21:31	06:49 20:26	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	07:37 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	07:06 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 22:03	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	06:59 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 16:44	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 16:56	08:37 16:24
10	08:47 16:45	08:07 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 16:24
13	08:45 16:49	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	06:57 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 16:48	08:42 16:24
15	08:43 16:53	07:57 17:50	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	07:59 16:46	08:43 16:24
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 16:58	07:51 17:55	06:48 18:47	06:36 20:41	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	08:45 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	05:37 21:52	06:26 20:58	07:18 19:46	08:10 18:37	08:06 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	05:38 21:50	06:27 20:56	07:20 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	05:40 21:49	06:29 20:53	07:21 19:42	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	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 22:06	05:43 21:46	06:32 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 22:07	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	08:32 17:10	07:36 18:08	06:31 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 17:24	08:17 16:34	08:49 16:27
26	08:31 17:12	07:34 18:10	06:29 19:01	06:19 20:55	05:28 21:44	05:16 22:07	05:47 21:42	06:38 20:42	07:30 19:30	07:23 17:22	08:18 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 22:06	05:48 21:41	06:39 20:40	07:31 19:27	07:24 17:20	08:20 16:32	08:50 16:29
28	08:28 17:15	07:29 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	07:26 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 21:37	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	06:11 21:02	05:24 21:49	05:18 22:06	05:53 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		05:55 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												
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: 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	20:29 19:18	20:29 17:10	20:29 16:28	20:29 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	20:29 19:15	20:29 17:08	20:29 16:27	20:29 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	20:26 19:13	20:26 17:06	20:26 16:27	20:26 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	21:18 (3) 21:27	20:25 19:11	20:25 17:04	20:25 16:26	20:25 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	20:24 19:08	20:24 17:02	20:24 16:26	20:24 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	20:23 19:06	20:23 17:01	20:23 16:25	20:23 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 (3) 21:22	20:23 19:04	20:23 16:59	20:23 16:25	20:23 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	20:22 19:01	20:22 16:57	20:22 16:24	20:22 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	20:20 18:59	20:20 16:56	20:20 16:24	20:20 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	20:19 18:57	20:19 16:54	20:19 16:24	20:19 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	20:18 18:54	20:18 16:52	20:18 16:24	20:18 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	20:17 18:52	20:17 16:51	20:17 16:24	20:17 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	20:16 18:50	20:16 16:49	20:16 16:23	20:16 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	20:15 19:58	20:15 16:48	20:15 16:23	20:15 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	20:14 19:56	20:14 16:46	20:14 16:23	20:14 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	20:13 19:53	20:13 16:45	20:13 16:24	20:13 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	20:12 19:51	20:12 16:43	20:12 16:24	20:12 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	20:11 19:49	20:11 16:42	20:11 16:24	20:11 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	20:10 19:46	20:10 16:41	20:10 16:24	20:10 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	20:09 19:44	20:09 16:39	20:09 16:25	20:09 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	20:07 19:41	20:07 16:38	20:07 16:25	20:07 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	20:06 19:39	20:06 16:37	20:06 16:26	20:06 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	20:05 19:37	20:05 16:36	20:05 16:26	20:05 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	20:04 19:34	20:04 16:35	20:04 16:27	20:04 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	20:03 19:32	20:03 16:34	20:03 16:27	20:03 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	20:02 19:30	20:02 16:32	20:02 16:28	20:02 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	21:12 (2) 20:40	20:01 19:27	20:01 16:31	20:01 16:29	20:01 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	21:12 (2) 20:38	20:00 19:25	20:00 16:31	20:00 16:30	20:00 16:30
29	08:27 17:17	07:22 18:06	06:12 19:01	06:12 20:52	05:25 21:48	05:17 22:06	21:18 (3) 21:37	21:13 (2) 20:36	20:00 19:22	20:00 16:30	20:00 16:30	20:00 16:30
30	08:25 17:19	07:20 18:08	06:10 19:02	06:10 21:02	05:24 21:49	05:18 22:06	21:17 (3) 21:36	21:13 (2) 20:33	20:00 19:20	20:00 16:30	20:00 16:31	20:00 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	21:18 (3) 21:34	21:14 (2) 20:31	20:00 17:12	20:00 16:32	20:00 16:32	20:00 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)	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: 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 16:34	08:22 17:23	07:27 18:16	07:15 20:12	06:09 21:04	05:22 21:51	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 22:05	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	07:37 17:06	08:29 16:27
4	08:50 16:37	08:17 17:29	07:20 18:22	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	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 22:03	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	06:59 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	08:08 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 16:56	08:37 16:24
10	08:47 16:45	08:07 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 18:55	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	07:57 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	05:47 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	06:57 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 16:48	08:42 16:24
15	08:44 16:53	07:57 17:50	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 18:46	07:59 16:46	08:43 16:24
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	08:04 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	05:35 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 16:58	07:51 17:55	06:48 18:47	06:36 20:41	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	05:38 21:50	06:27 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 20:53	07:21 19:42	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 20:49	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 16:26
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	05:43 21:46	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	08:32 17:10	07:36 18:09	06:31 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 17:24	08:17 16:34	08:49 16:27
26	08:31 17:12	07:34 18:10	06:29 19:01	06:19 20:55	05:28 21:44	05:16 22:07	05:47 21:42	06:38 20:42	07:30 19:30	07:23 17:22	08:18 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	07:24 17:20	08:20 16:32	08:50 16:29
28	08:28 17:15	07:29 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	07:26 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	07:28 17:16	08:23 16:30	08:50 16:30
30	08:25 17:19		07:20 20:08	06:11 21:02	05:24 21:49	05:18 22:06	05:53 21:36	06:44 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 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	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: 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
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	20:41	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	18:08	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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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
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	06:12	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	20:35	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	20:53	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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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 16:34	08:22 17:23	07:27 18:16	07:15 20:12	06:09 21:04	05:22 21:51	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 22:05	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	07:37 17:06	08:29 16:27
4	08:50 16:37	08:17 17:29	07:20 18:22	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	07:39 17:04	08:30 16:26
5	08:49 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 22:03	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	06:59 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	08:08 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 16:56	08:37 16:24
10	08:47 16:45	08:07 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 18:55	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	07:57 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	05:47 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	06:57 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 16:48	08:42 16:24
15	08:44 16:53	07:57 17:50	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	07:59 16:46	08:43 16:24
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	08:04 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	05:35 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 16:58	07:51 17:55	06:48 18:47	06:36 20:41	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	05:38 21:50	06:27 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 20:53	07:21 19:42	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	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 22:06	05:43 21:46	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 18:57	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 16:35	08:49 16:27
25	08:32 17:10	07:36 18:08	06:31 18:59	06:21 20:54	05:29 21:43	05:15 22:07	05:46 21:44	06:36 20:45	07:28 19:32	07:21 17:24	08:17 16:34	08:49 16:27
26	08:31 17:12	07:34 18:10	06:29 19:01	06:19 20:55	05:28 21:44	05:16 22:07	05:47 21:42	06:38 20:42	07:30 19:30	07:23 17:22	08:18 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	07:24 17:20	08:20 16:32	08:50 16:29
28	08:28 17:15	07:29 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	07:26 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	07:28 17:16	08:23 16:30	08:50 16:30
30	08:25 17:19		07:20 20:08	06:11 21:02	05:24 21:49	05:18 22:06	05:53 21:36	06:44 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 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	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:** 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)	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:** 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)	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: 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)	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: 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 16:34	08:22 17:23	07:27 18:16	07:15 20:12	06:09 21:04	05:22 21:51	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 22:05	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	07:37 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	07:06 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 22:03	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	06:59 20:24	05:55 21:16	05:17 21:59	05:24 22:02	06:08 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	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	08:07 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 18:55	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	07:57 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	05:47 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	06:57 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 16:48	08:42 16:24
15	08:43 16:53	07:57 17:50	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	07:59 16:46	08:43 16:24
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 16:58	07:51 17:55	06:48 18:47	06:36 20:41	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	08:45 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	05:37 21:52	06:26 20:58	07:18 19:46	08:10 18:37	08:06 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	05:38 21:50	06:27 20:56	07:20 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	05:40 21:49	06:29 20:53	07:21 19:42	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	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 22:06	05:43 21:46	06:33 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 22:07	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	08:32 17:10	07:36 18:08	06:31 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 17:24	08:17 16:34	08:49 16:27
26	08:31 17:12	07:34 18:10	06:29 19:01	06:19 20:55	05:28 21:44	05:16 22:07	05:47 21:42	06:38 20:42	07:30 19:30	07:23 17:22	08:18 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 22:06	05:49 21:41	06:39 20:40	07:31 19:27	07:24 17:20	08:20 16:32	08:50 16:29
28	08:28 17:15	07:29 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	07:26 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 21:37	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	06:11 21:02	05:24 21:49	05:18 22:06	05:53 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		05:55 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												
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:** BR - H70

Assumptions for shadow calculations

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

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

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
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
	16:34	17:23	18:16	9	08:00 (1)	20:12	21:04	21:52	22:06	21:33	20:29	19:18
2	08:50	08:21	08:47 (2)	07:25	07:49 (1)	07:13	06:07	05:21	05:19	05:58	06:49	07:40
	16:35	17:25	3	08:50 (2)	18:18	11	08:00 (1)	20:13	21:06	21:53	22:06	21:31
3	08:50	08:19	08:46 (2)	07:23	07:47 (1)	07:10	06:05	05:20	05:20	05:59	06:51	07:42
	16:36	17:27	6	08:52 (2)	18:20	13	08:00 (1)	20:15	21:08	21:54	22:05	21:29
4	08:50	08:17	08:44 (2)	07:21	07:44 (1)	07:08	06:03	05:19	05:21	06:01	06:53	07:43
	16:37	17:29	9	08:53 (2)	18:22	15	07:59 (1)	20:17	21:09	21:55	22:05	21:27
5	08:50	08:16	08:42 (2)	07:18	07:42 (1)	07:06	06:01	05:19	05:22	06:03	06:54	07:45
	16:38	17:30	11	08:53 (2)	18:23	17	07:59 (1)	20:19	21:11	21:56	22:04	21:26
6	08:49	08:14	08:40 (2)	07:16	07:40 (1)	07:03	05:59	05:18	05:22	06:04	06:56	07:47
	16:40	17:32	14	08:54 (2)	18:25	18	07:58 (1)	20:20	21:13	21:57	22:04	21:24
7	08:49	08:12	08:38 (2)	07:14	07:40 (1)	07:01	05:57	05:17	05:23	06:06	06:58	07:49
	16:41	17:34	16	08:54 (2)	18:27	16	07:56 (1)	20:22	21:15	21:58	22:03	21:22
8	08:48	08:10	08:36 (2)	07:11	07:42 (1)	06:59	05:55	05:17	05:24	06:08	06:59	07:50
	16:42	17:36	19	08:55 (2)	18:29	12	07:54 (1)	20:24	21:16	21:59	22:02	21:20
9	08:48	08:09	08:34 (2)	07:09	07:46 (1)	06:56	05:53	05:16	05:25	06:09	07:01	07:52
	16:44	17:38	21	08:55 (2)	18:31	4	07:50 (1)	20:26	21:18	22:00	22:02	21:18
10	08:47	08:07	08:32 (2)	07:07	06:54	05:52	05:16	05:26	06:11	07:03	07:54	08:45
	16:45	17:40	23	08:55 (2)	18:33	20	20:28	21:20	22:01	22:01	21:16	20:08
11	08:47	08:05	08:30 (2)	07:05	06:52	05:50	05:15	05:27	06:12	07:04	07:56	08:47
	16:46	17:42	25	08:55 (2)	18:34	20	20:29	21:21	22:01	22:00	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	08:48
	16:48	17:44	26	08:54 (2)	18:36	20	20:31	21:23	22:02	21:59	21:12	20:03
13	08:45	08:01	08:26 (3)	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59	08:50
	16:49	17:46	28	08:54 (2)	18:38	20	20:33	21:25	22:03	21:58	21:10	20:01
14	08:44	07:59	08:24 (3)	06:58	06:45	05:45	05:14	05:31	06:17	07:10	08:01	08:52
	16:51	17:48	29	08:53 (2)	18:40	20	20:35	21:26	22:03	21:57	21:08	19:58
15	08:44	07:57	08:23 (3)	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	08:53
	16:53	17:50	30	08:52 (2)	18:42	20	20:36	21:28	22:04	21:56	21:06	19:56
16	08:43	07:55	08:22 (3)	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:05	08:54
	16:54	17:52	29	08:51 (2)	18:43	20	20:38	21:29	22:04	21:55	21:04	19:54
17	08:42	07:53	08:24 (3)	06:50	06:38	05:40	05:14	05:34	06:22	07:15	08:06	08:55
	16:56	17:53	26	08:50 (2)	18:45	20	20:40	21:31	22:05	21:54	21:02	19:51
18	08:41	07:51	08:27 (3)	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:56
	16:58	17:55	16	08:47 (2)	18:47	20	20:42	21:32	22:05	21:53	21:00	19:49
19	08:40	07:49	06:46		06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:57
	16:59	17:57	18:49		20:43	21:34	22:06	21:52	20:58	19:46	18:37	16:41
20	08:39	07:47	06:43		06:32	05:36	05:14	05:38	06:28	07:20	08:12	08:58
	17:01	17:59	18:50		20:45	21:35	22:06	21:51	20:56	19:44	18:35	16:39
21	08:38	07:45	06:41		06:29	05:34	05:14	05:40	06:29	07:21	08:14	08:58
	17:03	18:01	18:52		20:47	21:37	22:06	21:49	20:54	19:42	18:32	16:38
22	08:36	07:43	06:39		06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:58
	17:04	18:03	18:54		20:49	21:38	22:06	21:48	20:51	19:39	18:30	16:37
23	08:35	07:40	06:36		06:25	05:32	05:15	05:43	06:33	07:25	08:17	08:59
	17:06	18:05	18:56		20:50	21:40	22:07	21:47	20:49	19:37	18:28	16:36
24	08:34	07:38	06:34		06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:59
	17:08	18:07	18:58		20:52	21:41	22:07	21:45	20:47	19:34	18:26	16:35
25	08:33	07:36	06:32		06:21	05:29	05:15	05:46	06:36	07:28	08:21	08:59
	17:10	18:09	18:59		20:54	21:43	22:07	21:44	20:45	19:32	18:24	16:34
26	08:31	07:34	06:29		06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:58
	17:12	18:10	19:01		20:56	21:44	22:07	21:42	20:43	19:30	18:22	16:33
27	08:30	07:32	06:27	07:56 (1)	06:17	05:27	05:16	05:49	06:39	07:31	08:25	08:58
	17:13	18:12	3	07:59 (1)	19:03	20:57	21:45	22:07	21:41	20:40	19:27	18:20
28	08:28	07:30	06:24	07:54 (1)	06:15	05:26	05:17	05:50	06:41	07:33	08:27	08:58
	17:15	18:14	6	08:00 (1)	19:05	20:59	21:47	22:07	21:39	20:38	19:25	18:18
29	08:27	07:22	06:13		06:13	05:25	05:17	05:52	06:43	07:35	08:29	08:58
	17:17	18:16	20:06		21:01	21:48	22:06	21:38	20:36	19:23	18:16	17:09
30	08:25	07:20	06:11		06:11	05:24	05:18	05:53	06:44	07:37	08:30	08:58
	17:19	18:18	20:08		21:03	21:49	22:06	21:36	20:34	19:20	18:14	17:07
31	08:24	07:17	06:10		06:10	05:23		05:55	06:46		07:32	08:25
	17:21	18:10	20:10		21:50	21:50		21:34	20:31		17:12	16:05
Potential sun hours	256	276	367	418	489	503	506	456	381	330	263	240
Total, worst case		340	115							343	118	
Sun reduction		0.21	0.24							0.24	0.19	
Oper. time red.		1.00	1.00							1.00	1.00	
Wind dir. red.		0.66	0.68							0.67	0.66	
Total reduction		0.14	0.16							0.16	0.12	
Total, real		47	19							55	15	

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: 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	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	21:11 (2) 22:05	21:22 (2) 21:31	05:58 20:26	06:49 19:15	07:40 17:08	07:35 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	05:59 20:24	06:51 19:13	07:42 17:06	07:37 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	06:01 20:22	06:53 19:11	07:43 17:04	07:39 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	06:03 20:19	06:54 19:08	07:45 17:02	07:41 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	06:04 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 21:14	05:17 21:58	21:14 (2) 22:03	21:20 (2) 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	21:15 (2) 22:02	21:20 (2) 21:20	06:07 20:12	06:59 19:01	07:50 16:57	07:47 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	06:09 20:10	07:01 18:59	07:52 16:56	07:48 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	06:11 20:08	07:03 18:57	07:54 16:54	07:50 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	06:12 20:05	07:04 18:54	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	21:18 (2) 21:59	21:20 (2) 21:12	06:14 20:03	07:06 18:52	07:57 16:51	07:54 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	06:16 20:01	07:08 18:50	07:59 16:49	07:56 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	21:25 (2) 21:08	06:17 19:58	07:09 18:48	08:01 16:48	07:58 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	06:19 19:56	07:11 18:45	08:03 16:46	07:59 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	06:21 19:53	07:13 18:43	08:04 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	21:22 (2) 21:54	21:19 (2) 21:02	06:22 19:51	07:14 18:41	08:06 16:43	08:03 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	21:21 (2) 21:00	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 22:05	21:26 (3) 21:52	21:20 (2) 21:06	06:26 19:46	07:18 18:37	08:10 16:41	08:06 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	21:23 (2) 21:06	06:27 19:44	07:19 18:34	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	21:28 (3) 21:49	21:24 (2) 21:03	06:29 19:41	07:21 18:32	08:13 16:38	08:10 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	21:25 (2) 21:03	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 22:06	21:28 (3) 21:46	21:26 (2) 21:04	06:32 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 18:57	06:23 20:52	05:30 21:41	05:15 22:06	21:24 (2) 21:45	21:24 (2) 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 18:08	06:31 18:59	06:21 20:54	05:29 21:42	05:15 22:07	21:24 (2) 21:44	21:25 (2) 21:04	06:36 19:32	07:28 18:24	08:21 16:33	08:17 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	21:26 (2) 21:04	06:37 19:30	07:30 18:22	08:23 16:32	08:18 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	21:23 (2) 21:41	21:27 (2) 21:04	06:39 19:27	07:31 18:20	08:24 16:31	08:20 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	21:22 (2) 21:39	21:28 (2) 21:04	06:41 19:25	07:33 18:18	08:26 16:31	08:21 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	21:29 (2) 21:04	06:43 19:22	07:35 18:16	08:28 16:30	08:23 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	21:30 (2) 21:04	06:44 19:20	07:36 18:14	08:30 16:29	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	05:19 22:06	21:21 (2) 21:34	21:31 (2) 21:04	06:46 19:20	07:37 18:14	08:31 16:32	08:26 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	6 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	9 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	12 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	15 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	18 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	21 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	24 07:42 (1)	07:06	06:01	05:19	05:22	06:03	06:54	07:45	08:32
10	16:38	17:30	18:23	27 07:55 (1)	20:19	21:11	21:56	22:04	21:26	20:20	19:08	16:26
11	08:49	08:14	07:16	30 07:40 (1)	07:03	05:59	05:18	05:22	06:04	06:56	07:47	08:33
12	16:40	17:32	18:25	3 07:55 (1)	20:21	21:13	21:57	22:04	21:24	20:17	19:06	16:25
13	08:49	08:12	07:14	6 07:37 (1)	07:01	05:57	05:17	05:23	06:06	06:58	07:49	08:35
14	16:41	17:34	18:27	9 07:53 (1)	20:22	21:15	21:58	22:03	21:22	20:15	19:04	16:25
15	08:48	08:10	07:11	12 07:36 (1)	06:59	05:55	05:17	05:24	06:08	06:59	07:50	08:36
16	16:42	17:36	18:29	15 07:52 (1)	20:24	21:16	21:59	22:02	21:20	20:13	19:01	16:24
17	08:48	08:09	07:09	18 07:37 (1)	06:56	05:53	05:16	05:25	06:09	07:01	07:52	08:37
18	16:44	17:38	18:31	21 07:51 (1)	20:26	21:18	22:00	22:02	21:18	20:10	18:59	16:24
19	08:47	08:07	07:07	24 07:38 (1)	06:54	05:52	05:16	05:26	06:11	07:03	07:54	08:38
20	16:45	17:40	18:33	3 07:48 (1)	20:28	21:20	22:01	22:01	21:16	20:08	18:57	16:24
21	08:47	08:05	07:05	6 06:52	05:50	05:15	05:27	06:12	07:04	07:56	08:47	08:39
22	16:46	17:42	18:34	9 06:29	21:21	22:01	22:00	21:14	20:06	18:55	17:44	16:24
23	08:46	08:03	07:02	12 06:49	05:48	05:15	05:28	06:14	07:06	07:57	08:48	08:40
24	16:48	17:44	18:36	15 06:31	21:23	22:02	21:59	21:12	20:03	18:52	17:41	16:24
25	08:45	08:01	07:00	18 06:47	05:47	05:15	05:30	06:16	07:08	07:59	08:50	08:41
26	16:49	17:46	18:38	21 06:33	21:25	22:03	21:58	21:10	20:01	18:50	17:39	16:24
27	08:44	07:59	06:58	24 06:45	05:45	05:14	05:31	06:17	07:10	08:01	08:52	08:42
28	16:51	17:48	18:40	3 06:35	21:26	22:03	21:57	21:08	19:58	18:48	17:37	16:24
29	08:44	07:57	06:55	6 06:43	05:43	05:14	05:32	06:19	07:11	08:03	08:54	08:43
30	16:53	17:50	18:42	9 06:36	21:28	22:04	21:56	21:06	19:56	18:46	17:35	16:24
31	08:43	07:55	06:53	12 06:40	05:42	05:14	05:33	06:21	07:13	08:05	08:56	08:44
32	16:54	17:52	18:43	15 06:38	21:29	22:04	21:55	21:04	19:54	18:43	17:32	16:24
33	08:42	07:53	06:50	18 06:38	05:40	05:14	05:34	06:22	07:15	08:06	08:57	08:45
34	16:56	17:53	18:45	21 06:40	21:31	22:05	21:54	21:02	19:51	18:41	17:30	16:24
35	08:41	07:51	06:48	24 06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:59	08:46
36	16:58	17:55	18:47	3 06:42	21:32	22:05	21:53	21:00	19:49	18:39	17:28	16:24
37	08:40	07:49	06:46	6 06:34	05:37	05:14	05:37	06:26	07:18	08:10	09:01	08:46
38	16:59	17:57	18:49	9 06:43	21:34	22:06	21:52	20:58	19:46	18:37	17:26	16:24
39	08:39	07:47	06:43	12 06:32	05:36	05:14	05:38	06:28	07:20	08:12	09:03	08:47
40	17:01	17:59	18:50	15 06:45	21:35	22:06	21:51	20:56	19:44	18:35	17:24	16:25
41	08:38	07:45	06:41	18 06:29	05:34	05:14	05:40	06:29	07:21	08:14	09:05	08:48
42	17:03	18:01	18:52	21 06:47	21:37	22:06	21:49	20:54	19:42	18:32	17:21	16:25
43	08:36	07:43	06:39	24 06:27	05:33	05:14	05:41	06:31	07:23	08:15	09:06	08:48
44	17:04	18:03	18:54	3 06:49	21:38	22:06	21:48	20:51	19:39	18:30	17:19	16:26
45	08:35	07:40	06:36	6 06:25	05:32	05:15	05:43	06:33	07:25	08:17	09:08	08:49
46	17:06	18:05	18:56	9 06:50	21:40	22:07	21:47	20:49	19:37	18:28	17:17	16:26
47	08:34	07:38	06:34	12 06:23	05:30	05:15	05:44	06:34	07:26	08:19	09:10	08:49
48	17:08	18:07	18:58	15 06:52	21:41	22:07	21:45	20:47	19:34	18:26	17:15	16:27
49	08:33	07:36	06:32	18 06:21	05:29	05:15	05:46	06:36	07:28	08:21	09:12	08:49
50	17:10	18:09	18:59	21 06:54	21:43	22:07	21:44	20:45	19:32	18:24	17:13	16:27
51	08:31	07:34	06:29	24 06:19	05:28	05:16	05:47	06:38	07:30	08:23	09:14	08:50
52	17:12	18:10	19:01	3 06:56	21:44	22:07	21:42	20:43	19:30	18:22	17:11	16:28
53	08:30	07:32	06:27	6 06:17	05:27	05:16	05:49	06:39	07:31	08:25	09:16	08:50
54	17:13	18:12	19:03	9 06:57	21:45	22:07	21:41	20:40	19:27	18:19	17:08	16:29
55	08:28	07:30	06:24	12 06:15	05:26	05:17	05:50	06:41	07:33	08:27	09:18	08:50
56	17:15	18:14	19:05	15 06:59	21:47	22:07	21:39	20:38	19:25	18:17	17:06	16:30
57	08:27	07:22	06:13	18 06:13	05:25	05:17	05:52	06:43	07:35	08:29	09:20	08:50
58	17:17	18:16	19:06	21 06:51	21:48	22:06	21:38	20:36	19:23	18:15	17:04	16:30
59	08:25	07:20	06:11	24 06:11	05:24	05:18	05:53	06:44	07:37	08:31	09:22	08:50
60	17:19	18:18	19:08	3 06:53	21:49	22:06	21:36	20:34	19:20	18:12	17:01	16:31
61	08:24	07:17	06:08	6 05:23	05:23	05:16	05:55	06:46	07:39	08:33	09:24	08:50
62	17:21	18:19	19:09	9 06:57	21:50	22:06	21:34	20:31	19:17	18:09	16:58	16:32
Potential sun hours	256	276	367	418	489	503	506	456	381	330	263	240
Total, worst case		294	113							364	54	
Sun reduction		0.21	0.24							0.24	0.19	
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							0.16	0.12	
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)	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: BU - H73

Assumptions for shadow calculations

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

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

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
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	21:09 (2) 21:31 (3)	05:18 21:33 (3)	21:17 (3) 20:29	05:56 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	21:11 (3) 21:19 (3)	05:19 22:05	21:17 (3) 21:32 (3)	05:58 21:31	07:40 19:15	07:35 17:08
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	21:11 (3) 21:21 (3)	05:20 22:05	21:17 (3) 21:30 (3)	05:59 21:29	07:42 19:13	07:37 17:06
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	21:11 (3) 21:21 (3)	05:21 22:04	21:17 (3) 21:30 (3)	06:01 21:27	07:43 19:11	07:39 17:04
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	21:11 (3) 21:22 (3)	05:21 22:04	21:17 (3) 21:30 (3)	06:03 21:25	07:45 19:08	07:41 17:02
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	21:11 (3) 21:23 (3)	05:22 22:03	21:18 (3) 21:30 (3)	06:04 21:24	07:47 19:06	07:43 17:01
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	21:11 (3) 21:24 (3)	05:23 22:03	21:18 (3) 21:29 (3)	06:06 21:22	07:49 19:04	07:45 16:59
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	21:12 (3) 21:25 (3)	05:24 22:02	21:18 (3) 21:29 (3)	06:07 21:20	07:50 19:01	07:47 16:57
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	21:12 (3) 21:26 (3)	05:25 22:01	21:18 (3) 21:27 (3)	06:09 21:18	07:52 18:59	07:48 16:56
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	21:12 (3) 21:26 (3)	05:26 22:01	21:18 (3) 21:27 (3)	06:11 21:16	07:54 18:57	07:50 16:54
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	21:12 (3) 21:27 (3)	05:27 22:00	21:17 (2) 21:26 (3)	06:12 21:14	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	05:15 22:02	21:13 (3) 21:28 (3)	05:28 21:59	21:16 (2) 21:25 (3)	06:14 21:12	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	05:15 22:02	21:12 (3) 21:28 (3)	05:30 21:58	21:15 (2) 21:25 (2)	06:16 21:10	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	05:14 22:03	21:13 (3) 21:29 (3)	05:31 21:57	21:15 (2) 21:24 (2)	06:17 21:08	07:59 18:48	07:58 16:48
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	21:13 (3) 21:29 (3)	05:32 21:56	21:14 (2) 21:23 (2)	06:19 21:06	07:59 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	05:14 22:04	21:13 (3) 21:30 (3)	05:33 21:55	21:13 (2) 21:22 (2)	06:21 21:04	07:59 18:43	08:01 16:45
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	21:14 (3) 21:30 (3)	05:34 21:54	21:12 (2) 21:21 (2)	06:22 21:02	07:59 18:41	08:03 16:43
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	21:14 (3) 21:30 (3)	05:36 21:53	21:12 (2) 21:20 (2)	06:24 21:00	07:59 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	05:14 22:05	21:14 (3) 21:31 (3)	05:37 21:52	21:12 (2) 21:20 (2)	06:26 20:58	07:59 18:37	08:06 16:41
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	21:14 (3) 21:31 (3)	05:38 21:50	21:12 (2) 21:18 (2)	06:27 20:56	07:59 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	05:14 22:06	21:15 (3) 21:32 (3)	05:40 21:49	21:11 (2) 21:17 (2)	06:29 20:53	07:59 18:32	08:10 16:38
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	21:15 (3) 21:32 (3)	05:41 21:48	21:11 (2) 21:15 (2)	06:31 20:51	07:59 18:30	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	05:15 22:06	21:15 (3) 21:32 (3)	05:43 21:46	21:11 (2) 21:15 (2)	06:32 20:49	07:59 18:28	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	05:15 22:06	21:15 (3) 21:32 (3)	05:44 21:45	21:11 (2) 21:13 (2)	06:34 20:47	07:59 18:26	08:15 16:35
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	21:16 (3) 21:32 (3)	05:45 21:44	21:12 (2) 21:13 (2)	06:36 20:45	07:59 18:24	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	05:16 22:07	21:15 (3) 21:32 (3)	05:47 21:42	21:13 (2) 21:14	06:37 20:42	07:59 18:23	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	05:16 22:07	21:16 (3) 21:32 (3)	05:48 21:41	21:14 (2) 21:16 (2)	06:39 20:40	07:59 18:22	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	05:17 22:06	21:16 (3) 21:32 (3)	05:50 21:39	21:16 (2) 21:17 (3)	06:41 20:38	07:59 18:25	08:21 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	21:17 (3) 21:32 (3)	05:51 21:37	21:17 (2) 21:18 (2)	06:43 20:36	07:59 18:22	08:23 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	21:16 (3) 21:31 (3)	05:53 21:36	21:18 (2) 21:19	06:44 20:33	07:59 18:20	08:25 16:29
31	08:24 17:21	07:17 18:10	06:08 19:10	05:23 21:50	05:23 21:50	05:19 22:06	21:18 (2) 21:34	05:55 20:31	21:18 (2) 20:31	06:46 20:31	07:59 17:12	08:50 16:32
Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240
Total, worst case					88	438		223				
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					21	85		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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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

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: 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) 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 22:05	05:58 21:31	06:27 (3) 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	2 06:29 (3)	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	05:21 22:05	06:01 21:27		06:53 20:22	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	05:22 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	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	05:53 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	06:18 (3) 06:19 (3)	05:26 22:00	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	06:16 (3) 06:19 (3)	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	06:15 (3) 06:20 (3)	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	06:13 (3) 06:20 (3)	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	06:12 (3) 06:21 (3)	05:31 21:57	06:17 (3) 06:22 (3)		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	06:10 (3) 06:21 (3)	05:32 21:56	06:15 (3) 06:24 (3)		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	06:09 (3) 06:21 (3)	05:33 21:55	06:13 (3) 06:25 (3)	9	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	06:07 (3) 06:20 (3)	05:35 21:54	06:12 (3) 06:26 (3)	12	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	06:06 (3) 06:21 (3)	05:36 21:53	06:12 (3) 06:28 (3)	14	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	06:05 (3) 06:21 (3)	05:37 21:52	06:12 (3) 06:28 (3)	16	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	06:03 (3) 06:20 (3)	05:39 21:50	06:11 (3) 06:29 (3)	16	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	06:02 (3) 06:20 (3)	05:40 21:49	06:10 (3) 06:29 (3)	18	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	06:01 (3) 06:20 (3)	05:41 21:48	06:12 (3) 06:30 (3)	19	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	06:01 (3) 06:19 (3)	05:43 21:47	06:13 (3) 06:30 (3)	18	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	06:02 (3) 06:19 (3)	05:44 21:45	06:14 (3) 06:30 (3)	17	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	06:02 (3) 06:18 (3)	05:46 21:44	06:16 (3) 06:31 (3)	16	07:28 19:32	08:17 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	06:03 (3) 06:18 (3)	05:47 21:42	06:17 (3) 06:31 (3)	15	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	06:04 (3) 06:17 (3)	05:49 21:41	06:18 (3) 06:31 (3)	14	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	06:06 (3) 06:16 (3)	05:50 21:39	06:20 (3) 06:31 (3)	13	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 20:52	05:25 21:48	06:07 (3) 06:14 (3)	05:52 21:38	06:21 (3) 06:31 (3)	11	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) 06:31 (3)	10	07:37 19:20	07:30 18:14	08:25 16:29	08:50 16:31
31	08:24 17:21	07:17 18:10	07:07 19:10	07:07 21:50	05:23 21:50	05:19 21:54	05:55 21:34	06:24 (3) 06:30 (3)	8	07:38 19:12	07:32 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					242					6			
Sun reduction					0.37								
Oper. time red.					1.00								
Wind dir. red.					0.64								
Total reduction					0.24								
Total, real					57					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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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)	21:52	4	06:25 (5)
2	08:50	15:56 (3)	08:21	07:25	07:12	08:08 (4)	06:06	06:56 (7)	05:21	06:19 (5)				
	16:35	2	15:58 (3)	17:25	18:18	20:13	13	08:21 (4)	21:06	15	07:11 (7)	21:53	8	06:27 (5)
3	08:50	15:57 (3)	08:19	07:23	07:10	08:04 (4)	06:04	06:58 (7)	05:20	06:18 (5)				
	16:36	3	16:00 (3)	17:26	18:20	20:15	18	08:22 (4)	21:08	13	07:11 (7)	21:54	11	06:29 (5)
4	08:50	15:57 (3)	08:17	07:20	07:08	08:03 (4)	06:03	06:59 (7)	05:19	06:17 (5)				
	16:37	5	16:02 (3)	17:28	18:21	20:17	21	08:24 (4)	21:09	10	07:09 (7)	21:55	13	06:30 (5)
5	08:50	15:57 (3)	08:15	07:18	07:05	08:01 (4)	06:01	07:01 (7)	05:18	06:16 (5)				
	16:38	5	16:02 (3)	17:30	18:23	20:19	24	08:25 (4)	21:11	6	07:07 (7)	21:56	15	06:31 (5)
6	08:49	15:58 (3)	08:14	16:59 (1)	07:16	07:03	07:59 (4)	05:59	05:18	06:16 (5)				
	16:39	6	16:04 (3)	17:32	3	17:02 (1)	18:25	20:20	26	08:25 (4)	21:13	21:57	16	06:32 (5)
7	08:49	15:58 (3)	08:12	16:59 (1)	07:14	07:01	07:59 (4)	05:57	05:17	06:15 (5)				
	16:41	7	16:05 (3)	17:34	5	17:04 (1)	18:27	20:22	27	08:26 (4)	21:14	21:58	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	06:15 (5)				
	16:42	8	16:06 (3)	17:36	8	17:06 (2)	18:29	20:24	28	08:26 (4)	21:16	21:59	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	06:15 (5)				
	16:43	10	16:09 (3)	17:38	10	17:08 (2)	18:31	20:26	28	08:25 (4)	21:18	22:00	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	06:15 (5)				
	16:45	11	16:10 (3)	17:40	13	17:10 (2)	18:32	20:27	29	08:26 (4)	21:19	22:00	19	06:34 (5)
11	08:47	15:59 (3)	08:05	16:57 (1)	07:04	06:52	07:56 (4)	05:50	05:15	06:15 (5)				
	16:46	12	16:11 (3)	17:42	16	17:13 (2)	18:34	20:29	29	08:25 (4)	21:21	22:01	20	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	06:15 (5)				
	16:48	14	16:13 (3)	17:44	17	17:15 (2)	18:36	20:31	28	08:25 (4)	21:23	22:02	21	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	06:14 (5)				
	16:49	14	16:14 (3)	17:46	19	17:17 (2)	18:38	20:33	28	08:24 (4)	21:24	22:03	21	06:35 (5)
14	08:44	16:00 (3)	07:59	16:58 (1)	06:57	06:45	07:56 (4)	05:45	05:14	06:15 (5)				
	16:51	16	16:16 (3)	17:48	21	17:19 (2)	18:40	20:34	27	08:23 (4)	21:26	22:03	21	06:36 (5)
15	08:44	16:01 (3)	07:57	16:59 (1)	06:55	06:43	07:57 (4)	05:43	05:14	06:15 (5)				
	16:52	17	16:18 (3)	17:49	22	17:21 (1)	18:41	20:36	25	08:22 (4)	21:28	22:04	21	06:36 (5)
16	08:43	16:01 (3)	07:55	17:00 (1)	06:53	06:40	07:58 (4)	05:42	05:14	06:15 (5)				
	16:54	19	16:20 (3)	17:51	22	17:22 (1)	18:43	20:38	23	08:21 (4)	21:29	22:04	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	06:15 (5)				
	16:56	20	16:22 (3)	17:53	20	17:21 (1)	18:45	20:40	21	08:20 (4)	21:31	22:05	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	06:15 (5)				
	16:57	21	16:24 (3)	17:55	18	17:20 (1)	18:47	20:41	18	08:18 (4)	21:32	22:05	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	06:15 (5)				
	16:59	21	16:25 (3)	17:57	14	17:17 (1)	18:49	20:43	14	08:15 (4)	21:34	22:06	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	06:15 (5)				
	17:01	20	16:24 (3)	17:59	7	17:14 (1)	18:50	20:45	9	08:12 (4)	21:35	22:06	22	06:37 (5)
21	08:37	16:05 (3)	07:45	06:41	06:29	06:29	05:34	05:14	06:15 (5)					
	17:03	19	16:24 (3)	18:01	18:52	20:47	21:37	22:06	22	06:37 (5)				
22	08:36	16:07 (3)	07:42	06:39	06:27	07:02 (7)	05:33	05:14	06:16 (5)					
	17:04	17	16:24 (3)	18:03	18:54	20:48	7	07:09 (7)	21:38	22:06	22	06:38 (5)		
23	08:35	16:08 (3)	07:40	06:36	06:25	07:00 (7)	05:32	05:15	06:16 (5)					
	17:06	14	16:22 (3)	18:05	18:56	20:50	11	07:11 (7)	21:40	22:06	22	06:38 (5)		
24	08:34	16:10 (3)	07:38	06:34	06:23	06:58 (7)	05:30	05:15	06:16 (5)					
	17:08	11	16:21 (3)	18:07	18:57	20:52	15	07:13 (7)	21:41	22:07	22	06:38 (5)		
25	08:32	16:13 (3)	07:36	06:31	06:21	06:57 (7)	05:29	05:15	06:17 (5)					
	17:10	5	16:18 (3)	18:08	18:59	20:54	16	07:13 (7)	21:43	22:07	22	06:39 (5)		
26	08:31	17:11	07:34	06:29	06:19	06:57 (7)	05:28	05:16	06:17 (5)					
	17:11	18:10	19:01	20:55	17	07:14 (7)	21:44	22:07	22	06:39 (5)				
27	08:30	17:12	07:32	06:27	06:17	06:56 (7)	05:27	05:16	06:18 (5)					
	17:13	18:12	19:03	20:57	18	07:14 (7)	21:45	22:07	21	06:39 (5)				
28	08:28	17:15	07:29	06:24	06:14	06:56 (7)	05:26	05:16	06:18 (5)					
	17:15	18:14	19:04	20:59	18	07:14 (7)	21:47	22:06	21	06:39 (5)				
29	08:27	17:17	07:27	06:22	06:12	06:56 (7)	05:24	05:17	06:18 (5)					
	17:17	20:06	21:01	06:10	17	07:13 (7)	21:48	22:06	21	06:39 (5)				
30	08:25	17:19	07:20	06:10	06:10	06:56 (7)	05:23	05:18	06:18 (5)					
	17:19	20:08	21:02	06:10	17	07:13 (7)	21:49	22:06	21	06:39 (5)				
31	08:24	17:21	07:17	06:10	06:10	06:56 (7)	05:23	05:18	06:18 (5)					
	17:21	20:10	21:04	06:10	17	07:13 (7)	21:50	22:06	21	06:39 (5)				
Potential sun hours	256	276	367	418	489	503	569							
Use of sun	298	215	573	60	569									
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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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			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			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		06:59		07:57 (4)	07:50		07:47			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		07:58 (4)	07:52	07:48			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		08:01 (4)	07:54	07:50			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		08:04 (4)	07:56	07:52			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			06:14		07:04 (7)	07:06			07:57	07:54			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			06:16		07:04 (7)	07:08			07:59	07:56			08:41				
	21:58			21:10	18	07:22 (7)	20:01			18:50	16:49		16:23					
14	05:31			06:17		07:03 (7)	07:09			08:01	07:58			08:42				
	21:57			21:08	18	07:21 (7)	19:58			18:48	16:47		16:23					
15	05:32			06:19		07:03 (7)	07:11			08:03	07:59			08:43				
	21:56			21:06	18	07:21 (7)	19:56			18:45	16:46		16:23					
16	05:33			06:21		07:04 (7)	07:13			08:04	08:01			08:44				
	21:55			21:04	17	07:21 (7)	19:53			18:43	16:45		16:24					
17	05:34			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			06:24		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			06:26		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			06:27		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			06:29		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			06:31			07:23			08:15	08:12		15:41 (3)	08:48				
	21:48			20:51			19:39			18:30	10	17:46 (1)	16:37	20	16:01 (3)	16:25		
23	05:42			06:32		08:08 (4)	07:25			08:17	17:33 (1)	08:13	15:40 (3)	08:49				
	21:46			20:49	9	08:17 (4)	19:37			18:28	15	17:48 (1)	16:36	21	16:01 (3)	16:26		
24	05:44			06:34		08:04 (4)	07:26			08:19	17:31 (1)	08:15	15:40 (3)	08:49				
	21:45			20:47	15	08:19 (4)	19:34			18:26	19	17:50 (1)	16:34	21	16:01 (3)	16:27		
25	05:45			06:36		08:02 (4)	07:28			07:21	16:30 (1)	08:17	15:40 (3)	08:49				
	21:44			20:45	19	08:21 (4)	19:32			17:24	21	16:51 (1)	16:33	20	16:00 (3)	16:27		
26	05:47			06:37		08:00 (4)	07:30			07:23	16:29 (1)	08:18	15:40 (3)	08:50				
	21:42			20:42	22	08:22 (4)	19:30			17:22	23	16:52 (1)	16:32	19	15:59 (3)	16:28		
27	05:48			06:39		07:59 (4)	07:31			07:24	16:28 (1)	08:20	15:41 (3)	08:50				
	21:41			20:40	24	08:23 (4)	19:27			17:20	22	16:50 (1)	16:31	17	15:58 (3)	16:29		
28	05:50			06:41		07:59 (4)	07:33			07:26	16:28 (1)	08:22	15:40 (3)	08:50				
	21:39			20:38	25	08:24 (4)	19:25			17:18	20	16:48 (2)	16:31	16	15:56 (3)	16:29		
29	05:51			06:42		07:57 (4)	07:35			07:28	16:27 (1)	08:23	15:41 (3)	08:50				
	21:38			20:36	27	08:24 (4)	19:22			17:16	19	16:46 (2)	16:30	15	15:56 (3)	16:30		
30	05:53			06:44		07:57 (4)	07:36			07:30	16:27 (1)	08:25	15:41 (3)	08:50				
	21:36			20:33	28	08:25 (4)	19:20			17:14	17	16:44 (2)	16:29	14	15:55 (3)	16:31		
31	05:55			06:46		07:55 (4)				07:32	16:27 (1)			08:50				
	21:34			20:31	29	08:24 (4)				17:12	15	16:42 (2)		16:32				
Potential sun hours	506			456		381		330		263			240					
Total, worst case		169		398		249		181		269			74					
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.		0.64		0.67		0.68		0.64		0.63			0.62					
Total reduction		0.17		0.20		0.19		0.15		0.12			0.09					
Total, real		29		79		48		28		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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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	08:22	07:27	07:15	06:09	05:22	05:51 (3)	05:19	05:50 (3)	05:56	06:48	07:38	07:34	08:26
2	16:34	17:23	18:16	20:12	21:04	21:52	06:01 (3)	22:06	06:07 (3)	21:33	20:29	19:18	17:10	16:28
3	08:50	08:21	07:25	07:13	06:07	05:21	05:50 (3)	05:19	05:51 (3)	05:58	06:49	07:40	07:36	08:28
4	16:35	17:25	18:18	20:13	21:06	21:53	06:01 (3)	22:05	06:07 (3)	21:31	20:27	19:15	17:08	16:28
5	08:50	08:19	07:23	07:10	06:05	05:20	05:50 (3)	05:20	05:51 (3)	05:59	06:51	07:42	07:37	08:29
6	16:36	17:27	18:20	20:15	21:08	21:54	06:02 (3)	22:05	06:07 (3)	21:29	20:24	19:13	17:06	16:27
7	08:50	08:17	07:21	07:08	06:03	05:19	05:49 (3)	05:21	05:52 (3)	06:01	06:53	07:43	07:39	08:30
8	16:37	17:29	18:22	20:17	21:09	21:55	06:02 (3)	22:05	06:07 (3)	21:27	20:22	19:11	17:04	16:26
9	08:50	08:16	07:18	07:06	06:01	05:19	05:49 (3)	05:22	05:53 (3)	06:03	06:54	07:45	07:41	08:32
10	16:38	17:30	18:23	20:19	21:11	21:56	06:02 (3)	22:04	06:08 (3)	21:26	20:20	19:08	17:03	16:26
11	08:49	08:14	07:16	07:03	05:59	05:18	05:48 (3)	05:22	05:54 (3)	06:04	06:56	07:47	07:43	08:33
12	16:40	17:32	18:25	20:20	21:13	21:57	06:02 (3)	22:04	06:08 (3)	21:24	20:17	19:06	17:01	16:25
13	08:49	08:12	07:14	07:01	05:57	05:17	05:48 (3)	05:23	05:55 (3)	06:06	06:58	07:49	07:45	08:34
14	16:41	17:34	18:27	20:22	21:15	21:58	06:03 (3)	22:03	06:09 (3)	21:22	20:15	19:04	16:59	16:25
15	08:48	08:10	07:11	06:59	05:55	05:17	05:47 (3)	05:24	05:56 (3)	06:08	06:59	07:50	07:47	08:36
16	16:42	17:36	18:29	20:24	21:16	21:59	06:02 (3)	22:02	06:09 (3)	21:20	20:13	19:01	16:57	16:25
17	08:48	08:08	07:09	06:56	05:53	05:16	05:47 (3)	05:25	05:57 (3)	06:09	07:01	07:52	07:49	08:37
18	16:44	17:38	18:31	20:26	21:18	22:00	06:03 (3)	22:02	06:09 (3)	21:18	20:10	18:59	16:56	16:24
19	08:47	08:07	07:07	06:54	05:52	05:16	05:46 (3)	05:26	05:58 (3)	06:11	07:03	07:54	07:50	08:38
20	16:45	17:40	18:33	20:27	21:20	22:00	06:02 (3)	22:01	06:09 (3)	21:16	20:08	18:57	16:54	16:24
21	08:47	08:05	07:04	06:52	05:50	05:15	05:46 (3)	05:27	05:59 (3)	06:13	07:04	07:56	07:52	08:39
22	16:47	17:42	18:34	20:29	21:21	22:01	06:03 (3)	22:00	06:09 (3)	21:14	20:05	18:55	16:52	16:24
23	08:46	08:03	07:02	06:49	05:48	05:15	05:46 (3)	05:29	06:00 (3)	06:14	07:06	07:57	07:54	08:40
24	16:48	17:44	18:36	20:31	21:23	22:02	06:03 (3)	21:59	06:09 (3)	21:12	20:03	18:52	16:51	16:24
25	08:45	08:01	07:00	06:47	05:47	05:15	05:46 (3)	05:30	06:01 (3)	06:16	07:08	07:59	07:56	08:41
26	16:50	17:46	18:38	20:33	21:24	22:03	06:03 (3)	21:58	06:09 (3)	21:10	20:01	18:50	16:49	16:24
27	08:44	07:59	06:57	06:45	05:45	05:15	05:45 (3)	05:31	06:02 (3)	06:17	07:10	08:01	07:58	08:42
28	16:51	17:48	18:40	20:35	21:26	22:03	06:03 (3)	21:57	06:09 (3)	21:08	19:58	18:48	16:48	16:24
29	08:44	07:57	06:55	06:43	05:43	05:14	05:45 (3)	05:32	06:03 (3)	06:19	07:11	08:03	07:59	08:43
30	16:53	17:50	18:42	20:36	21:28	22:04	06:03 (3)	21:56	06:09 (3)	21:06	19:56	18:46	16:46	16:24
31	08:43	07:55	06:53	06:40	05:42	05:14	05:45 (3)	05:33	06:04 (3)	06:21	07:13	08:05	08:01	08:44
32	16:54	17:52	18:43	20:38	21:29	22:04	06:03 (3)	21:55	06:09 (3)	21:04	19:54	18:45	16:45	16:24
33	08:42	07:53	06:50	06:38	05:40	05:14	05:45 (3)	05:35	06:05 (3)	06:23	07:15	08:06	08:03	08:45
34	16:56	17:53	18:45	20:40	21:31	22:05	06:03 (3)	21:54	06:08 (3)	21:02	19:51	18:41	16:43	16:24
35	08:41	07:51	06:48	06:36	05:39	05:14	05:45 (3)	05:36	06:07 (3)	06:24	07:16	08:08	08:05	08:46
36	16:58	17:55	18:47	20:42	21:32	22:05	06:03 (3)	21:53	06:09 (3)	21:00	19:49	18:39	16:42	16:24
37	08:40	07:49	06:46	06:34	05:37	05:14	05:45 (3)	05:37	06:06 (3)	06:26	07:18	08:10	08:07	08:46
38	16:59	17:57	18:49	20:43	21:34	22:06	06:03 (3)	21:52	06:09 (3)	21:08	19:46	18:37	16:41	16:24
39	08:39	07:47	06:43	06:32	05:36	05:14	05:45 (3)	05:39	06:08 (3)	06:28	07:20	08:12	08:08	08:47
40	17:01	17:59	18:50	20:45	21:35	22:06	06:04 (3)	21:50	06:10 (3)	21:06	19:44	18:35	16:39	16:25
41	08:37	07:45	06:41	06:29	05:34	05:14	05:46 (3)	05:40	06:09 (3)	06:29	07:21	08:14	08:10	08:48
42	17:03	18:01	18:52	20:47	21:37	22:06	06:05 (3)	21:49	06:10 (3)	21:14	19:42	18:32	16:38	16:25
43	08:36	07:43	06:39	06:27	05:33	05:14	05:46 (3)	05:41	06:31 (3)	07:23	08:15	08:12	08:08	08:48
44	17:04	18:03	18:54	20:49	21:38	22:06	06:05 (3)	21:48	06:32 (3)	07:25	08:17	08:13	08:09	08:49
45	08:35	07:40	06:36	06:25	05:32	05:15	05:46 (3)	05:43	06:33 (3)	07:25	08:17	08:13	08:09	08:49
46	17:06	18:05	18:56	20:50	21:40	22:07	06:05 (3)	21:47	06:34 (3)	07:26	08:18	08:15	08:11	08:49
47	08:34	07:38	06:34	06:23	05:30	05:15	05:47 (3)	05:44	06:35 (3)	07:26	08:19	08:16	08:12	08:49
48	17:08	18:07	18:58	20:52	21:41	22:07	06:05 (3)	21:45	06:36 (3)	07:27	08:20	08:17	08:13	08:49
49	08:32	07:36	06:32	06:21	05:29	05:15	05:47 (3)	05:46	06:37 (3)	07:27	08:20	08:17	08:13	08:49
50	17:10	18:09	18:59	20:54	21:43	22:07	06:05 (3)	21:44	06:38 (3)	07:28	08:21	08:18	08:14	08:49
51	08:31	07:34	06:29	06:19	05:28	05:16	05:47 (3)	05:47	06:39 (3)	07:28	08:21	08:18	08:14	08:49
52	17:12	18:10	19:01	20:56	21:44	22:07	06:05 (3)	21:42	06:40 (3)	07:29	08:22	08:19	08:15	08:49
53	08:30	07:32	06:27	06:17	05:27	05:16	05:48 (3)	05:49	06:41 (3)	07:29	08:22	08:19	08:15	08:49
54	17:14	18:12	19:03	20:57	21:45	22:07	06:06 (3)	21:41	06:42 (3)	07:30	08:23	08:20	08:16	08:49
55	08:28	07:30	06:24	06:15	05:26	05:17	05:49 (3)	05:50	06:43 (3)	07:30	08:23	08:20	08:16	08:49
56	17:15	18:14	19:05	20:59	21:47	22:08	06:06 (3)	21:39	06:44 (3)	07:31	08:24	08:21	08:17	08:49
57	08:27	07:22	06:13	05:25	05:17	05:17	05:49 (3)	05:52	06:45 (3)	07:31	08:24	08:21	08:17	08:49
58	17:17	20:06	21:01	21:48	21:48	22:06	06:06 (3)	21:38	06:46 (3)	07:32	08:25	08:22	08:18	08:49
59	08:25	07:20	06:11	05:24	05:18	05:18	05:49 (3)	05:53	06:46 (3)	07:32	08:25	08:22	08:18	08:49
60	17:19	20:08	21:03	21:49	21:49	22:06	06:06 (3)	21:36	06:47 (3)	07:33	08:26	08:23	08:19	08:49
61	08:24	07:17	06:08	05:23	05:17	05:17	05:50 (3)	05:55	06:48 (3)	07:33	08:26	08:23	08:19	08:49
62	17:21	20:10	21:05	21:50	21:50	22:06	06:06 (3)	21:34	06:49 (3)	07:34	08:27	08:24	08:20	08:49
Potential sun hours	256	276	367	418	488	503		506	456	381	330	263	240	
Total, worst case					36		494							
Sun reduction					0.37		0.30							
Oper. time red.					1.00		1.00							
Wind dir. red.					0.62		0.62							
Total reduction					0.23		0.19							
Total, real					8		92							

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:** 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	05:57 (3) 22:06	05:56 22:09	06:48 20:29	07:38 19:18	07:34 17:10
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	05:57 (3) 22:05	05:58 22:07	06:49 20:27	07:40 19:15	07:36 17:08
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	05:56 (3) 22:05	05:59 22:29	06:51 20:24	07:42 19:13	07:37 17:06
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	05:57 (3) 22:05	06:01 22:22	06:53 20:22	07:43 19:11	07:39 17:04
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	05:57 (3) 22:04	06:03 22:26	06:54 20:20	07:45 19:08	07:41 17:03
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	05:57 (3) 22:04	06:04 22:24	06:56 20:17	07:47 19:06	07:43 17:01
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	05:57 (3) 22:03	06:06 22:22	06:58 20:15	07:49 19:04	07:45 16:59
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	05:57 (3) 22:02	06:08 22:20	06:59 20:13	07:50 19:01	07:47 16:57
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	05:57 (3) 22:02	06:09 22:18	07:01 20:10	07:52 18:59	07:49 16:56
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	05:58 (3) 22:01	06:11 22:16	07:03 20:08	07:54 18:57	07:50 16:54
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	05:59 (3) 22:00	06:13 22:14	07:04 20:05	07:56 18:55	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	05:15 22:02	05:54 (3) 22:00	06:00 (3) 22:12	06:14 22:03	07:06 20:08	07:57 18:52	07:54 16:51
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	06:01 (3) 22:10	06:16 22:01	07:08 20:01	07:59 18:50	07:56 16:49
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	06:02 (3) 22:08	06:17 22:01	07:10 19:58	08:01 18:48	07:58 16:48
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	06:03 (3) 22:06	06:19 22:01	07:11 19:56	08:03 18:46	07:59 16:46
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	06:04 (3) 22:04	06:21 22:04	07:13 19:54	08:05 18:45	08:01 16:45
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	06:05 (3) 22:02	06:23 22:02	07:15 19:51	08:06 18:41	08:03 16:43
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	06:07 (3) 22:00	06:24 22:00	07:16 19:49	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	05:14 22:06	05:56 (3) 22:00	06:08 (3) 22:00	06:26 22:05	07:18 19:46	08:10 18:37	08:07 16:41
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	06:09 (3) 22:00	06:28 22:06	07:20 19:44	08:12 18:35	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	05:14 22:06	05:58 (3) 22:00	06:10 (3) 22:04	06:29 22:04	07:21 19:42	08:14 18:32	08:10 16:38
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	06:12 (3) 22:01	06:31 22:05	07:23 19:39	08:15 18:30	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	05:15 22:07	05:57 (3) 22:00	06:13 (3) 22:04	06:33 22:09	07:25 19:37	08:17 18:28	08:13 16:36
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	06:14 (3) 22:04	06:34 22:07	07:26 19:34	08:19 18:26	08:15 16:35
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	06:16 (3) 22:04	06:36 22:05	07:28 19:32	08:21 18:24	08:17 16:34
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	06:18 (3) 22:04	06:38 22:04	07:30 19:30	08:23 18:22	08:18 16:33
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	06:19 (3) 22:04	06:39 22:04	07:31 19:27	08:24 18:20	08:20 16:32
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	05:59 (3) 22:00	06:20 (3) 22:04	06:41 22:03	07:33 19:25	08:26 18:18	08:22 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	05:58 (3) 22:00	06:21 (3) 22:04	06:43 22:03	07:35 19:23	08:28 18:16	08:23 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	05:57 (3) 22:00	06:22 (3) 22:04	06:44 22:03	07:37 19:20	08:30 18:14	08:25 16:29
31	08:24 17:21	07:17 18:10	06:10 19:04	06:10 21:04	05:23 21:50	05:17 22:06	06:11 (3) 22:00	06:23 (3) 22:04	06:46 22:03	07:39 19:12	08:31 18:12	08:26 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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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	05:18 22:04	06:03 21:25	20:41 (1) 20:46 (1)	19:34 (3) 20:19	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	05:18 22:03	06:04 21:24	20:38 (1) 20:49 (1)	19:34 (3) 20:17	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	20:27 (1) 21:58	05:19 22:03	06:06 21:22	20:37 (1) 20:52 (1)	19:33 (3) 20:15	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	05:17 22:02	06:07 21:20	20:35 (1) 20:50 (1)	19:32 (3) 20:12	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	20:30 (1) 22:00	05:16 22:01	06:09 21:18	20:34 (1) 20:49 (1)	19:31 (3) 20:10	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	20:31 (1) 22:00	05:16 22:01	06:11 21:16	20:33 (1) 20:47 (1)	19:32 (3) 20:08	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	20:32 (1) 22:01	05:15 22:00	06:12 21:14	20:33 (1) 20:45 (1)	19:33 (3) 20:05	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	05:15 21:59	06:14 21:12	20:32 (1) 20:43 (1)	19:32 (3) 20:03	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	05:15 21:58	06:16 21:10	20:32 (1) 20:41 (1)	19:32 (3) 20:01	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	05:14 21:57	06:17 21:08	20:31 (1) 20:39 (1)	19:31 (3) 19:58	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	05:14 21:56	06:19 21:06	20:31 (1) 20:37 (1)	19:31 (3) 19:56	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) 22:04	05:14 21:55	06:21 21:04	20:31 (1) 20:36 (1)	19:31 (3) 19:53	08:04 18:43	08:01 16:45
17	08:42 16:56	07:53 17:53	06:50 18:45	06:38 20:40	05:40 21:31	20:37 (1) 22:05	05:14 21:54	06:22 21:02	20:31 (1) 20:33 (1)	19:31 (3) 19:51	08:06 18:41	08:03 16:43
18	08:41 16:57	07:51 17:55	06:48 18:47	06:36 20:41	05:39 21:32	20:38 (1) 22:05	05:14 21:53	06:24 21:00	20:33 (1) 20:45 (1)	19:31 (3) 19:58	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) 22:05	05:14 21:52	06:26 20:58	20:34 (1) 20:41 (1)	19:31 (3) 19:58	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) 22:06	05:14 21:50	06:27 20:56	20:35 (1) 20:42 (1)	19:31 (3) 19:58	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) 22:06	05:14 21:49	06:29 20:53	20:36 (1) 20:43 (1)	19:31 (3) 19:58	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) 22:06	05:14 21:48	06:31 20:51	20:37 (1) 20:44 (1)	19:31 (3) 19:58	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) 22:06	05:15 21:46	06:32 20:49	20:38 (1) 20:45 (1)	19:31 (3) 19:58	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) 22:07	05:15 21:45	06:34 20:47	20:39 (1) 20:46 (1)	19:31 (3) 19:58	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) 22:07	05:15 21:44	06:36 20:45	20:40 (1) 20:47 (1)	19:31 (3) 19:58	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) 22:07	05:16 21:42	06:37 20:42	20:41 (1) 20:48 (1)	19:31 (3) 19:58	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) 22:08	05:16 21:41	06:39 20:40	20:42 (1) 20:49 (1)	19:31 (3) 19:58	08:25 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) 22:09	05:17 21:39	06:41 20:38	20:43 (1) 20:50 (1)	19:31 (3) 19:58	08:27 18:49	08:21 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) 22:10	05:17 21:37	06:43 20:36	20:44 (1) 20:51 (1)	19:31 (3) 19:58	08:29 18:51	08:23 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) 22:11	05:18 21:36	06:44 20:33	20:45 (1) 20:52 (1)	19:31 (3) 19:58	08:31 18:53	08:25 16:31
31	08:24 17:21	07:17 18:10	06:19 19:01	06:09 21:03	05:23 21:50	20:51 (1) 22:12	05:19 21:34	06:46 20:31	20:46 (1) 20:53 (1)	19:31 (3) 19:58	08:33 18:55	08:27 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			161		171		
Oper. time red.			1.00	1.00	1.00			0.30		0.28		
Wind dir. red.			0.68	0.68	0.68			1.00		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) 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: 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	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)	05:53 (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	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	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	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	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	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	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	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	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	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	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	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	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)	05:50	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)	05:51	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	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	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	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	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	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	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	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	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	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	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	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	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)	05:49	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)	05:50	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	05:25	05:17	05:17	05:49 (3)	05:52	06:43	07:35	08:28	08:23	08:50	
	17:17	07:20	06:11	05:24	05:18	05:18	8	05:57 (3)	21:38	20:36	19:23	17:16	16:30	16:31
30	08:25	07:19	06:11	05:24	05:18	05:18	05:49 (3)	05:53	06:44	07:37	08:30	08:25	08:50	
	17:19	07:20	06:11	05:24	05:18	05:18	8	05:57 (3)	21:36	20:33	19:20	17:14	16:29	16:31
31	08:24	07:17	06:11	05:24	05:18	05:18	05:49 (3)	05:53	06:44	07:37	08:30	08:25	08:50	
	17:21	07:17	06:11	05:24	05:18	05:18	8	05:57 (3)	21:36	20:33	19:20	17:14	16:29	16:31
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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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	22:06	21:32 (3)	21:41	21:12 (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	05:25	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	19:07	21:01	21:48	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	08:30	08:25	08:50
60	17:19	18:18	19:09	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	05:17	05:17	21:17 (3)	05:55	21:17 (3)	06:46	07:38	08:32	08:27	08:50
62	17:21	18:20	19:11	21:05	21:50	22:07	21:17 (3)	21:34	21:17 (3)	20:31	19:18	18:12	16:32	16:32
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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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)	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: 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 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	21:25 (2) 21:31 (2)	05:56 21:32	06:48 20:29	07:38 19:18	07:34 17:10
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	05:19 22:05	21:26 (2) 21:31 (2)	05:58 21:31	06:49 20:26	07:40 19:15	07:35 17:08
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	21:25 (2) 21:30 (2)	05:59 21:29	06:51 20:24	07:42 19:13	07:37 17:06
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	05:19 22:04	21:25 (2) 21:30 (2)	06:01 21:27	06:53 20:22	07:43 19:11	07:39 17:04
5	08:49 16:38	08:15 17:30	07:18 18:23	07:05 20:19	06:01 21:11	05:19 21:56	05:21 22:04	21:25 (2) 21:30 (2)	06:03 21:25	06:54 20:19	07:45 19:08	07:41 17:02
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	21:25 (2) 21:30 (2)	06:04 21:24	06:56 20:17	07:47 19:06	07:43 17:01
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	21:26 (2) 21:29 (2)	06:06 21:22	06:58 20:15	07:49 19:04	07:45 16:59
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	21:26 (2) 21:29 (2)	06:07 21:20	06:59 20:12	07:50 19:01	07:47 16:57
9	08:48 16:44	08:08 17:38	07:09 18:31	06:56 20:26	05:53 21:18	05:16 21:59	05:25 22:01	21:25 (2) 21:27 (2)	06:09 21:18	07:01 20:10	07:52 18:59	07:48 16:56
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	05:26 22:01	21:25 (2) 21:27 (2)	06:11 21:16	07:03 20:08	07:54 18:57	07:50 16:54
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	05:27 22:00	21:25 (2) 21:26 (2)	06:12 21:14	07:04 20:05	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	05:15 22:02	05:28 22:02	06:14 21:12	07:06 20:03	07:57 18:52	07:54 16:51	08:00 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	05:30 21:58	06:16 21:10	07:08 20:01	07:59 18:50	07:56 16:49	08:01 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 16:48	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	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	05:39 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	08:45 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	05:37 21:52	06:26 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	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	07:45 18:01	06:41 18:52	06:29 20:47	05:34 21:37	05:14 22:06	05:40 21:49	06:29 20:53	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	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 22:06	05:43 21:46	06:32 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	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	08:32 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 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	05:47 21:42	06:37 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	05:48 21:41	06:39 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	05:26 21:46	05:17 22:06	05:50 21:39	06:41 20:38	07:33 19:25	08:26 17:18	08:21 16:31	08:50 16:30
29	08:27 17:17	07:27 18:14	06:22 19:04	06:12 20:59	05:25 21:46	05:17 22:06	05:51 21:37	06:43 20:36	07:35 19:22	08:28 17:16	08:23 16:30	08:50 16:30
30	08:25 17:19	07:25 18:14	06:20 19:04	06:10 20:59	05:24 21:46	05:18 22:06	05:53 21:36	06:44 20:33	07:36 19:20	08:30 17:14	08:25 16:29	08:50 16:31
31	08:24 17:21	07:24 18:14	06:19 19:04	06:09 20:59	05:23 21:46	05:18 22:06	05:55 21:34	06:46 20:31	07:37 17:12	08:31 16:31	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						178						
Sun reduction						0.30						
Oper. time red.						1.00						
Wind dir. red.						0.65						
Total reduction						0.19						
Total, real						35						

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: 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 21:15	05:18 21:58	05:22 22:03	06:04 21:22	06:56 20:15	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 21:18	05:17 21:58	05:23 22:02	06:06 21:18	06:58 20:10	07:49 18:59	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 21:20	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 21:20	05:16 22:01	05:25 22:01	06:09 21:16	07:01 20:08	07:52 18:57	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) 16:56	07:50 16:24
11	08:47 16:46	08:05 17:42	07:05 18:30 (2)	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) 16:55	07:52 16:24
12	08:46 16:48	08:03 17:44	07:02 18:33 (2)	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 18:34 (2)	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	08:24 (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	07:59 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 18:17	06:22 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 17:16	08:40 (2) 16:30	08:23 16:30
30	08:25 17:19	07:20 18:19	06:20 19:08	06:11 19:08	05:24 21:49	05:18 22:06	05:53 21:36	06:44 20:34	07:37 19:20	08:13 (1) 17:14	08:41 (1) 16:29	08:25 16:31
31	08:24 17:21	07:17 18:24	06:17 19:10	06:07 19:10	05:23 21:50	05:16 22:06	05:55 21:34	06:46 20:31	07:38 19:12	08:14 (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)
	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: 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)	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: 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)	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: 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 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 21:33	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 22:05	05:58 21:31	06:49 20:26	07:40 19:15	07:35 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	07:37 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	07:06 20:19	06:01 21:11	05:19 21:56	05:22 22:04	06:03 21:25	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 22:03	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	06:59 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 16:44	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 16:56	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	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 16:24
13	08:45 16:49	08:01 17:46	07:00 18:38	06:47 20:33	05:47 21:24	05:15 22:02	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	06:57 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 16:48	08:42 16:23
15	08:43 16:53	07:57 17:50	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	07:59 16:46	08:43 16:24
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 16:58	07:51 17:55	06:48 18:47	06:36 20:41	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	08:45 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	05:37 21:52	06:26 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	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	07:45 18:01	06:41 18:52	06:29 20:47	05:34 21:37	05:14 22:06	05:40 21:49	06:29 20:53	07:21 19:42	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	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 22:06	05:43 21:46	06:32 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 22:07	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	08:32 17:10	07:36 18:08	06:31 18:59	06:21 20:54	05:29 21:42	05:15 22:07	05:46 21:44	06:36 20:45	07:28 19:32	07:21 17:24	08:17 16:34	08:49 16:27
26	08:31 17:12	07:34 18:10	06:29 19:01	06:19 20:55	05:28 21:44	05:16 22:07	05:47 21:42	06:38 20:42	07:30 19:30	07:23 17:22	08:18 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 22:06	05:48 21:41	06:39 20:40	07:31 19:27	07:24 17:20	08:20 16:32	08:50 16:29
28	08:28 17:15	07:29 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	07:26 17:18	08:21 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 21:37	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	05:53 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		05:55 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												
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: 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	08:22	07:27	07:15	06:08	05:22	21:04 (3)	05:18	21:12 (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	21:04 (3)	05:19	21:13 (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	21:05 (3)	05:20	21:12 (3)	05:59	06:51	07:42	07:37	08:29
6	16:36	17:26	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	21:05 (3)	05:21	21:12 (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	21:05 (3)	05:21	21:12 (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	21:06 (3)	05:22	21:12 (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	21:06 (3)	05:23	21:12 (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	21:07 (3)	05:24	21:12 (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	21:07 (3)	05:25	21:12 (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	21:07 (3)	05:26	21:12 (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	21:08 (3)	05:27	21:12 (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	21:09 (3)	05:28	21:11 (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	21:08 (3)	05:30	21:12 (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	21:09 (3)	05:31	21:12 (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	21:09 (3)	05:32	21:12 (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	21:10 (3)	05:33	21:12 (3)	06:21	07:13	08:04	08:01	08:44
32	16:54	17:51	18:43	20:38	21:29	22:04	21:29 (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	21:10 (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	21:29 (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	21:10 (3)	05:36	21:12 (3)	06:24	07:16	08:08	08:05	08:45
36	16:57	17:55	18:47	20:41	21:32	22:05	21:29 (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	21:29 (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	21:11 (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	21:29 (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	21:12 (3)	05:40	21:09 (3)	06:29	07:21	08:13	08:10	08:47
42	17:03	18:01	18:52	20:47	21:37	22:06	21:30 (3)	21:49	21:17 (3)	20:53	19:41	18:32	16:38	16:25
43	08:36	07:42	06:38	06:27	05:33	05:14	21:12 (3)	05:41	21:08 (3)	06:31	07:23	08:15	08:12	08:48
44	17:04	18:03	18:54	20:48	21:38	22:06	21:30 (3)	21:48	21:15 (3)	20:51	19:39	18:30	16:37	16:25
45	08:35	07:40	06:36	06:25	05:32	05:15	21:12 (3)	05:43	21:08 (3)	06:32	07:25	08:17	08:13	08:48
46	17:06	18:05	18:56	20:50	21:40	22:06	21:30 (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	21:11 (3)	05:44	21:07 (3)	06:34	07:26	08:19	08:15	08:49
48	17:08	18:07	18:57	20:52	21:41	22:06	21:30 (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	21:12 (3)	05:45	21:08 (3)	06:36	07:28	08:21	08:17	08:49
50	17:10	18:08	18:59	20:54	21:42	22:07	21:31 (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	21:12 (3)	05:47	21:07 (3)	06:37	07:30	08:23	08:18	08:50
52	17:12	18:10	19:01	20:55	21:44	22:07	21:31 (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	21:12 (3)	05:48	21:07 (3)	06:39	07:31	08:24	08:20	08:50
54	17:13	18:12	19:03	20:57	21:45	22:06	21:32 (3)	21:41	21:09 (3)	20:40	19:27	18:20	16:31	16:29
55	08:28	07:29	06:24	06:14	05:26	05:17	21:12 (3)	05:50	21:07 (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	21:08 (3)	20:38	19:25	18:18	16:31	16:30
57	08:27	07:22	06:12	06:02	05:25	05:17	21:12 (3)	05:51	21:08 (3)	20:38	19:25	18:18	16:31	16:30
58	17:17	18:16	19:06	20:59	21:46	22:06	21:32 (3)	21:37	21:12 (3)	20:38	19:25	18:18	16:31	16:30
59	08:25	07:20	06:10	06:00	05:24	05:18	21:12 (3)	05:53	21:08 (3)	20:38	19:25	18:18	16:31	16:30
60	17:19	18:18	19:08	21:02	21:49	22:06	21:31 (3)	21:36	21:12 (3)	20:38	19:25	18:18	16:31	16:30
61	08:24	07:17	06:07	05:57	05:23	05:19	21:12 (3)	05:55	21:08 (3)	20:38	19:25	18:18	16:31	16:30
62	17:21	18:20	19:10	21:03	21:50	22:06	21:34	21:34	21:12 (3)	20:38	19:25	18:18	16:31	16:30
Potential sun hours	256	276	367	418	488	503	550	506	456	381	330	263	240	
Total, worst case					122		550	322						
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					30		107	56						

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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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			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			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			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			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			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			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			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			05:27		21:23 (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			05:28		21:23 (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			05:30		21:23 (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			05:31		21:23 (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			05:32		21:24 (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			05:33		21:24 (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			05:34		21:24 (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			05:36		21:25 (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			05:37		21:25 (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			05:38		21:25 (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			05:40		21:26 (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			05:41		21:26 (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			05:43		21:26 (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			05:44		21:26 (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			05:45		21:26 (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			05:47		21:26 (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			05:48		21:27 (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			05:50		21:26 (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	06:12	05:25	05:17			05:51		21:27 (2)	06:43	07:35	07:28	08:23	08:50
	17:17		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	06:10	05:24	05:18			05:53		21:26 (2)	06:44	07:36	07:30	08:25	08:50
	17:19		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		05:23				05:55		20:31		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							130			22						
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							25			4						

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

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:** 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)	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:** 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 16:34	08:22 17:23	07:27 18:16	08:01 (2) 08:15 (2)	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	08:04 (1) 08:16 (1)	07:34 17:10	08:26 16:28
2	08:50 16:35	08:21 17:25	07:25 18:18	08:04 (2) 08:13 (2)	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	08:06 (1) 08:16 (1)	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	08:07 (1) 08:15 (1)	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 21:27	06:53 20:22	07:44 19:11	08:09 (1) 08:15 (1)	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	08:11 (1) 08:14 (1)	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	07:35 (1) 07:37 (1)	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	07:33 (1) 07:37 (1)	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	07:30 (1) 07:37 (1)	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	07:28 (1) 07:37 (1)	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	08:41 (2) 08:44 (2)	07:52 16:52	08:39 16:24
12	08:46 16:48	08:03 17:44	07:02 18:36	07:26 (1) 07:37 (1)	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	08:37 (2) 08:48 (2)	07:54 16:51	08:40 16:24
13	08:45 16:49	08:01 17:46	07:00 18:38	07:23 (1) 07:35 (1)	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	08:33 (2) 08:49 (2)	07:56 16:49	08:41 16:24
14	08:45 16:51	07:59 17:48	06:58 18:40	07:21 (1) 07:35 (1)	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	08:32 (2) 08:51 (2)	07:58 16:48	08:42 16:24
15	08:44 16:53	07:57 17:50	06:55 18:42	07:20 (1) 07:32 (1)	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	08:31 (2) 08:51 (2)	08:00 16:46	08:43 16:24
16	08:43 16:54	07:55 17:52	06:53 18:43	07:22 (1) 07:30 (1)	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	08:31 (2) 08:52 (2)	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	08:33 (2) 08:52 (2)	08:03 16:43	08:45 16:24
18	08:41 16:58	07:51 17:55	06:48 18:47	08:16 (2) 08:19 (2)	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	08:35 (2) 08:53 (2)	08:05 16:42	08:46 16:24
19	08:40 16:59	07:49 17:57	06:46 18:49	08:14 (2) 08:20 (2)	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	08:37 (2) 08:53 (2)	08:07 16:41	08:46 16:24
20	08:39 17:01	07:47 17:59	06:43 18:50	08:11 (2) 08:20 (2)	06:43 20:45	05:36 21:35	05:14 22:06	05:38 21:51	06:28 20:56	07:20 19:44	08:12 18:35	08:39 (2) 08:52 (2)	08:08 16:39	08:47 16:25
21	08:38 17:03	07:45 18:01	06:41 18:52	08:09 (2) 08:21 (2)	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	08:40 (2) 08:51 (2)	08:10 16:38	08:48 16:25
22	08:36 17:04	07:43 18:03	06:39 18:54	08:07 (2) 08:21 (2)	06:39 20:49	05:33 21:38	05:14 22:06	05:41 21:48	06:31 20:51	07:23 19:39	08:15 18:30	08:42 (2) 08:50 (2)	08:12 16:37	08:48 16:26
23	08:35 17:06	07:40 18:05	06:36 18:56	08:05 (2) 08:21 (2)	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	08:44 (2) 08:49 (2)	08:14 16:36	08:49 16:26
24	08:34 17:08	07:38 18:07	06:34 18:58	08:03 (2) 08:21 (2)	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	08:46 (2) 08:48 (2)	08:15 16:35	08:49 16:27
25	08:33 17:10	07:36 18:09	06:32 18:59	08:00 (2) 08:20 (2)	06:32 20:54	06:32 21:43	05:46 22:07	05:46 21:44	06:36 20:45	07:28 19:32	08:21 17:24		08:17 16:34	08:49 16:27
26	08:31 17:12	07:34 18:10	06:29 19:01	07:58 (2) 08:20 (2)	06:29 20:56	06:29 21:44	05:47 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	07:59 (2) 08:19 (2)	06:27 20:57	06:27 21:45	05:49 22:07	05:49 21:41	06:39 20:40	07:31 19:27	08:24 18:10	08:05 (1) 08:10 (1)	08:20 17:20	08:50 16:32
28	08:28 17:15	07:30 18:14	06:24 19:05	08:00 (2) 08:18 (2)	06:24 20:59	06:24 21:47	05:50 22:07	05:50 21:39	06:41 20:38	07:33 19:25	08:26 18:13	08:02 (1) 08:13 (1)	08:22 17:18	08:50 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 18:14	08:00 (1) 08:14 (1)	08:23 17:16	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 18:15	08:02 (1) 08:15 (1)	08:25 17:14	08:50 16:31
31	08:24 17:21		07:17 20:10		05:23 21:50	05:23 21:50		05:55 21:34	06:46 20:31		07:32 17:12			08:50 16:32
Potential sun hours	256	276	367		418	489	503	506	456	381	330		263	240
Total, worst case		158	102							43	221			
Sun reduction		0.21	0.24								0.24			
Oper. time red.		1.00	1.00							1.00	1.00			
Wind dir. red.		0.68	0.67							0.67	0.67			
Total reduction		0.14	0.16							0.19	0.16			
Total, real		22	17							8	36			

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

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	07:45 (8)	06:06	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	07:45 (8)	06:05	06:36 (10)	05:20
4	08:50	16:37	08:17	17:28	18:21	07:21	18:21	20:15	07:56 (8)	21:08	06:49 (10)	21:54	11	07:56 (8)	21:08	06:49 (10)	21:54
5	08:50	16:38	08:16	17:30	18:23	07:18	18:23	20:17	07:55 (8)	21:09	06:49 (10)	21:55	9	07:55 (8)	21:09	06:49 (10)	21:55
6	08:49	16:39	08:14	17:32	18:25	07:16	18:25	20:19	07:48 (8)	21:11	06:48 (10)	21:56	5	07:48 (8)	21:11	06:48 (10)	21:56
7	08:49	16:41	08:12	17:34	18:27	07:14	18:27	20:20	07:53 (8)	21:13	06:48 (10)	21:57	13	07:53 (8)	21:13	06:48 (10)	21:57
8	08:48	16:42	08:10	17:36	18:29	07:11	18:29	20:22		21:15	06:48 (10)	21:58	11		21:15	06:48 (10)	21:58
9	08:48	16:43	08:08	17:38	18:31	07:09	18:31	20:24		21:16	06:46 (10)	21:59	9		21:16	06:46 (10)	21:59
10	08:47	16:44	08:07	17:40	18:34	07:07	18:34	20:26		21:18	06:45 (10)	22:00	7		21:18	06:45 (10)	22:00
11	08:47	16:45	08:05	17:42	18:36	07:04	18:36	20:27		21:20		22:01			21:20		22:01
12	08:46	16:46	08:03	17:44	18:38	07:02	18:38	20:29	07:15 (9)	05:50		05:15	7	07:15 (9)	05:50		05:15
13	08:45	16:47	08:01	17:46	18:40	07:00	18:40	20:31	07:22 (9)	05:52		05:17	10	07:22 (9)	05:52		05:17
14	08:44	16:48	07:59	17:48	18:41	06:57	18:41	20:33	07:24 (9)	05:54		05:19	11	07:24 (9)	05:54		05:19
15	08:44	16:49	07:57	17:50	18:43	06:55	18:43	20:35	07:25 (9)	05:56		05:21	11	07:25 (9)	05:56		05:21
16	08:43	16:50	07:55	17:52	18:45	06:53	18:45	20:37	07:26 (9)	05:58		05:23	11	07:26 (9)	05:58		05:23
17	08:42	16:51	07:53	17:54	18:47	06:50	18:47	20:39	07:27 (9)	05:59		05:25	9	07:27 (9)	05:59		05:25
18	08:41	16:52	07:51	17:56	18:49	06:48	18:49	20:41	07:28 (9)	06:00		05:27	7	07:28 (9)	06:00		05:27
19	08:40	16:53	07:49	17:58	18:51	06:46	18:51	20:43	07:29 (9)	06:02		05:29		07:29 (9)	06:02		05:29
20	08:39	16:54	07:47	18:00	18:53	06:44	18:53	20:45	07:30 (9)	06:04		05:31		07:30 (9)	06:04		05:31
21	08:38	16:55	07:45	18:02	18:55	06:41	18:55	20:47	07:31 (9)	06:06		05:33		07:31 (9)	06:06		05:33
22	08:36	16:56	07:43	18:04	18:57	06:39	18:57	20:49	07:32 (9)	06:08		05:35		07:32 (9)	06:08		05:35
23	08:35	16:57	07:40	18:06	18:59	06:36	18:59	20:51	07:33 (9)	06:10		05:37		07:33 (9)	06:10		05:37
24	08:34	16:58	07:38	18:08	19:01	06:34	19:01	20:53	07:34 (9)	06:12		05:39		07:34 (9)	06:12		05:39
25	08:33	16:59	07:36	18:10	19:03	06:31	19:03	20:55	07:35 (9)	06:14		05:41		07:35 (9)	06:14		05:41
26	08:31	17:00	07:34	18:12	19:05	06:29	19:05	20:57	07:36 (9)	06:16		05:43		07:36 (9)	06:16		05:43
27	08:30	17:01	07:32	18:14	19:07	06:27	19:07	20:59	07:37 (9)	06:18		05:45		07:37 (9)	06:18		05:45
28	08:28	17:02	07:29	18:16	19:09	06:24	19:09	21:01	07:38 (9)	06:20		05:47		07:38 (9)	06:20		05:47
29	08:27	17:03	07:27	18:18	19:11	06:22	19:11	21:03	07:39 (9)	06:22		05:49		07:39 (9)	06:22		05:49
30	08:25	17:04	07:25	18:20	19:13	06:20	19:13	21:05	07:40 (9)	06:24		05:51	3	07:40 (9)	06:24		05:51
31	08:24	17:05	07:23	18:22	19:15	06:18	19:15	21:07	07:41 (9)	06:26		05:53	8	07:41 (9)	06:26		05:53
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)	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: 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)	17:10 17:08
3	05:20 22:05	05:59 21:29	06:50 (10) 20:24	07:42 19:13	07:37 17:06	08:29 16:27
4	05:21 22:05	06:01 21:27	06:48 (10) 20:22	06:53 19:11	07:39 17:04	08:31 16:26
5	05:21 22:04	06:03 21:26	06:47 (10) 20:20	06:54 19:08	07:41 17:03	08:32 16:26
6	05:22 22:04	06:04 21:24	06:46 (10) 20:17	06:56 19:06	07:43 17:01	08:33 16:25
7	05:23 22:03	06:06 21:22	06:46 (10) 20:15	07:43 (8) 07:48 (8)	07:49 19:04	08:35 16:25
8	05:24 22:02	06:07 21:20	06:45 (10) 20:13	06:59 07:49 (8)	07:50 19:01	08:36 16:24
9	05:25 22:02	06:09 21:18	06:45 (10) 20:10	07:39 (8) 07:50 (8)	07:52 18:59	08:37 16:24
10	05:26 22:01	06:11 21:16	06:45 (10) 20:08	07:38 (8) 07:51 (8)	07:54 18:57	08:38 16:24
11	05:27 22:00	06:12 21:14	06:45 (10) 20:05	07:37 (8) 07:50 (8)	07:56 18:54	08:39 16:24
12	05:28 21:59	06:14 21:12	06:46 (10) 20:03	07:37 (8) 07:50 (8)	07:57 18:52	08:40 16:23
13	05:29 21:58	06:16 21:10	06:47 (10) 20:01	07:38 (8) 07:49 (8)	07:59 18:50	08:41 16:23
14	05:31 21:57	06:17 21:08	06:55 (10) 19:58	07:41 (8) 07:47 (8)	08:01 18:48	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	07:28 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	07:14 (9) 07:23 (9)	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		17		
Sun reduction		0.30		0.24		
Oper. time red.		1.00		1.00		
Wind dir. red.		0.66		0.67		
Total reduction		0.20		0.16		
Total, real		34		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: 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 16:34	08:22 17:23	07:27 18:16		07:15 20:12	16	19:29 (3) 19:45 (3)	06:08 21:04	05:22 21:51	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	08:20 17:25	07:25 18:18		07:12 20:13	13	19:31 (3) 19:44 (3)	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		19:34 (3) 21:08	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	6	19:40 (3) 21:09	06:03 21:55	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		21:11	06:01 21:56	05:18 22:04	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	05:18 21:13	05:22 21:57	06:04 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	05:17 21:14	05:23 21:58	06:06 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	05:17 21:16	05:24 21:59	06:07 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	05:16 21:18	05:25 22:00	06:09 22:01	06:09 21:18		07:01 20:10	5	19:28 (3) 19:33 (3)	07:52 18:59	08:37 16:55
10	08:47 16:45	08:06 17:40	07:07 18:32		06:54 20:27		05:52	05:16 21:19	05:26 22:00	06:11 22:01	06:11 21:16		07:03 20:08	12	19:25 (3) 19:37 (3)	07:54 18:57	08:38 16:54
11	08:47 16:46	08:05 17:42	07:04 18:34		06:52 20:29		05:50	05:15 21:21	05:27 22:01	06:12 22:00	06:12 21:14		07:04 20:05	16	19:22 (3) 19:38 (3)	07:56 18:54	08:39 16:52
12	08:46 16:48	08:03 17:44	07:02 18:36		06:49 20:31		05:48	05:15 21:23	05:28 22:02	06:14 21:59	06:14 21:12		07:06 20:03	15	19:21 (3) 19:36 (3)	07:57 18:52	08:40 16:51
13	08:45 16:49	08:01 17:46	07:00 18:38		06:47 20:33		05:46	05:15 21:24	05:29 22:02	06:16 21:58	06:16 21:10		07:08 20:01	14	19:19 (3) 19:33 (3)	07:59 18:50	08:41 16:49
14	08:44 16:51	07:59 17:48	06:57 18:40		06:45 20:34		05:45	05:14 21:26	05:31 22:03	06:17 21:57	06:17 21:08		07:09 19:58	13	19:18 (3) 19:31 (3)	08:01 18:48	08:42 16:47
15	08:43 16:52	07:57 17:49	06:55 18:41		06:42 20:36		05:43	05:14 21:28	05:32 22:04	06:19 21:56	06:19 21:06		07:11 19:56	11	19:18 (3) 19:29 (3)	08:03 18:45	08:43 16:46
16	08:43 16:54	07:55 17:51	06:53 18:43		06:40 20:38	1	20:10 (1) 20:11 (1)	05:42 21:29	05:14 22:04	05:33 21:55	06:21 21:04		07:13 19:53	10	19:16 (3) 19:26 (3)	08:04 18:43	08:44 16:45
17	08:42 16:56	07:53 17:53	06:50 18:45		06:38 20:40	4	20:09 (1) 20:13 (1)	05:40 21:31	05:14 22:05	05:34 21:54	06:22 21:02	3	20:23 (1) 20:26 (1)	07:14 19:51	19:16 (3) 19:24 (3)	08:06 18:41	08:45 16:43
18	08:41 16:57	07:51 17:55	06:48 18:47		06:36 20:41	5	20:09 (1) 20:14 (1)	05:39 21:32	05:14 22:05	05:36 21:53	06:24 21:00	11	20:19 (1) 20:30 (1)	07:16 19:49	19:17 (3) 19:22 (3)	08:08 18:39	08:45 16:42
19	08:40 16:59	07:49 17:57	06:46 18:49		06:34 20:43	7	20:08 (1) 20:15 (1)	05:37 21:34	05:14 22:05	05:37 21:52	06:26 20:58	13	20:16 (1) 20:29 (1)	07:18 19:46	19:16 (3) 19:19 (3)	08:10 18:37	08:46 16:40
20	08:38 17:01	07:47 17:59	06:43 18:50		06:31 20:45	9	20:08 (1) 20:17 (1)	05:36 21:35	05:14 22:06	05:38 21:50	06:27 20:56	12	20:15 (1) 20:27 (1)	07:19 19:44	19:15 (3) 20:14 (1)	08:08 17:21	08:47 16:39
21	08:37 17:03	07:45 18:01	06:41 18:52		06:29 20:47	11	20:08 (1) 20:19 (1)	05:34 21:37	05:14 22:06	05:40 21:49	06:29 20:53	11	20:14 (1) 20:25 (1)	07:21 19:41	19:13 (3) 20:13 (1)	08:10 18:32	08:47 16:25
22	08:36 17:04	07:42 18:03	06:38 18:54		06:27 20:48	11	20:09 (1) 20:20 (1)	05:33 21:38	05:14 22:06	05:41 21:48	06:31 20:51	10	20:13 (1) 20:23 (1)	07:23 19:39	19:13 (3) 20:13 (1)	08:12 18:30	08:48 16:25
23	08:35 17:06	07:40 18:05	06:36 18:56		06:25 20:50	12	20:10 (1) 20:22 (1)	05:32 21:40	05:15 22:06	05:42 21:46	06:32 20:49	8	20:12 (1) 20:21 (1)	07:24 19:37	19:13 (3) 20:12 (1)	08:13 18:28	08:48 16:26
24	08:34 17:08	07:38 18:07	06:34 18:57	2	18:30 (3) 18:32 (3)	13	20:11 (1) 20:24 (1)	05:30 21:41	05:15 22:07	05:44 21:45	06:34 20:47	7	20:12 (1) 20:19 (1)	07:26 19:34	19:13 (3) 20:12 (1)	08:14 18:26	08:49 16:24
25	08:32 17:10	07:36 18:08	06:31 18:59	5	18:32 (3) 18:33 (3)	9	20:13 (1) 20:22 (1)	05:29 21:42	05:15 22:07	05:45 21:44	06:36 20:45	5	20:12 (1) 20:17 (1)	07:28 19:32	19:13 (3) 20:11 (1)	08:17 17:24	08:49 16:23
26	08:31 17:11	07:34 18:10	06:29 19:01	7	18:33 (3) 18:35 (3)		05:28 21:44	05:16 22:07	05:47 21:42	06:37 20:42	06:37 19:30	3	20:11 (1) 20:14 (1)	07:30 19:30	19:13 (3) 20:14 (1)	08:18 17:22	08:50 16:28
27	08:30 17:13	07:32 18:12	06:27 19:03	9	18:34 (3) 18:37 (3)		05:27 20:57	05:16 21:45	05:48 22:06	06:39 21:41	06:39 20:40		19:30 19:27	07:30 19:27	19:13 (3) 19:27	08:21 17:20	08:50 16:29
28	08:28 17:15	07:29 18:14	06:24 19:04	11	18:27 (3) 18:38 (3)		05:14 20:59	05:26 21:47	05:17 22:06	05:50 21:39	06:41 20:38		06:41 19:25	07:33 19:25	19:13 (3) 19:25	08:21 17:18	08:50 16:29
29	08:27 17:17	07:22 20:06	06:12 21:00	12	19:28 (3) 19:40 (3)		05:12 21:01	05:25 21:48	05:17 22:06	05:51 21:37	06:42 20:36		06:42 19:22	07:35 19:22	19:13 (3) 19:22	08:23 17:16	08:50 16:30
30	08:25 17:19	07:20 20:08	06:10 21:02	14	19:28 (3) 19:42 (3)		05:10 21:02	05:23 21:49	05:18 22:06	05:53 21:36	06:44 20:33		06:44 19:20	07:36 19:20	19:13 (3) 19:20	08:25 17:14	08:50 16:31
31	08:24 17:21	07:17 20:10	06:03 19:43 (3)	15	19:28 (3) 19:43 (3)		05:03 21:50	05:23 21:50	05:55 21:34	06:46 20:31	06:46 20:31		06:46 19:20	07:33 19:20	19:13 (3) 19:20	08:21 17:12	08:50 16:32
Potential sun hours	256	276	367		418		488		503		456		381		330	263	240
Total, worst case			75		117						83		112				
Sun reduction			0.24		0.35						0.30		0.28				
Oper. time red.			1.00		1.00						1.00		1.00				
Wind dir. red.			0.68		0.68						0.67		0.68				
Total reduction			0.17		0.24						0.20		0.19				
Total, real			12		28						17		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:** CU - H99

Assumptions for shadow calculations

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

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
1.30 2.04 2.89 4.92 5.79 4.99 4.32 4.35 3.60 2.54 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	07:52 (2)	07:15	06:09	05:22	05:18	05:56	06:48	07:38	08:04 (1)	07:34	08:26
	16:34	17:23	18:16	08:12 (2)	20:12	21:04	21:52	22:06	21:33	20:29	19:18	08:12 (1)	17:10	16:28
2	08:50	08:21	07:25	07:53 (2)	07:13	06:07	05:21	05:19	05:58	06:49	07:40	08:06 (1)	07:36	08:28
	16:35	17:25	18:18	08:11 (2)	20:13	21:06	21:53	22:06	21:31	20:27	19:15	08:12 (1)	17:08	16:28
3	08:50	08:19	07:23	07:55 (2)	07:10	06:05	05:20	05:20	05:59	06:51	07:42	08:07 (1)	07:38	08:29
	16:36	17:27	18:20	08:10 (2)	20:15	21:08	21:54	22:05	21:29	20:24	19:13	08:10 (1)	17:06	16:27
4	08:50	08:17	07:21	07:56 (2)	07:08	06:03	05:19	05:21	06:01	06:53	07:44	08:09	07:39	08:31
	16:37	17:29	18:22	08:07 (2)	20:17	21:09	21:55	22:05	21:27	20:22	19:11	08:07 (1)	17:04	16:26
5	08:50	08:16	07:18	07:56 (2)	07:06	06:01	05:19	05:22	06:03	06:54	07:45	08:10	07:41	08:32
	16:38	17:30	18:23	08:07 (2)	20:19	21:11	21:56	22:04	21:26	20:20	19:08	08:10	17:03	16:26
6	08:49	08:14	07:16	07:56 (2)	07:03	05:59	05:18	05:22	06:04	06:56	07:47	08:11	07:43	08:33
	16:40	17:32	18:25	08:07 (2)	20:21	21:13	21:57	22:04	21:24	20:17	19:06	08:11	17:01	16:25
7	08:49	08:12	07:14	07:56 (2)	07:01	05:57	05:17	05:23	06:06	06:58	07:49	08:12	07:45	08:35
	16:41	17:34	18:27	08:07 (2)	20:22	21:15	21:58	22:03	21:22	20:15	19:04	08:12	16:59	16:25
8	08:48	08:10	07:11	07:56 (2)	07:01	05:57	05:17	05:24	06:08	06:59	07:50	08:13	07:47	08:36
	16:42	17:36	18:29	08:07 (2)	20:24	21:16	21:59	22:02	21:20	20:13	19:01	08:13	16:57	16:24
9	08:48	08:09	07:09	07:56 (2)	07:01	05:57	05:17	05:24	06:08	06:59	07:50	08:13	07:47	08:36
	16:44	17:38	18:31	08:07 (2)	20:26	21:18	22:00	22:02	21:18	20:10	18:59	08:33 (2)	07:49	08:37
10	08:47	08:07	07:07	07:30 (1)	06:54	05:52	05:16	05:26	06:11	07:03	07:54	08:40 (2)	16:56	16:24
	16:45	17:40	18:33	07:32 (1)	20:28	21:20	22:01	22:01	21:16	20:08	18:57	08:30 (2)	07:50	08:38
11	08:47	08:05	07:05	07:28 (1)	06:52	05:50	05:15	05:27	06:12	07:05	07:56	08:43 (2)	16:54	16:24
	16:46	17:42	18:34	07:33 (1)	20:29	21:21	22:01	22:00	21:14	20:06	18:55	08:28 (2)	07:52	08:39
12	08:46	08:03	07:02	07:26 (1)	06:49	05:48	05:15	05:28	06:14	07:06	07:57	08:44 (2)	16:51	16:24
	16:48	17:44	18:36	07:33 (1)	20:31	21:23	22:02	21:59	21:12	20:03	18:52	08:46 (2)	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	08:46 (2)	16:51	16:24
	16:50	17:46	18:38	07:32 (1)	20:33	21:25	22:03	21:58	21:10	20:01	18:50	08:46 (2)	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	08:46 (2)	16:48	16:24
	16:51	17:48	18:40	07:32 (1)	20:35	21:26	22:03	21:57	21:08	19:58	18:48	08:46 (2)	16:48	16:24
15	08:44	07:57	06:55	07:18 (1)	06:43	05:43	05:14	05:32	06:19	07:11	08:03	08:46 (2)	16:48	16:24
	16:53	17:50	18:42	07:30 (1)	20:36	21:28	22:04	21:56	21:06	19:56	18:46	08:46 (2)	16:46	16:24
16	08:43	07:55	06:53	07:16 (1)	06:40	05:42	05:14	05:33	06:21	07:13	08:05	08:46 (2)	16:48	16:24
	16:54	17:52	18:43	07:29 (1)	20:38	21:29	22:04	21:55	21:04	19:54	18:43	08:46 (2)	16:45	16:24
17	08:42	07:53	06:50	07:17 (1)	06:38	05:40	05:14	05:35	06:22	07:15	08:06	08:46 (2)	16:48	16:24
	16:56	17:53	18:45	07:27 (1)	20:40	21:31	22:05	21:54	21:02	19:51	18:41	08:46 (2)	16:43	16:24
18	08:41	07:51	06:48	07:16 (1)	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:46 (2)	16:48	16:24
	16:58	17:55	18:47	07:27 (1)	20:42	21:32	22:05	21:53	21:00	19:49	18:39	08:46 (2)	16:42	16:24
19	08:40	07:49	06:46	07:15 (1)	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:46 (2)	16:48	16:24
	16:59	17:57	18:49	07:27 (1)	20:43	21:34	22:06	21:52	20:58	19:46	18:37	08:46 (2)	16:41	16:24
20	08:39	07:47	06:43	07:14 (1)	06:32	05:36	05:14	05:38	06:28	07:20	08:12	08:46 (2)	16:48	16:24
	17:01	17:59	18:51	07:27 (1)	20:45	21:35	22:06	21:51	20:56	19:44	18:35	08:46 (2)	16:39	16:25
21	08:38	07:45	06:41	07:13 (1)	06:29	05:34	05:14	05:40	06:29	07:21	08:14	08:46 (2)	16:48	16:24
	17:03	18:01	18:52	07:27 (1)	20:47	21:37	22:06	21:49	20:54	19:42	18:32	08:46 (2)	16:38	16:25
22	08:36	07:43	06:39	07:10 (1)	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:46 (2)	16:48	16:24
	17:04	18:03	18:54	07:27 (1)	20:49	21:38	22:06	21:48	20:51	19:39	18:30	08:46 (2)	16:37	16:26
23	08:35	07:40	06:36	07:07 (1)	06:25	05:32	05:15	05:43	06:33	07:25	08:17	08:46 (2)	16:48	16:24
	17:06	18:05	18:56	07:27 (1)	20:50	21:40	22:07	21:47	20:49	19:37	18:28	08:46 (2)	16:36	16:26
24	08:34	07:38	06:34	07:04 (1)	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:46 (2)	16:48	16:24
	17:08	18:07	18:58	07:27 (1)	20:52	21:41	22:07	21:45	20:47	19:34	18:26	08:46 (2)	16:35	16:27
25	08:33	07:36	06:32	07:01 (1)	06:21	05:29	05:15	05:46	06:36	07:28	08:21	08:46 (2)	16:48	16:24
	17:10	18:09	18:59	07:27 (1)	20:54	21:43	22:07	21:44	20:45	19:32	18:24	08:46 (2)	16:34	16:27
26	08:31	07:34	06:29	06:58 (1)	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:46 (2)	16:48	16:24
	17:12	18:10	19:01	07:27 (1)	20:56	21:44	22:07	21:42	20:43	19:30	18:22	08:46 (2)	16:33	16:28
27	08:30	07:32	06:27	06:56 (1)	06:17	05:27	05:16	05:49	06:39	07:31	08:24	08:46 (2)	16:48	16:24
	17:13	18:12	19:03	07:27 (1)	20:57	21:45	22:07	21:41	20:40	19:27	18:20	08:46 (2)	16:32	16:29
28	08:28	07:30	06:24	06:54 (1)	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:46 (2)	16:48	16:24
	17:15	18:14	19:05	07:27 (1)	20:59	21:47	22:07	21:39	20:38	19:25	18:18	08:46 (2)	16:31	16:30
29	08:27	07:22	06:13	06:53 (1)	06:13	05:25	05:17	05:52	06:43	07:35	08:28	08:46 (2)	16:48	16:24
	17:17	18:16	19:07	07:27 (1)	21:01	21:48	22:06	21:38	20:36	19:23	18:16	08:46 (2)	16:30	16:30
30	08:25	07:20	06:11	06:51 (1)	06:11	05:24	05:18	05:53	06:44	07:37	08:30	08:46 (2)	16:48	16:24
	17:19	18:18	19:09	07:27 (1)	21:03	21:49	22:06	21:36	20:34	19:20	18:13	08:46 (2)	16:29	16:31
31	08:24	07:17	06:08	06:50 (1)	06:11	05:23	05:17	05:55	06:46	07:39	08:32	08:46 (2)	16:48	16:24
	17:21	18:20	19:11	07:27 (1)	21:05	21:50	22:06	21:34	20:31	19:17	18:10	08:46 (2)	16:28	16:32
Potential sun hours	256	276	367	418	489	503	506	456	381	330	263	240		
Total, worst case		98	133						54		184			
Sun reduction		0.21	0.24						0.28		0.24			
Oper. time red.		1.00	1.00						1.00		1.00			
Wind dir. red.		0.68	0.67						0.67		0.68			
Total reduction		0.14	0.16						0.19		0.16			
Total, real		14	22						10		30			

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: 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) 21:27 (3)	05:18 21:32	21:16 (3) 20:29	05:56 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	21:05 (3) 21:19 (3)	05:19 22:05	21:16 (3) 21:28 (3)	05:58 21:31	06:49 20:26	07:40 17:08
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) 21:21 (3)	05:20 22:05	21:15 (3) 21:28 (3)	05:59 21:29	06:51 20:24	07:42 17:06
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) 21:21 (3)	05:21 22:04	21:14 (3) 21:29 (3)	06:01 21:27	06:53 20:22	07:39 17:04
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) 21:22 (3)	05:21 22:04	21:14 (3) 21:30 (3)	06:03 21:25	06:54 20:19	07:41 17:02
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) 21:23 (3)	05:22 22:03	21:14 (3) 21:30 (3)	06:04 21:24	06:56 20:17	07:43 17:01
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) 21:23 (3)	05:23 22:03	21:14 (3) 21:29 (3)	06:06 21:22	06:58 20:15	07:45 16:59
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) 21:24 (3)	05:24 22:02	21:14 (3) 21:29 (3)	06:07 21:20	06:59 20:12	07:47 16:57
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) 21:24 (3)	05:25 22:01	21:13 (3) 21:27 (3)	06:09 21:18	07:01 20:10	07:52 16:56
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) 21:23 (3)	05:26 22:01	21:12 (3) 21:27 (3)	06:11 21:16	07:03 20:08	07:54 16:54
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) 21:23 (3)	05:27 22:00	21:12 (3) 21:26 (3)	06:12 21:14	07:04 20:05	07:56 16:52
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) 21:23 (3)	05:28 21:59	21:12 (3) 21:25 (3)	06:14 21:12	07:06 20:03	07:57 16:51
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) 21:21 (3)	05:30 21:58	21:13 (3) 21:25 (3)	06:16 21:10	07:08 20:01	07:59 16:49
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) 21:21 (3)	05:31 21:57	21:12 (3) 21:24 (3)	06:17 21:08	07:09 19:58	08:01 16:48
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) 21:21 (3)	05:32 21:56	21:12 (3) 21:23 (3)	06:19 21:06	07:11 19:56	08:03 16:46
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) 21:21 (3)	05:33 21:55	21:12 (3) 21:22 (3)	06:21 21:04	07:13 19:53	08:04 16:45
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) 21:20 (3)	05:34 21:54	21:12 (3) 21:21 (3)	06:22 21:02	07:14 19:51	08:06 16:43
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) 21:20 (3)	05:36 21:53	21:11 (3) 21:20 (3)	06:24 21:00	07:16 19:49	08:08 16:42
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) 21:19 (3)	05:37 21:52	21:12 (3) 21:20 (3)	06:26 20:58	07:18 19:46	08:10 16:40
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) 21:03 (3)	05:38 22:06	21:12 (3) 21:18 (3)	06:27 20:56	07:19 19:44	08:12 16:39
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	21:02 (3) 21:05 (3)	05:14 22:06	21:12 (3) 21:17 (3)	06:29 20:53	07:21 19:41	08:13 16:38
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	21:02 (3) 21:07 (3)	05:14 22:06	21:12 (3) 21:15 (3)	06:31 20:51	07:23 19:39	08:15 16:37
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	21:02 (3) 21:08 (3)	05:15 22:06	21:13 (3) 21:18 (3)	06:32 20:49	07:25 19:37	08:17 16:36
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	21:02 (3) 21:08 (3)	05:15 22:06	21:13 (3) 21:18 (3)	06:34 20:45	07:26 19:34	08:19 16:35
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	21:02 (3) 21:10 (3)	05:15 22:07	21:13 (3) 21:17 (3)	06:36 20:45	07:28 19:32	08:21 16:33
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	21:02 (3) 21:11 (3)	05:16 22:07	21:13 (3) 21:17 (3)	06:37 20:42	07:30 19:30	08:23 16:32
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	21:02 (3) 21:12 (3)	05:16 22:07	21:13 (3) 21:16 (3)	06:39 20:40	07:31 19:27	08:24 16:31
28	08:28 17:15	07:29 18:14	06:24 19:04	06:14 20:59	05:26 21:46	05:17 22:08	21:03 (3) 21:13 (3)	05:17 22:08	21:14 (3) 21:17 (3)	06:41 20:38	07:33 19:25	08:26 16:30
29	08:27 17:17	07:22 18:17	06:12 19:06	06:12 20:59	05:25 21:48	05:17 22:09	21:04 (3) 21:15 (3)	05:17 22:09	21:15 (3) 21:18 (3)	06:43 20:36	07:35 19:22	08:28 16:30
30	08:25 17:19	07:20 18:19	06:10 19:08	06:10 21:02	05:24 21:49	05:18 22:10	21:04 (3) 21:16 (3)	05:18 22:10	21:16 (3) 21:19 (3)	06:44 20:33	07:36 19:20	08:29 16:29
31	08:24 17:21	07:17 18:20	06:08 19:10	06:08 21:02	05:23 21:50	05:19 22:11	21:04 (3) 21:17 (3)	05:19 22:11	21:17 (3) 21:20 (3)	06:46 20:31	07:37 17:12	08:30 16:32
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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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: CX - H102

Assumptions for shadow calculations

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

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	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	5	19:32 (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		19:37 (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			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	07:49	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	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	08:47	08:05	07:04		06:52			05:50	05:15	05:27	06:12		07:04		19:25 (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	3	19:28 (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	11	19:32 (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		19:18 (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	15	19:33 (3)	18:50	16:49	16:23	
14	08:44	07:59	06:57		06:45			20:06 (1)	05:45	05:14	05:31		07:09		19:17 (3)	08:01	07:58	08:42	
	16:51	17:48	18:40		20:34	1		20:07 (1)	21:26	22:03	21:57		19:58	14	19:31 (3)	18:48	16:47	16:23	
15	08:43	07:57	06:55		06:42			20:05 (1)	05:43	05:14	05:32		06:19		19:16 (3)	08:03	07:59	08:43	
	16:52	17:49	18:41		20:36	4		20:09 (1)	21:28	22:04	21:56		21:06	13	19:29 (3)	18:45	16:46	16:23	
16	08:43	07:55	06:53		06:40			20:05 (1)	05:42	05:14	05:33		06:21		19:14 (3)	08:04	08:01	08:44	
	16:54	17:51	18:43		20:38	6		20:11 (1)	21:29	22:04	21:55		21:04	12	19:26 (3)	18:43	16:45	16:24	
17	08:42	07:53	06:50		06:38			20:05 (1)	05:40	05:14	05:34		06:22		19:14 (3)	08:06	08:03	08:45	
	16:56	17:53	18:45		20:40	8		20:13 (1)	21:31	22:05	21:54		21:02	10	19:24 (3)	18:41	16:43	16:24	
18	08:41	07:51	06:48		06:36			20:06 (1)	05:39	05:14	05:36		06:24		19:13 (3)	08:08	08:05	08:45	
	16:57	17:55	18:47		20:41	8		20:14 (1)	21:32	22:05	21:53		21:00	9	19:22 (3)	18:39	16:42	16:24	
19	08:40	07:49	06:46		06:34			20:05 (1)	05:37	05:14	05:37		06:26		19:13 (3)	08:10	08:06	08:46	
	16:59	17:57	18:49		20:43	10		20:15 (1)	21:34	22:05	21:52		20:58	6	19:19 (3)	18:37	16:40	16:24	
20	08:38	07:47	06:43		06:31			20:06 (1)	05:36	05:14	05:38		06:27		19:13 (3)	08:12	08:08	08:47	
	17:01	17:59	18:50		20:45	11		20:17 (1)	21:35	22:06	21:50		20:56	6	20:23 (1)	19:44			
21	08:37	07:45	06:41		06:29			20:07 (1)	05:34	05:14	05:40		06:29		20:13 (1)	07:21			
	17:03	18:01	18:52		20:47	12		20:19 (1)	21:37	22:06	21:49		20:53	12	20:25 (1)	19:41			
22	08:36	07:42	06:38		06:27			20:09 (1)	05:33	05:14	05:41		06:31		20:11 (1)	07:23			
	17:04	18:03	18:54		20:48	11		20:20 (1)	21:38	22:06	21:48		20:51	12	20:23 (1)	19:39			
23	08:35	07:40	06:36		18:26 (3)			20:12 (1)	05:32	05:15	05:42		06:32		20:10 (1)	07:24			
	17:06	18:05	18:56	4	18:30 (3)			20:16 (1)	21:40	22:06	21:46		20:49	11	20:21 (1)	19:37			
24	08:34	07:38	06:34		18:26 (3)			05:30	05:15	05:44	06:34		20:09 (1)		20:09 (1)	07:26			
	17:08	18:06	18:57	6	18:32 (3)			21:41	22:07	21:45	20:47		20:47	10	20:19 (1)	19:34			
25	08:32	07:36	06:31		18:25 (3)			05:29	05:15	05:45	06:36		20:08 (1)		20:08 (1)	07:28			
	17:10	18:08	18:59	8	18:33 (3)			21:42	22:07	21:44	20:45		20:45	9	20:17 (1)	19:32			
26	08:31	07:34	06:29		18:25 (3)			05:28	05:16	05:47	06:37		20:07 (1)		20:07 (1)	07:30			
	17:11	18:10	19:01	10	18:35 (3)			21:44	22:07	21:42	20:42		20:42	7	20:14 (1)	19:30			
27	08:30	07:32	06:27		18:26 (3)			05:27	05:16	05:48	06:39		20:07 (1)		20:07 (1)	07:33			
	17:13	18:12	19:03		18:37 (3)			21:45	22:06	21:41	20:40		20:40	5	20:12 (1)	19:27			
28	08:28	07:29	06:24		18:25 (3)			05:26	05:17	05:50	06:41		20:07 (1)		20:07 (1)	07:33			
	17:15	18:14	19:04	13	18:38 (3)			21:47	22:06	21:39	20:38		20:38	4	20:11 (1)	19:25			
29	08:27	07:22	06:17		19:26 (3)			05:25	05:17	05:51	06:42		20:07 (1)		20:07 (1)	07:35			
	17:17	18:16	19:06	14	19:40 (3)			21:48	22:06	21:37	20:36		20:36	1	20:08 (1)	19:22			
30	08:25	07:20	06:15		19:27 (3)			05:23	05:18	05:53	06:44		20:07 (1)		20:07 (1)	07:36			
	17:19	18:18	19:08	15	19:42 (3)			21:49	22:06	21:36	20:33		20:33		19:20				
31	08:24	07:17	06:12		19:28 (3)			05:23		05:55	06:46								
	17:21	18:20	19:10	12	19:40 (3)			21:50		21:34	20:31								
Potential sun hours	256	276	367		418			489		503	506		456		381		330	263	240
Total, worst case				93		80						77			98				
Sun reduction				0.24		0.35						0.30			0.28				
Oper. time red.				1.00		1.00						1.00			1.00				
Wind dir. red.				0.68		0.67						0.67			0.68				
Total reduction				0.17		0.24						0.20			0.19				
Total, real				15		19						15			19				

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: CY - H103

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

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	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	9 08:42 (1) 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	13 08:44 (1) 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	15 08:45 (1) 16:23	
14	08:45	07:59	06:58	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	17 08:46 (1) 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	18:46	16:46	17 08:47 (1) 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 08:48 (1) 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	
	16:56	1 09:12 (1)	17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	15 08:49 (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	
	16:58	3 09:13 (1)	17:55	18:47	20:42	21:32	22:05	21:53	21:00	19:49	18:39	16:42	
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	
	16:59	5 09:14 (1)	17:57	18:49	20:43	21:34	22:06	21:52	20:58	19:46	18:37	16:41	
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	
	17:01	7 09:15 (1)	17:59	18:50	20:45	21:35	22:06	21:51	20:56	19:44	18:35	16:39	
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	
	17:03	8 09:14 (1)	18:01	18:52	20:47	21:37	22:06	21:49	20:54	19:42	18:32	16:38	
22	08:36	09:05 (1)	07:43	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12	
	17:04	10 09:15 (1)	18:03	18:54	20:49	21:38	22:06	21:48	20:51	19:39	18:30	16:37	
23	08:35	09:04 (1)	07:40	06:36	06:25	05:32	05:15	05:43	06:33	07:25	08:17	08:14	
	17:06	12 09:16 (1)	18:05	18:56	20:50	21:40	22:07	21:47	20:49	19:37	18:28	16:36	
24	08:34	09:02 (1)	07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15	
	17:08	13 09:15 (1)	18:07	18:58	20:52	21:41	22:07	21:45	20:47	19:34	18:26	16:35	
25	08:33	09:01 (1)	07:36	06:32	06:21	05:29	05:15	05:45	06:36	07:28	08:21	08:17	
	17:10	15 09:16 (1)	18:09	18:59	20:54	21:43	22:07	21:44	20:45	19:32	17:24	16:34	
26	08:31	08:59 (1)	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:19	
	17:12	16 09:15 (1)	18:10	19:01	20:56	21:44	22:07	21:42	20:43	19:30	17:22	16:32	
27	08:30	08:58 (1)	07:32	06:27	06:17	05:27	05:16	05:48	06:39	07:31	08:25	08:20	
	17:13	17 09:15 (1)	18:12	19:03	20:57	21:45	22:07	21:41	20:40	19:27	17:20	16:32	
28	08:28	08:57 (1)	07:30	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:22	
	17:15	17 09:14 (1)	18:14	19:05	20:59	21:47	22:07	21:39	20:38	19:25	17:18	16:31	
29	08:27	08:58 (1)	07:31	07:22	06:13	05:25	05:17	05:52	06:43	07:35	08:28	08:23	
	17:17	15 09:13 (1)	18:13	19:04	20:58	21:46	22:06	21:38	20:36	19:23	17:16	16:30	
30	08:25	09:00 (1)	07:30	07:20	06:11	05:24	05:18	05:53	06:44	07:37	08:30	08:25	
	17:19	13 09:13 (1)	18:13	19:04	20:58	21:46	22:06	21:38	20:36	19:20	17:14	16:29	
31	08:24	09:02 (1)	07:31	07:17	06:12	05:25	05:19	05:55	06:46	07:39	08:32	08:27	
	17:21	9 09:11 (1)	18:11	19:02	20:56	21:44	22:06	21:38	20:36	19:23	17:16	16:30	
Potential sun hours	255		276	367	418	489	503	506	456	381	330	263	
Total, worst case	161										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	17										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:** CZ - H104

Assumptions for shadow calculations

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

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	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 21:33	06:48 20:29	19:56 (1) 20:01 (1)	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	19:57 (1) 19:59 (1)	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	2	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 16:45	08:06 17:40	07:07 18:32	06:54 20:27	19:58 (1) 20:00 (1)	05:52 21:19	05:26 22:00	06:11 22:01	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	19:57 (1) 20:02 (1)	05:50 21:21	05:27 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	19:57 (1) 20:04 (1)	05:48 21:23	05:28 22:02	06:14 21:59	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	19:57 (1) 20:05 (1)	05:46 21:24	05:29 22:02	06:16 21:58	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	19:57 (1) 20:07 (1)	05:45 21:26	05:14 22:03	05:31 21:57	06:17 21:08		07:09 19:58	07:58 18:48	08:42 16:23		
15	08:43 16:52	07:57 17:49	06:55 18:41	06:42 20:36	19:58 (1) 20:09 (1)	05:43 21:28	05:14 22:04	05:32 21:56	06:19 21:06		07:11 19:56	07:59 18:45	08:43 16:23		
16	08:43 16:54	07:55 17:51	06:53 18:43	06:40 20:38	19:59 (1) 20:11 (1)	05:42 21:29	05:14 22:04	05:33 21:55	06:21 21:04		07:13 19:53	19:12 (3) 19:19 (3)	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	20:01 (1) 20:12 (1)	05:40 21:31	05:14 22:05	05:34 21:54	06:22 21:02		07:14 19:51	19:09 (3) 19:22 (3)	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	18:19 (3) 20:41	06:36 20:41	05:39 21:32	05:14 22:05	05:36 21:53	06:24 21:00		07:16 19:49	19:07 (3) 19:22 (3)	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	18:19 (3) 20:43	06:34 20:43	05:37 21:34	05:14 22:05	05:37 21:52	06:26 20:58		07:18 19:46	19:05 (3) 19:19 (3)	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	18:18 (3) 20:45	06:31 20:45	05:36 21:35	05:14 22:06	05:38 21:50	06:27 20:56		07:19 19:44	19:04 (3) 19:17 (3)	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	18:18 (3) 20:47	06:29 20:47	05:34 21:37	05:14 22:06	05:40 21:49	06:29 20:53		07:21 19:41	19:04 (3) 19:14 (3)	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	18:18 (3) 20:48	06:27 20:48	05:33 21:38	05:14 22:06	05:41 21:48	06:31 20:51		07:23 19:39	19:02 (3) 19:11 (3)	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	18:18 (3) 20:50	06:25 20:50	05:32 21:40	05:15 22:06	05:42 21:46	06:32 20:49		07:24 19:37	19:02 (3) 19:09 (3)	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	18:18 (3) 20:52	06:23 20:52	05:30 21:41	05:15 22:07	05:44 21:45	06:34 20:47		07:26 19:34	19:02 (3) 19:07 (3)	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	18:19 (3) 20:54	06:21 20:54	05:29 21:42	05:15 22:07	05:45 21:44	06:36 20:45	20:06 (1) 20:12 (1)	07:28 19:32	19:02 (3) 19:04 (3)	07:21 17:24	08:17 16:33	08:49 16:27
26	08:31 17:11	07:34 18:10	06:29 19:01	18:20 (3) 20:55	06:19 20:55	05:28 21:44	05:16 22:07	05:47 21:42	06:37 20:42	6 12	20:02 (1) 20:14 (1)	07:30 19:30	07:23 17:22	08:18 16:32	08:50 16:28
27	08:30 17:13	07:32 18:12	06:27 19:03	18:23 (3) 20:57	06:17 20:57	05:27 21:45	05:16 22:06	05:48 21:41	06:39 20:40	20:01 (1) 20:12 (1)	07:31 19:27	07:24 17:20	08:20 16:31	08:50 16:29	
28	08:28 17:15	07:29 18:14	06:24 19:04	18:31 (3) 20:59	06:14 20:59	05:26 21:47	05:17 22:06	05:50 21:39	06:41 20:38	11 20:11 (1)	07:33 19:25	07:26 17:18	08:21 16:31	08:50 16:29	
29	08:27 17:17	07:22 18:16	06:12 19:06	20:59 21:01	06:12 21:01	05:25 21:48	05:17 22:06	05:51 21:37	06:42 20:36	19:58 (1) 20:08 (1)	07:35 19:22	07:28 17:16	08:23 16:30	08:50 16:30	
30	08:25 17:19	07:20 18:12	06:10 20:08	20:50 21:02	06:10 21:02	05:23 21:49	05:18 22:06	05:53 21:36	06:44 20:33	19:58 (1) 20:06 (1)	07:36 19:20	07:30 17:14	08:25 16:29	08:50 16:31	
31	08:24 17:21	07:17 18:20	06:07 20:10	20:57 21:05	06:07 21:05	05:23 21:50	05:15 22:07	05:46 21:34	06:46 20:31	19:56 (1) 20:03 (1)	07:37 19:19	07:32 17:12	08:20 16:32	08:50 16:32	
Potential sun hours	256	276	367	418	489	503	506	456	381		330	263	240		
Total, worst case			92		71			65	102						
Sun reduction			0.24		0.35			0.30	0.28						
Oper. time red.			1.00		1.00			1.00	1.00						
Wind dir. red.			0.68		0.67			0.67	0.68						
Total reduction			0.17		0.24			0.20	0.19						
Total, real			15		17			13	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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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: DA - H105

Assumptions for shadow calculations

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

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
1.30 2.04 2.89 4.92 5.79 4.99 4.32 4.35 3.60 2.54 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	20 07:51 (2) 08:11 (2)	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	08:04 (1) 08:11 (1)	07:34 17:10	08:26 16:28
2	08:50 16:35	08:21 17:25	07:25 18:18	18 07:52 (2) 08:10 (2)	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	08:06 (1) 08:11 (1)	07:36 17:08	08:28 16:28
3	08:50 16:36	08:19 17:27	07:23 18:20	14 07:54 (2) 08:08 (2)	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	08:07 (1) 08:10 (1)	07:38 17:06	08:29 16:27
4	08:50 16:37	08:17 17:29	07:21 18:22	10 07:55 (2) 08:05 (2)	07:08 20:17	06:03 21:09	05:19 21:55	05:21 22:05	06:01 21:27	06:53 20:22	07:44 19:11	08:09 08:10	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	08:10 08:11	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	08:11 08:12	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	08:12 08:13	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	08:13 08:14	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	08:32 (2) 08:39 (2)	07:49 16:56	08:37 16:24
10	08:47 16:45	08:07 17:40	07:07 18:33	2 07:30 (1) 07:32 (1)	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	08:29 (2) 08:42 (2)	07:50 16:54	08:38 16:24
11	08:47 16:46	08:05 17:42	07:05 18:34	4 07:28 (1) 07:32 (1)	06:52 20:29	05:50 21:21	05:15 22:01	05:27 22:00	06:13 21:14	07:05 20:06	07:56 18:55	08:27 (2) 08:43 (2)	07:52 16:52	08:39 16:24
12	08:46 16:48	08:03 17:44	07:02 18:36	7 07:26 (1) 07:33 (1)	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	08:26 (2) 08:44 (2)	07:54 16:51	08:40 16:24
13	08:45 16:50	08:01 17:46	07:00 18:38	9 07:23 (1) 07:32 (1)	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	08:25 (2) 08:44 (2)	07:56 16:49	08:41 16:24
14	08:45 16:51	07:59 17:48	06:58 18:40	10 07:21 (1) 07:31 (1)	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	08:27 (2) 08:44 (2)	07:58 16:48	08:42 16:24
15	08:44 16:53	07:57 17:50	06:55 18:42	12 07:18 (1) 07:30 (1)	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	08:29 (2) 08:45 (2)	08:00 16:46	08:43 16:24
16	08:43 16:54	07:55 17:52	06:53 18:43	12 07:16 (1) 07:28 (1)	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	08:31 (2) 08:45 (2)	08:01 16:45	08:44 16:24
17	08:42 16:56	07:53 17:53	06:50 18:45	8 07:18 (1) 07:26 (1)	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	08:33 (2) 08:44 (2)	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	08:35 (2) 08:44 (2)	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	08:37 (2) 08:43 (2)	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	05:38 21:51	06:28 20:56	07:20 19:44	08:12 18:35	08:39 (2) 08:42 (2)	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 08:11	08:10 16:38	08:48 16:25
22	08:36 17:04	07:43 18:03	06:39 18:54	4 08:07 (2) 08:11 (2)	06:39 20:49	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 08:13	08:12 16:37	08:48 16:26
23	08:35 17:06	07:40 18:05	06:36 18:56	7 08:05 (2) 08:12 (2)	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 08:15	08:14 16:36	08:49 16:26
24	08:34 17:08	07:38 18:07	06:34 18:58	10 08:03 (2) 08:13 (2)	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 08:16	08:15 16:35	08:49 16:27
25	08:33 17:10	07:36 18:06	06:32 18:59	12 08:00 (2) 08:12 (2)	06:32 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	08:16 08:17	08:17 16:34	08:49 16:27
26	08:31 17:12	07:34 18:10	06:29 19:01	14 07:58 (2) 08:12 (2)	06:29 20:56	05:28 21:44	05:16 22:07	05:47 21:42	06:38 20:43	19:30	6 08:01 (1) 08:07 (1)	08:19 08:20	08:19 16:33	08:50 16:28
27	08:30 17:13	07:32 18:12	06:27 19:03	16 07:56 (2) 08:12 (2)	06:27 20:57	05:27 21:45	05:16 22:07	05:49 21:41	06:39 20:40	07:31	12 07:58 (1) 08:10 (1)	08:21 08:22	08:20 16:32	08:50 16:29
28	08:28 17:15	07:30 18:14	06:24 19:05	18 07:54 (2) 08:12 (2)	06:24 19:05	05:26 21:47	05:17 22:07	05:50 21:39	06:41 20:38	07:33 19:25	12 07:59 (1) 08:11 (1)	08:23 08:24	08:22 16:31	08:50 16:30
29	08:27 17:17	07:22 07:20	06:13 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	11 08:00 (1) 08:11 (1)	08:25 08:26	08:23 16:30	08:50 16:30
30	08:25 17:19	07:20 07:17	06:11 20:08		05:54 21:03	05:24 21:49	05:18 22:06	05:53 21:36	06:44 20:34	07:37 19:20	9 08:02 (1) 08:11 (1)	08:27 08:28	08:25 16:29	08:50 16:31
31	08:24 17:21	07:17 07:10	06:10 20:10		05:23 21:50	05:23 21:50	05:55 21:34	06:46 20:31	07:39 19:20	07:32 17:14		08:29 08:30	08:26 16:31	08:51 16:32
Potential sun hours	256	276	367		418	489	503	506	456	381	330		263	240
Total, worst case		82	126							50	164			
Sun reduction		0.21	0.24							0.28	0.24			
Oper. time red.		1.00	1.00							1.00	1.00			
Wind dir. red.		0.68	0.67							0.67	0.68			
Total reduction		0.14	0.16							0.19	0.16			
Total, real		11	21							10	26			

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:** 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
	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	06:32	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	21:47	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	06:11	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)	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: 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

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)	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:** 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
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	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	06:26 (3)	06:48	07:38	07:34	08:26
	16:34	17:23	18:16	20:12	21:04	21:52	22:06	21:33	9 06:35 (3)	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	06:27 (3)	06:49	07:40	07:36	08:28
	16:35	17:25	18:18	20:13	21:06	21:53	22:05	21:31	8 06:35 (3)	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	06:29 (3)	06:51	07:42	07:37	08:29
	16:36	17:27	18:20	20:15	21:08	21:54	22:05	21:29	6 06:35 (3)	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	06:30 (3)	06:53	07:43	07:39	08:31
	16:37	17:29	18:22	20:17	21:09	21:55	22:05	21:27	5 06:35 (3)	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	06:32 (3)	06:54	07:45	07:41	08:32
	16:38	17:30	18:23	20:19	21:11	21:56	22:04	21:26	3 06:35 (3)	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	06:33 (3)	06:56	07:47	07:43	08:33
	16:40	17:32	18:25	20:20	21:13	21:57	22:04	21:24	1 06:34 (3)	20:17	19:06	17:01	16:25
7	08:49	08:12	07:14	07:01	05:57	06:17	05:23	06:06		06:58	07:49	07:45	08:34
	16:41	17:34	18:27	20:22	21:15	2 06:23 (3)	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	06:21 (3)	05:17	05:24	06:08	06:59	07:50	07:47	08:36
	16:42	17:36	18:29	20:24	21:16	4 06:25 (3)	21:59	22:02	21:20	20:13	19:01	16:57	16:25
9	08:48	08:08	07:09	06:56	05:54	06:19 (3)	05:16	05:25	06:09	07:01	07:52	07:49	08:37
	16:44	17:38	18:31	20:26	21:18	5 06:24 (3)	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	06:18 (3)	05:16	05:26	06:11	07:03	07:54	07:50	08:38
	16:45	17:40	18:33	20:28	21:20	7 06:25 (3)	22:00	22:01	21:16	20:08	18:57	16:54	16:24
11	08:47	08:05	07:05	06:52	05:50	06:16 (3)	05:15	05:27	06:13	07:05	07:56	07:52	08:39
	16:47	17:42	18:34	20:29	21:21	9 06:25 (3)	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	06:15 (3)	05:15	05:29	06:14	07:06	07:57	07:54	08:40
	16:48	17:44	18:36	20:31	21:23	10 06:25 (3)	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	06:13 (3)	05:15	05:30	06:16	07:08	07:59	07:56	08:41
	16:50	17:46	18:38	20:33	21:24	11 06:24 (3)	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	06:12 (3)	05:15	05:31	06:18	07:10	08:01	07:58	08:42
	16:51	17:48	18:40	20:35	21:26	12 06:24 (3)	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	06:10 (3)	05:14	05:32	06:19	07:11	08:03	07:59	08:43
	16:53	17:50	18:42	20:36	21:28	13 06:23 (3)	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	06:09 (3)	05:14	05:33	06:21	07:13	08:05	08:01	08:44
	16:54	17:52	18:43	20:38	21:29	14 06:23 (3)	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	06:09 (3)	05:14	05:35	06:23	07:15	08:06	08:03	08:45
	16:56	17:53	18:45	20:40	21:31	12 06:21 (3)	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	06:11 (3)	05:14	05:36	06:24	07:16	08:08	08:05	08:46
	16:58	17:55	18:47	20:42	21:32	9 06:20 (3)	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	06:13 (3)	05:14	05:37	06:26	07:18	08:10	08:07	08:46
	16:59	17:57	18:49	20:43	21:34	5 06:18 (3)	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	05:39	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	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	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	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	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	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	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	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	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	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	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	8 06:30 (3)	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	06:20 (3)	06:38	07:30	08:23	08:18	08:50
	17:12	18:10	19:01	20:56	21:44	22:07	21:42	11 06:31 (3)	20:43	19:30	17:22	16:33	16:28
27	08:30	07:32	06:27	06:17	05:27	05:16	05:49	06:19 (3)	06:39	07:31	08:25	08:20	08:50
	17:14	18:12	19:03	20:57	21:45	22:07	21:41	13 06:32 (3)	20:40	19:27	17:20	16:32	16:29
28	08:28	07:30	06:24	06:15	05:26	05:17	05:50	06:20 (3)	06:41	07:33	08:26	08:22	08:50
	17:15	18:14	19:05	20:59	21:47	22:06	21:39	13 06:33 (3)	20:38	19:25	17:18	16:31	16:30
29	08:27	07:22	06:13	06:03	05:25	05:17	05:52	06:21 (3)	06:43	07:35	08:28	08:23	08:50
	17:17	18:16	19:06	21:01	21:48	22:06	21:38	13 06:34 (3)	20:36	19:23	17:16	16:30	16:31
30	08:25	07:20	06:11	06:01	05:24	05:18	05:53	06:23 (3)	06:44	07:37	08:30	08:25	08:50
	17:19	18:18	19:08	21:03	21:49	22:06	21:36	12 06:35 (3)	20:33	19:20	17:14	16:29	16:31
31	08:24	07:17	06:02	05:52	05:23	05:15	05:55	06:24 (3)	06:46		07:32	08:32	08:50
	17:21	18:20	19:10	21:05	21:50	22:06	21:34	11 06:35 (3)	20:31		17:12	16:31	16:32
Potential sun hours	256	276	367	418	488	503	506	456		381	330	263	240
Total, worst case					113			81					
Sun reduction					0.37			0.26					
Oper. time red.					1.00			1.00					
Wind dir. red.					0.65			0.65					
Total reduction					0.24			0.17					
Total, real					27			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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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	20:51 20:24	06:51 19:13	07:42 17:06	07:37 16:27	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	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 16:46	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	05:30 21:58	06:16 21:10	07:08 20:01	07:59 18:50	07:56 16:49	08:41 16:23	
14	08:44 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 16:48	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	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	05:39 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	08:45 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	05:37 21:52	06:26 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	05:14 22:06	05:38 21:50	06:27 21:03 (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	05:14 22:06	05:40 21:49	06:29 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	05:14 22:06	05:41 21:48	06:31 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	05:15 22:06	05:43 21:46	06:32 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	05:15 22:06	05:44 21:45	06:34 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	05:15 22:07	05:45 21:44	06:36 21:12 (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	05:47 21:42	06:37 21:11 (3)	07:30 19:30	07:23 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	05:48 21:41	06:39 21:09 (3)	07:31 19:27	07:24 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	05:50 21:39	06:41 21:08 (3)	07:26 19:25	07:26 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	05:25 21:48	05:17 22:06	05:51 21:37	06:43 21:06 (3)	07:35 19:22	07:28 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	05:24 21:49	05:18 22:06	05:53 21:36	06:44 21:05 (3)	07:36 19:20	07:30 17:14	08:25 16:29	08:50 16:31	
31	08:24 17:21	07:17 18:10	06:07 19:04	05:23 21:05	05:23 21:50	05:18 22:06	05:55 21:34	06:46 21:03 (3)	07:32 20:31	07:32 17:12	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					138		1		6				
Sun reduction					0.37		0.30		0.30				
Oper. time red.					1.00		1.00		1.00				
Wind dir. red.					0.67		0.65		0.67				
Total reduction					0.25		0.19		0.20				
Total, real					34		0		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	18:55	07:55 (6)	20:12	07:15	06:08	15	07:00 (10)	05:22	21:52	21:52
2	08:50	16:35	08:21	17:25	18:18	07:25	18:23	19:02	07:53 (6)	20:13	07:13	06:06	16	07:01 (10)	05:20	21:53	21:53
3	08:50	16:38	08:19	17:30	18:23	07:23	18:23	19:02	07:52 (6)	20:13	07:10	06:05	16	07:01 (10)	05:20	21:54	21:54
4	08:50	16:39	08:17	17:32	18:25	07:21	18:25	19:04	07:51 (6)	20:15	07:08	06:03	16	07:01 (10)	05:19	21:54	21:54
5	08:50	16:41	08:16	17:34	18:27	07:18	18:27	19:06	07:51 (6)	20:17	07:06	06:01	17	07:01 (10)	05:17	21:55	21:55
6	08:49	16:43	08:14	17:36	18:30	07:16	18:30	19:09	07:51 (6)	20:19	07:03	06:01	16	07:00 (10)	05:18	21:56	21:56
7	08:49	16:44	08:12	17:38	18:33	07:14	18:33	19:11	07:51 (6)	20:20	07:01	06:01	15	07:00 (10)	05:17	21:57	21:57
8	08:48	16:45	08:10	17:40	18:36	07:11	18:36	19:14	07:53 (6)	20:22	07:01	06:01	13	06:59 (10)	05:17	21:58	21:58
9	08:48	16:46	08:08	17:42	18:38	07:09	18:38	19:16	07:59 (6)	20:24	07:01	06:01	12	06:58 (10)	05:16	21:59	21:59
10	08:47	16:47	08:07	17:43	18:39	07:07	18:39	19:17	07:59 (6)	20:26	07:01	06:01	9	06:56 (10)	05:16	22:00	22:00
11	08:47	16:48	08:05	17:44	18:40	07:04	18:40	19:18	07:59 (6)	20:27	07:01	06:01	5	06:55 (10)	05:16	22:01	22:01
12	08:46	16:49	08:03	17:46	18:42	07:02	18:42	19:19	07:59 (6)	20:29	07:01	06:01	12	06:55 (10)	05:15	22:01	22:01
13	08:45	16:50	08:01	17:48	18:44	07:00	18:44	19:20	07:59 (6)	20:31	07:01	06:01	10	06:55 (10)	05:15	22:02	22:02
14	08:44	16:51	07:59	17:50	18:45	06:57	18:45	19:21	07:59 (6)	20:33	07:01	06:01	8	06:55 (10)	05:15	22:03	22:03
15	08:44	16:52	07:57	17:52	18:46	06:55	18:46	19:22	07:59 (6)	20:35	07:01	06:01	21:26	06:55 (10)	05:14	22:03	22:03
16	08:43	16:53	07:55	17:54	18:47	06:53	18:47	19:23	07:59 (6)	20:36	07:01	06:01	05:43	06:55 (10)	05:14	22:04	22:04
17	08:42	16:54	07:53	17:56	18:48	06:50	18:48	19:24	07:59 (6)	20:38	07:01	06:01	21:28	06:55 (10)	05:14	22:04	22:04
18	08:41	16:55	07:51	17:58	18:49	06:48	18:49	19:25	07:59 (6)	20:40	07:01	06:01	05:42	06:55 (10)	05:14	22:05	22:05
19	08:40	16:56	07:49	17:59	18:50	06:46	18:50	19:26	07:59 (6)	20:42	07:01	06:01	21:31	06:55 (10)	05:14	22:05	22:05
20	08:39	16:57	07:47	18:01	18:51	06:43	18:51	19:27	07:59 (6)	20:44	07:01	06:01	05:39	06:55 (10)	05:14	22:06	22:06
21	08:38	16:58	07:45	18:03	18:52	06:41	18:52	19:28	07:59 (6)	20:46	07:01	06:01	21:32	06:55 (10)	05:14	22:06	22:06
22	08:36	16:59	07:43	18:05	18:53	06:39	18:53	19:29	07:59 (6)	20:48	07:01	06:01	05:37	06:55 (10)	05:14	22:07	22:07
23	08:35	17:00	07:40	18:07	18:54	06:36	18:54	19:30	07:59 (6)	20:50	07:01	06:01	05:36	06:55 (10)	05:14	22:07	22:07
24	08:34	17:01	07:38	18:09	18:55	06:34	18:55	19:31	07:59 (6)	20:52	07:01	06:01	05:35	06:55 (10)	05:14	22:07	22:07
25	08:33	17:02	07:36	18:11	18:56	06:31	18:56	19:32	07:59 (6)	20:54	07:01	06:01	05:34	06:55 (10)	05:14	22:07	22:07
26	08:31	17:03	07:34	18:13	18:57	06:29	18:57	19:33	07:59 (6)	20:56	07:01	06:01	05:33	06:55 (10)	05:14	22:07	22:07
27	08:30	17:04	07:32	18:15	18:58	06:27	18:58	19:34	07:59 (6)	20:58	07:01	06:01	05:32	06:55 (10)	05:14	22:07	22:07
28	08:28	17:05	07:29	18:17	18:59	06:24	18:59	19:35	07:59 (6)	21:00	07:01	06:01	05:31	06:55 (10)	05:14	22:07	22:07
29	08:27	17:06	07:27	18:19	19:00	06:22	19:00	19:36	07:59 (6)	21:02	07:01	06:01	05:30	06:55 (10)	05:14	22:07	22:07
30	08:25	17:07	07:25	18:21	19:01	06:20	19:01	19:37	07:59 (6)	21:04	07:01	06:01	05:29	06:55 (10)	05:14	22:07	22:07
31	08:24	17:08	07:23	18:23	19:02	06:18	19:02	19:38	07:59 (6)	21:06	07:01	06:01	05:28	06:55 (10)	05:14	22:07	22:07
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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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	16:46
16	08:43	09:12 (1)	07:55	06:53	06:40	05:42	05:33	06:21	07:13	08:05	08:01	14 08:49 (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	16:45
17	08:42	09:11 (1)	07:53	06:50	06:38	05:40	05:34	06:22	07:15	08:06	08:03	15 08:50 (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	16:43
18	08:41	09:10 (1)	07:51	06:48	06:36	05:39	05:34	06:24	07:16	08:08	08:05	17 08:51 (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	16:42
19	08:40	09:09 (1)	07:49	06:46	06:34	05:37	05:34	06:26	07:18	08:10	08:07	16 08:52 (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	16:41
20	08:39	09:08 (1)	07:47	06:43	06:32	05:36	05:34	06:27	07:20	08:12	08:08	15 08:53 (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	16:39
21	08:38	09:06 (1)	07:45	06:41	06:29	05:34	05:34	06:29	07:21	08:14	08:10	14 08:54 (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	16:38
22	08:36	09:05 (1)	07:43	06:39	06:27	05:33	05:34	06:31	07:23	08:15	08:12	12 08:54 (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	16:37
23	08:35	09:04 (1)	07:40	06:36	06:25	05:32	05:35	06:33	07:25	08:17	08:14	11 08:55 (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	16:36
24	08:34	09:02 (1)	07:38	06:34	06:23	05:30	05:35	06:34	07:26	08:19	08:15	9 08:55 (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	16:35
25	08:33	09:01 (1)	07:36	06:32	06:21	05:29	05:35	06:36	07:28	08:21	08:17	8 08:55 (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	16:34
26	08:31	09:02 (1)	07:34	06:29	06:19	05:28	05:36	06:38	07:30	08:23	08:19	6 08:55 (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	16:32
27	08:30	09:04 (1)	07:32	06:27	06:17	05:27	05:36	06:39	07:31	08:25	08:20	5 08:56 (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	16:32
28	08:28	09:05 (1)	07:30	06:24	06:15	05:26	05:37	06:41	07:33	08:27	08:22	3 08:56 (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	16:31
29	08:27	09:08 (1)		07:22	06:13	05:25	05:37	06:43	07:35	08:29	08:23	1 08:55 (1)
	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	16:30
	17:19			20:08	21:03	21:49	22:06	21:36	20:34	19:20	17:14	16:29
31	08:24			07:17	06:10	05:23	05:35	06:46		07:32		16:29
	17:21			20:10	21:50	21:54	21:34	20:31		17:12		16:32
Potential sun hours	255		276	367	418	489	503	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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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:** 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	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	07:49 (2) 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	07:47 (2) 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	07:44 (2) 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	07:43 (2) 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	07:44 (2) 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 18:23 (2)	08:33 17:01
7	08:49 16:41	08:12 17:34	07:14 18:27	07:45 (2) 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 18:24 (2)	08:35 16:59
8	08:48 16:42	08:10 17:36	07:11 18:29	07:48 (2) 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 18:26 (2)	08:36 16:57
9	08:48 16:44	08:09 17:38	07:09 18:31	07:55 (2) 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 18:26 (2)	08:37 16:56
10	08:47 16:45	08:07 17:40	07:07 18:33	07:55 (2) 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 18:22 (2)	08:38 16:54
11	08:47 16:46	08:05 17:42	07:05 18:34	07:55 (2) 18:34	05:50 21:21	05:15 22:01	05:27 22:01	06:13 21:14	07:05 20:06	07:56 18:55	07:52 18:27 (2)	08:39 16:52
12	08:46 16:48	08:03 17:44	07:02 18:36	07:55 (2) 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	07:54 18:28 (2)	08:40 16:51
13	08:45 16:50	08:01 17:46	07:00 18:38	07:55 (2) 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	07:56 18:29 (2)	08:41 16:49
14	08:45 16:51	07:59 17:48	06:58 18:40	07:55 (2) 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	07:58 18:29 (2)	08:42 16:48
15	08:44 16:53	07:57 17:50	06:55 18:42	07:55 (2) 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	07:59 18:30 (2)	08:43 16:46
16	08:43 16:54	07:55 17:52	06:53 18:43	07:55 (2) 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	07:59 18:34 (2)	08:44 16:45
17	08:42 16:56	07:53 17:53	06:50 18:45	07:55 (2) 18:45	05:40 21:31	05:14 22:05	05:35 21:54	06:23 21:02	07:15 19:51	08:06 18:41	07:59 18:35 (2)	08:45 16:43
18	08:41 16:58	07:51 17:55	06:48 18:47	07:55 (2) 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	07:59 18:36 (2)	08:46 16:42
19	08:40 16:59	07:49 17:57	06:46 18:49	07:55 (2) 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	07:59 18:37 (2)	08:46 16:41
20	08:39 17:01	07:47 17:59	06:43 18:51	07:55 (2) 18:51	05:36 21:35	05:14 22:06	05:38 21:51	06:28 20:56	07:20 19:44	08:12 18:35	07:59 18:38 (2)	08:47 16:39
21	08:38 17:03	07:45 18:01	06:41 18:52	07:55 (2) 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	07:59 18:39 (2)	08:48 16:38
22	08:36 17:04	07:43 18:03	06:39 18:54	07:55 (2) 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	07:59 18:40 (2)	08:48 16:37
23	08:35 17:06	07:40 18:05	06:36 18:56	07:55 (2) 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	07:59 18:41 (2)	08:49 16:36
24	08:34 17:08	07:38 18:07	06:34 18:58	07:55 (2) 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	07:59 18:42 (2)	08:49 16:35
25	08:33 17:10	07:36 18:09	06:32 18:59	07:55 (2) 18:59	05:29 21:43	05:15 22:07	05:46 21:44	06:36 20:45	07:28 19:32	08:21 18:24	07:59 18:43 (2)	08:49 16:34
26	08:31 17:12	07:34 18:10	06:29 19:01	07:55 (2) 19:01	05:28 21:44	05:16 22:07	05:47 21:42	06:38 20:43	07:30 19:30	08:23 18:22	07:59 18:44 (2)	08:50 16:33
27	08:30 17:13	07:32 18:12	06:27 19:03	07:55 (2) 19:03	05:27 21:45	05:16 22:07	05:49 21:41	06:39 20:40	07:31 19:27	08:25 18:20	07:59 18:45 (2)	08:50 16:32
28	08:28 17:15	07:30 18:14	06:24 19:05	07:55 (2) 19:05	05:26 21:47	05:17 22:07	05:50 21:39	06:41 20:38	07:33 19:25	08:26 18:18	07:59 18:46 (2)	08:50 16:31
29	08:27 17:17	07:22 18:19	06:13 19:06	07:55 (2) 19:06	05:25 21:48	05:17 22:06	05:52 21:38	06:43 20:36	07:35 19:23	08:28 18:16	07:59 18:47 (2)	08:50 16:30
30	08:25 17:19	07:20 18:19	06:11 19:08	07:55 (2) 19:08	05:24 21:49	05:18 22:06	05:53 21:36	06:44 20:34	07:37 19:20	08:30 18:14	07:59 18:48 (2)	08:50 16:29
31	08:24 17:21	07:17 18:24	06:08 19:10	07:55 (2) 19:10	05:23 21:50	05:19 22:06	05:55 21:34	06:46 20:31	07:32 19:12	08:31 18:12	07:59 18:49 (2)	08:51 16:32
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)	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:** 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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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

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			05:14
	16:52	17:49		18:41	7	07:34 (8)		21:28			22:04
16	08:43	07:55		06:53		07:25 (8)		06:40			05:14
	16:54	17:51		18:43	11	07:36 (8)		21:29			22:04
17	08:42	07:53		06:50		07:24 (8)		06:38			05:14
	16:56	17:53		18:45	14	07:38 (8)		20:40			22:05
18	08:41	07:51		06:48		07:22 (8)		06:36			05:14
	16:57	17:55		18:47	15	07:37 (8)		20:42			22:05
19	08:40	07:49		06:46		07:22 (8)		06:34			05:14
	16:59	17:57		18:49	16	07:38 (8)		20:43			22:06
20	08:39	07:47		06:43		07:21 (8)		06:31			05:14
	17:01	17:59		18:50	16	07:37 (8)		20:45			22:06
21	08:38	07:45		06:41		07:21 (8)		06:29			05:14
	17:03	18:01		18:52	15	07:36 (8)		20:47			22:06
22	08:36	07:43		06:39		07:22 (8)		06:27			05:14
	17:04	18:03		18:54	14	07:36 (8)		20:49			22:06
23	08:35	07:40		06:36		07:22 (8)		06:25			05:15
	17:06	18:05		18:56	12	07:34 (8)		20:50	7	07:06 (10)	21:40
24	08:34	07:38		06:34		07:25 (8)		06:23			05:15
	17:08	18:07		18:57	6	07:31 (8)		20:52	11	07:08 (10)	21:41
25	08:33	07:36		06:31		06:21		06:55 (10)	05:29		05:15
	17:10	18:08	3	08:07 (6)		20:54		07:09 (10)	21:43		22:07
26	08:31	07:34		06:29		06:19		06:54 (10)	05:28		05:16
	17:12	18:10	9	08:10 (6)		20:56		07:09 (10)	21:44		22:07
27	08:30	07:32		06:27		06:17		06:54 (10)	05:27		05:16
	17:13	18:12	11	08:11 (6)		20:57		07:10 (10)	21:45		22:07
28	08:28	07:29		06:24		06:14		06:53 (10)	05:26		05:17
	17:15	18:14	12	08:12 (6)		20:59		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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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		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		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		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		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		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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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

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	
	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	
	16:39		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		08:37	
	16:44	1	09:20 (1)		17:38		18:31		20:26		21:18		22:00		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		08:38	
	16:45	3	09:21 (1)		17:40		18:33		20:28		21:20		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		08:39	
	16:46	4	09:21 (1)		17:42		18:34		20:29		21:21		22:01		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		08:40	
	16:48	6	09:22 (1)		17:44		18:36		20:31		21:23		22:02		21:59		21:12		20:03		18:52		16:24	
13	08:45		09:16 (1)		08:01		07:00		06:47		05:47		05:15		05:30		06:16		07:08		07:59		08:41	
	16:49	7	09:23 (1)		17:46		18:38		20:33		21:25		22:03		21:58		21:10		20:01		18:50		16:23	
14	08:45		09:15 (1)		07:59		06:58		06:45		05:45		05:14		05:31		06:17		07:09		08:01		08:42	
	16:51	8	09:23 (1)		17:48		18:40		20:35		21:26		22:03		21:57		21:08		19:58		18:48		16:23	
15	08:44		09:14 (1)		07:57		06:55		06:43		05:43		05:14		05:32		06:19		07:11		08:03		08:43	
	16:53	10	09:24 (1)		17:50		18:42		20:36		21:28		22:04		21:56		21:06		19:56		18:46		16:24	
16	08:43		09:12 (1)		07:55		06:53		06:40		05:42		05:14		05:33		06:21		07:13		08:05		08:44	
	16:54	11	09:23 (1)		17:51		18:43		20:38		21:29		22:04		21:55		21:04		19:54		18:43		16:24	
17	08:42		09:11 (1)		07:53		06:50		06:38		05:40		05:14		05:34		06:22		07:15		08:06		08:45	
	16:56	12	09:23 (1)		17:53		18:45		20:40		21:31		22:05		21:54		21:02		19:51		18:41		16:24	
18	08:41		09:10 (1)		07:51		06:48		06:36		05:39		05:14		05:36		06:24		07:16		08:08		08:46	
	16:58	14	09:24 (1)		17:55		18:47		20:42		21:32		22:05		21:53		21:00		19:49		18:39		16:24	
19	08:40		09:09 (1)		07:49		06:46		06:34		05:37		05:14		05:37		06:26		07:18		08:10		08:46	
	16:59	15	09:24 (1)		17:57		18:49		20:43		21:34		22:06		21:52		20:58		19:46		18:37		16:24	
20	08:39		09:08 (1)		07:47		06:43		06:32		05:36		05:14		05:38		06:27		07:20		08:12		08:47	
	17:01	16	09:24 (1)		17:59		18:50		20:45		21:35		22:06		21:51		20:56		19:44		18:35		16:25	
21	08:38		09:06 (1)		07:45		06:41		06:29		05:34		05:14		05:40		06:29		07:21		08:14		08:48	
	17:03	17	09:23 (1)		18:01		18:52		20:47		21:37		22:06		21:49		20:54		19:42		18:32		16:25	
22	08:36		09:08 (1)		07:43		06:39		06:27		05:33		05:14		05:41		06:31		07:23		08:15		08:48	
	17:04	15	09:23 (1)		18:03		18:54		20:49		21:38		22:07		21:48		20:51		19:39		18:30		16:26	
23	08:35		09:10 (1)		07:40		06:36		06:25		05:32		05:15		05:43		06:33		07:25		08:17		08:49	
	17:06	12	09:22 (1)		18:05		18:56		20:50		21:40		22:07		21:47		20:49		19:37		18:28		16:26	
24	08:34		09:11 (1)		07:38		06:34		06:23		05:30		05:15		05:44		06:34		07:26		08:19		08:49	
	17:08	10	09:21 (1)		18:07		18:58		20:52		21:41		22:07		21:45		20:47		19:34		18:26		16:27	
25	08:33		09:14 (1)		07:36		06:32		06:21		05:29		05:15		05:45		06:36		07:28		08:17		08:50	
	17:10	5	09:19 (1)		18:09		18:59		20:54		21:43		22:07		21:44		20:45		19:32		17:24		16:27	
26	08:31		09:11 (1)		07:34		06:29		06:19		05:28		05:16		05:47		06:38		07:30		08:19		08:50	
	17:12		18:10		19:01		20:56		21:44		22:07		21:42		20:43		19:30		17:22		16:32		16:28	
27	08:30		09:12 (1)		07:32		06:27		06:17		05:27		05:16		05:48		06:39		07:31		08:20		08:50	
	17:13		18:12		19:03		20:57		21:45		22:07		21:41		20:40		19:27		17:20		16:32		16:29	
28	08:28		09:13 (1)		07:30		06:24		06:15		05:26		05:17		05:50		06:41		07:33		08:22		08:50	
	17:15		18:14		19:05		20:59		21:47		22:07		21:39		20:38		19:25		17:18		16:31		16:30	
29	08:27		09:14 (1)		07:22		06:13		05:25		05:17		05:32		06:43		07:35		08:27		09:16		08:50	
	17:17		18:16		19:07		20:06		21:01		21:48		22:06		21:38		20:36		19:23		17:16		16:30	
30	08:25		09:15 (1)		07:20		06:11		05:24		05:18		05:33		06:44		07:37		08:29		09:18		08:50	
	17:19		18:18		19:09		20:08		21:03		21:49		22:06		21:36		20:34		19:20		17:14		16:29	
31	08:24		09:16 (1)		07:17		06:08		05:23		05:16		05:35		06:46		07:39		08:31		09:20		08:51	
	17:21		18:20		19:11		20:10		21:50		22:34		23:31		24:31		25:31		26:31		27:31		28:31	
Potential sun hours	255		276		367		418		489		503		506		456		381		330		263		240	
Total, worst case	166																				158		9	
Sun reduction	0.16																				0.19		0.14	
Oper. time red.	1.00																				1.00		1.00	
Wind dir. red.	0.65																				0.65		0.65	
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:** 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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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

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

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)	06:08		05:22
	16:34	17:23		18:16	12	08:12 (6)	20:12	12	07:55 (9)	21:04		21:52
2	08:50	08:21		07:25		08:01 (6)	07:13		07:43 (9)	06:06		05:21
	16:35	17:25		18:18	10	08:11 (6)	20:13	13	07:56 (9)	21:06		21:53
3	08:50	08:19		07:23		08:03 (6)	07:10		07:42 (9)	06:05		05:20
	16:36	17:26		18:20	6	08:09 (6)	20:15	13	07:55 (9)	21:08		21:54
4	08:50	08:17		07:21			07:08		07:42 (9)	06:03		05:19
	16:37	17:28		18:21			20:17	12	07:54 (9)	21:09		21:55
5	08:50	08:16		07:18			07:06		07:43 (9)	06:01		05:18
	16:38	17:30		18:23			20:19	11	07:54 (9)	21:11		21:56
6	08:49	08:14		07:16			07:03		07:43 (9)	05:59		05:18
	16:39	17:32		18:25			20:20	8	07:51 (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			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		05:15
	16:49	17:46		18:38	9	07:39 (8)	20:33			21:24		22:03
14	08:44	07:59		06:57		07:28 (8)	06:45			05:45		05:14
	16:51	17:48		18:40	12	07:40 (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	13	07:40 (8)	20:36			21:28		22:04
16	08:43	07:55		06:53		07:26 (8)	06:40			05:42		05:14
	16:54	17:51		18:43	15	07:41 (8)	20:38			21:29		22:04
17	08:42	07:53		06:50		07:26 (8)	06:38			05:40		05:14
	16:56	17:53		18:45	15	07:41 (8)	20:40			21:31		22:05
18	08:41	07:51		06:48		07:25 (8)	06:36		07:09 (10)	05:39		05:14
	16:57	17:55		18:47	15	07:40 (8)	20:42	6	07:15 (10)	21:32		22:05
19	08:40	07:49		06:46		07:26 (8)	06:34		07:05 (10)	05:37		05:14
	16:59	17:57		18:49	14	07:40 (8)	20:43	11	07:16 (10)	21:34		22:06
20	08:39	07:47		06:43		07:26 (8)	06:31		07:04 (10)	05:36		05:14
	17:01	17:59		18:50	12	07:38 (8)	20:45	13	07:17 (10)	21:35		22:06
21	08:38	07:45		06:41		07:28 (8)	06:29		07:03 (10)	05:34		05:14
	17:03	18:01		18:52	8	07:36 (8)	20:47	15	07:18 (10)	21:37		22:06
22	08:36	07:43		06:39			06:27		07:02 (10)	05:33		05:14
	17:04	18:03		18:54			20:49	16	07:18 (10)	21:38		22:06
23	08:35	07:40		06:36			06:25		07:02 (10)	05:32		05:15
	17:06	18:05		18:56			20:50	16	07:18 (10)	21:40		22:07
24	08:34	07:38		06:34			06:23		07:02 (10)	05:30		05:15
	17:08	18:07	3	08:09 (6)			20:52	16	07:18 (10)	21:41		22:07
25	08:33	07:36		08:02 (6)	06:31		06:21		07:02 (10)	05:29		05:15
	17:10	18:08	8	08:10 (6)	18:59		20:54	16	07:18 (10)	21:43		22:07
26	08:31	07:34		08:01 (6)	06:29		06:19		07:02 (10)	05:28		05:16
	17:12	18:10	11	08:12 (6)	19:01		20:56	15	07:17 (10)	21:44		22:07
27	08:30	07:32		08:01 (6)	06:27		06:17		07:03 (10)	05:27		05:16
	17:13	18:12	11	08:12 (6)	19:03		20:57	13	07:16 (10)	21:45		22:07
28	08:28	07:29		08:01 (6)	06:24		06:14		07:04 (10)	05:26		05:17
	17:15	18:14	12	08:13 (6)	19:05		20:59	10	07:14 (10)	21:47		22:07
29	08:27			07:22			06:12		07:06 (10)	05:25		05:17
	17:17			20:06			21:01	6	07:12 (10)	21:48		22:06
30	08:25			07:20		07:47 (9)	06:10			05:23		05:18
	17:19			20:08	7	07:54 (9)	21:03			21:49		22:06
31	08:24			07:17		07:44 (9)				05:23		
	17:21			20:10	10	07:54 (9)				21:50		
hrs	255	276		367			418			489		503
use		45		158			222					
on		0.21		0.24			0.35					
ed.		1.00		1.00			1.00					
ed.		0.68		0.67			0.67					
on		0.14		0.16			0.24					
al		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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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

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)	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:** 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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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		09:23 (1)	08:22	07:27	07:15	06:09	05:22	05:18	05:56	06:48	07:38	07:34		08:26	09:00 (1)	
2	16:34	9	09:32 (1)	17:23	18:16	20:12	21:04	21:52	22:06	21:33	20:29	19:18	17:10		16:28	16	09:16 (1)
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		08:28	09:01 (1)	
4	16:35	10	09:33 (1)	17:25	18:18	20:13	21:06	21:53	22:06	21:31	20:27	19:15	17:08		16:27	16	09:17 (1)
5	08:50		09:22 (1)	08:19	07:23	07:10	06:05	05:20	05:20	05:59	06:51	07:42	07:38		08:29	09:02 (1)	
6	16:36	11	09:33 (1)	17:27	18:20	20:15	21:08	21:54	22:05	21:29	20:24	19:13	17:06		16:27	16	09:18 (1)
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		08:31	09:04 (1)	
8	16:37	12	09:34 (1)	17:28	18:22	20:17	21:09	21:55	22:05	21:27	20:22	19:11	17:04		16:26	15	09:19 (1)
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		08:32	09:05 (1)	
10	16:38	12	09:33 (1)	17:30	18:23	20:19	21:11	21:56	22:04	21:26	20:20	19:08	17:03		16:26	14	09:19 (1)
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		08:33	09:07 (1)	
12	16:39	13	09:34 (1)	17:32	18:25	20:20	21:13	21:57	22:04	21:24	20:17	19:06	17:01		16:25	13	09:20 (1)
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		08:35	09:08 (1)	
14	16:41	14	09:34 (1)	17:34	18:27	20:22	21:15	21:58	22:03	21:22	20:15	19:04	16:59		16:25	12	09:20 (1)
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		08:36	09:09 (1)	
16	16:42	15	09:35 (1)	17:36	18:29	20:24	21:16	21:59	22:02	21:20	20:13	19:01	16:57		16:24	12	09:21 (1)
17	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		08:37	09:11 (1)	
18	16:44	16	09:35 (1)	17:38	18:31	20:26	21:18	22:00	22:02	21:18	20:10	18:59	16:56		16:24	11	09:22 (1)
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		08:38	09:12 (1)	
20	16:45	16	09:34 (1)	17:40	18:33	20:28	21:20	22:01	22:01	21:16	20:08	18:57	16:54		16:24	10	09:22 (1)
21	08:47		09:18 (1)	08:05	07:05	06:52	05:50	05:15	05:27	06:12	07:04	07:56	07:52		08:39	09:13 (1)	
22	16:46	16	09:34 (1)	17:42	18:34	20:29	21:21	22:01	22:00	21:14	20:05	18:55	16:52		16:24	10	09:23 (1)
23	08:46		09:18 (1)	08:03	07:02	06:49	05:48	05:15	05:28	06:14	07:06	07:57	07:54		08:40	09:14 (1)	
24	16:48	16	09:34 (1)	17:44	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:51		16:24	9	09:23 (1)
25	08:45		09:20 (1)	08:01	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59	07:56		08:41	09:15 (1)	
26	16:49	14	09:34 (1)	17:46	18:38	20:33	21:25	22:03	21:58	21:10	20:01	18:50	16:49		16:23	8	09:23 (1)
27	08:45		09:22 (1)	07:59	06:58	06:45	05:45	05:14	05:31	06:17	07:09	08:01	07:58		08:42	09:16 (1)	
28	16:51	12	09:34 (1)	17:48	18:40	20:35	21:26	22:03	21:57	21:08	19:58	18:48	16:48		16:23	8	09:24 (1)
29	08:44		09:23 (1)	07:57	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	08:00		08:43	09:17 (1)	
30	16:53	10	09:33 (1)	17:50	18:42	20:36	21:28	22:04	21:56	21:06	19:56	18:46	16:46		16:24	7	09:24 (1)
31	08:43		09:25 (1)	07:55	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:05	08:01		08:44	09:18 (1)	
32	16:54	5	09:30 (1)	17:51	18:43	20:38	21:29	22:04	21:55	21:04	19:54	18:43	16:45		16:24	7	09:25 (1)
33	08:42			07:53	06:50	06:38	05:40	05:14	05:34	06:22	07:15	08:06	08:03		08:45	09:19 (1)	
34	16:56			17:53	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:43		16:24	7	09:26 (1)
35	08:41			07:51	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:05		08:46	09:20 (1)	
36	16:57			17:55	18:47	20:42	21:32	22:05	21:53	21:00	19:49	18:39	16:42		16:24	6	09:26 (1)
37	08:40			07:49	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:07		08:46	09:20 (1)	
38	16:59			17:57	18:49	20:43	21:34	22:06	21:52	20:58	19:46	18:37	16:41		16:24	6	09:26 (1)
39	08:39			07:47	06:43	06:32	05:36	05:14	05:38	06:27	07:20	08:12	08:08		08:47	09:21 (1)	
40	17:01			17:59	18:50	20:45	21:35	22:06	21:51	20:56	19:44	18:35	16:39		16:25	6	09:27 (1)
41	08:38			07:45	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:14	08:10		08:48	09:21 (1)	
42	17:03			18:01	18:52	20:47	21:37	22:06	21:49	20:54	19:42	18:32	16:38		16:25	6	09:27 (1)
43	08:36			07:43	06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:12		08:48	09:22 (1)	
44	17:04			18:03	18:54	20:49	21:38	22:07	21:48	20:51	19:39	18:30	16:37		16:26	6	09:28 (1)
45	08:35			07:40	06:36	06:25	05:32	05:15	05:43	06:33	07:25	08:17	08:14		08:49	09:22 (1)	
46	17:06			18:05	18:56	20:50	21:40	22:07	21:47	20:49	19:37	18:28	16:36		16:26	6	09:28 (1)
47	08:34			07:38	06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:15		08:49	09:23 (1)	
48	17:08			18:07	18:58	20:52	21:41	22:07	21:45	20:47	19:34	18:26	16:35		16:27	6	09:29 (1)
49	08:33			07:36	06:32	06:21	05:29	05:15	05:45	06:36	07:28	08:21	08:17		08:50	09:23 (1)	
50	17:10			18:09	18:59	20:54	21:43	22:07	21:44	20:45	19:32	17:24	16:33		16:27	6	09:29 (1)
51	08:31			07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	08:23	08:19		08:50	09:23 (1)	
52	17:12			18:10	19:01	20:56	21:44	22:07	21:42	20:43	19:30	17:22	16:32	5	09:04 (1)	08:50	
53	08:30			07:32	06:27	06:17	05:27	05:16	05:48	06:39	07:31	08:25	08:20		09:02 (1)	08:50	
54	17:13			18:12	19:03	20:57	21:45	22:07	21:41	20:40	19:27	17:20	16:32	10	09:12 (1)	08:50	
55	08:28			07:30	06:24	06:15	05:26	05:17	05:50	06:41	07:33	08:26	08:22		09:01 (1)	08:50	
56	17:15			18:14	19:05	20:59	21:47	22:07	21:39	20:38	19:25	17:18	16:31	12	09:13 (1)	08:50	
57	08:27				07:22	06:13	05:25	05:17	05:52	06:43	07:35	08:28	08:23		09:01 (1)	08:50	
58	17:17				20:06	21:01	21:48	22:06	21:38	20:36	19:23	17:16	16:30	13	09:14 (1)	08:50	
59	08:25				07:20	06:11	05:24	05:18	05:53	06:44	07:37	08:30	08:25		09:01 (1)	08:50	
60	17:19				20:08	21:03	21:49	22:06	21:36	20:34	19:20	17:14	16:29	15	09:16 (1)	08:50	
61	08:24				07:17	06:08	05:23	05:15	05:55	06:46	07:39	08:32	08:27		08:51	09:23 (1)	
62	17:21				20:10	21:05	21:50	22:07	21:34	20:31	19:17	17:12	16:32		16:32	9	09:32 (1)
Potential sun hours	255			276	367	418	489	503	506	456	381	330	263		240		
Total, worst case	201													55		284	
Sun reduction	0.16													0.19		0.14	
Oper. time red.	1.00													1.00		1.00	
Wind dir. red.	0.65													0.65		0.65	
Total reduction	0.10													0.12		0.09	
Total, real	21													7		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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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 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	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	06:07 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 16:28
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	07:37 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	07:06 20:19	06:01 21:11	05:19 21:56	05:22 22:04	06:03 21:25	06:54 20:19	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 22:03	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	06:59 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 16:44	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	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 16:46	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 16:24
13	08:45 16:49	08:01 17:46	07:00 18:38	06:47 20:33	05:47 21:24	05:15 22:02	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	06:57 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 16:48	08:42 16:23
15	08:43 16:53	07:57 17:50	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	07:59 16:46	08:43 16:24
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 16:58	07:51 17:55	06:48 18:47	06:36 20:41	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	08:45 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	05:37 21:52	06:26 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	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	07:45 18:01	06:41 18:52	06:29 20:47	05:34 21:37	05:14 22:06	05:40 21:49	06:29 20:53	07:21 19:42	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	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 22:06	05:43 21:46	06:32 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	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	08:32 17:10	07:36 18:08	06:31 18:59	06:21 20:54	05:29 21:42	05:15 22:07	05:46 21:44	06:36 20:45	07:28 19:32	07:21 17:24	08:17 16:34	08:49 16:27
26	08:31 17:12	07:34 18:10	06:29 19:01	06:19 20:55	05:28 21:44	05:16 22:07	05:47 21:42	06:38 20:42	07:30 19:30	07:23 17:22	08:18 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 22:06	05:48 21:41	06:39 20:40	07:31 19:27	07:24 17:20	08:20 16:32	08:50 16:29
28	08:28 17:15	07:29 18:14	06:24 19:05	06:15 20:59	05:26 21:46	05:17 22:06	05:50 21:39	06:41 20:38	07:33 19:25	07:26 17:18	08:21 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 21:37	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	05:53 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		05:55 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												
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:** 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
	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	16:32	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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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	08:09
	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 (2)	08:17
	17:10	18:09	18:59	20:54	21:43	22:07	21:44	20:45	19:32	17:24	9	07:57 (2)
26	08:31	07:34	06:29	06:19	05:28	05:16	05:47	06:38	07:30	07:23	07:50 (2)	08:19
	17:12	18:10	19:01	20:56	21:44	22:07	21:42	20:43	19:30	17:22	7	07:57 (2)
27	08:30	07:32	06:27	06:17	05:27	05:16	05:49	06:39	07:31	07:25	07:52 (2)	08:20
	17:13	18:12	19:03	20:57	21:45	22:07	21:41	20:40	19:27	17:20	4	07:56 (2)
28	08:28	07:30	06:24	06:15	05:26	05:17	05:50	06:41	07:33	07:26	07:54 (2)	08:22
	17:15	18:14	19:05	20:59	21:47	22:07	21:39	20:38	19:25	17:18	2	07:56 (2)
29	08:27		07:22	06:13	05:25	05:17	05:52	06:43	07:35	07:28		08:23
	17:17		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	05:18	05:53	06:44	07:37	07:30		08:25
	17:19		20:08	21:03	21:49	22:06	21:36	20:34	19:20	17:14		16:29
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	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)	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:** 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 22:06	05:19 21:33	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 22:06	05:19 21:31	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 22:05	05:19 21:29	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 22:05	05:21 21:27	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 22:04	05:22 21:26	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 22:04	05:22 21:24	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 22:03	05:23 21:22	06:06 21:22	06:44 (2) 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 22:02	05:24 21:20	06:08 21:20	06:42 (2) 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 22:02	05:25 21:18	06:09 21:18	06:41 (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 21:16	06:11 21:16	06:39 (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	06:13 (2) 21:21	05:15 22:01	05:27 21:14	06:13 21:14	06:41 (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	06:14 (2) 21:23	05:15 22:02	05:29 21:12	06:14 21:12	06:42 (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	06:16 (2) 21:25	05:15 22:03	05:30 21:10	06:16 21:10	06:44 (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	06:18 (2) 21:26	05:15 22:03	05:31 21:08	06:18 21:08	06:46 (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	06:19 (2) 21:28	05:14 22:04	05:32 21:06	06:19 21:06	06:47 (2) 20:10	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	06:21 (2) 21:29	05:14 22:04	05:33 21:04	06:21 21:04	06:49 (2) 20:13	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	06:23 (2) 21:31	05:14 22:05	05:35 21:02	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	06:24 (2) 21:32	05:14 22:05	05:36 21:00	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	06:26 (2) 21:34	05:14 22:06	05:37 21:08	06:26 21:08	06:53 (2) 20:17	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	06:28 (2) 21:35	05:14 22:06	05:39 21:06	06:28 21:06	06:54 (2) 20:18	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	06:29 (2) 21:37	05:14 22:06	05:40 21:09	06:29 21:09	06:55 (2) 20:20	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	06:31 (2) 21:38	05:15 22:06	05:41 21:08	06:31 21:08	06:56 (2) 20:21	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	06:33 (2) 21:40	05:15 22:07	05:43 21:09	06:33 21:09	06:57 (2) 20:22	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	06:34 (2) 21:41	05:15 22:07	05:44 21:10	06:34 21:10	06:58 (2) 20:23	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	06:35 (2) 21:43	05:15 22:07	05:46 21:11	06:36 21:11	06:59 (2) 20:24	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	06:36 (2) 21:44	05:16 22:07	05:47 21:12	06:38 21:12	06:59 (2) 20:25	08:23 18:20	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	06:37 (2) 21:45	05:16 22:07	05:49 21:12	06:39 21:12	06:59 (2) 20:26	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	06:38 (2) 21:47	05:17 22:07	05:50 21:13	06:41 21:13	06:59 (2) 20:27	08:26 18:25	08:22 16:31	08:50 16:30
29	08:27 17:17	07:22 18:17	06:13 19:06	06:13 20:59	05:25 21:48	06:37 (2) 21:48	05:17 22:07	05:52 21:14	06:43 21:14	06:59 (2) 20:28	08:28 18:26	08:23 16:31	08:50 16:31
30	08:25 17:19	07:20 18:19	06:11 19:08	06:11 21:03	05:24 21:49	06:35 (2) 21:49	05:18 22:06	05:53 21:15	06:44 21:15	06:59 (2) 20:29	08:29 18:24	08:25 16:31	08:50 16:31
31	08:24 17:21	07:17 18:20	06:10 19:10	06:10 21:04	05:23 21:50	06:41 (2) 21:50	05:19 22:06	05:55 21:16	06:46 21:16	06:59 (2) 20:30	08:30 18:25	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				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)	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: 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) 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: 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	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	16:28
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	06:12	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
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	08:31 (2)	18:36	20:31	21:23	22:02	21:59	21:12	20:03	18:52	16:24
13	08:45	08:01	08:26 (2)	07:00	06:47	05:47	05:15	05:30	06:16	07:08	07:59	08:41
	16:50	17:46	08:32 (2)	18:38	20:33	21:25	22:03	21:58	21:10	20:01	18:50	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	08:42
	16:51	17:48	08:32 (2)	18:40	20:35	21:26	22:03	21:57	21:08	19:58	18:48	16:24
15	08:44	07:57	08:22 (2)	06:55	06:43	05:43	05:14	05:32	06:19	07:11	08:03	08:43
	16:53	17:50	08:32 (2)	18:42	20:36	21:28	22:04	21:56	21:06	19:56	18:46	16:24
16	08:43	07:55	08:20 (2)	06:53	06:40	05:42	05:14	05:33	06:21	07:13	08:05	08:44
	16:54	17:52	08:32 (2)	18:43	20:38	21:29	22:04	21:55	21:04	19:54	18:43	16:24
17	08:42	07:53	08:18 (2)	06:50	06:38	05:40	05:14	05:35	06:22	07:15	08:06	08:45
	16:56	17:53	08:32 (2)	18:45	20:40	21:31	22:05	21:54	21:02	19:51	18:41	16:24
18	08:41	07:51	08:16 (2)	06:48	06:36	05:39	05:14	05:36	06:24	07:16	08:08	08:46
	16:58	17:55	08:31 (2)	18:47	20:42	21:32	22:05	21:53	21:00	19:49	18:39	16:24
19	08:40	07:49	08:15 (2)	06:46	06:34	05:37	05:14	05:37	06:26	07:18	08:10	08:46
	16:59	17:57	08:31 (2)	18:49	20:43	21:34	22:06	21:52	20:58	19:46	18:37	16:24
20	08:39	07:47	08:15 (2)	06:43	06:32	05:36	05:14	05:38	06:28	07:20	08:12	08:47
	17:01	17:59	08:28 (2)	18:51	20:45	21:36	22:06	21:51	20:56	19:44	18:35	16:25
21	08:38	07:45	08:17 (2)	06:41	06:29	05:34	05:14	05:40	06:29	07:21	08:14	08:48
	17:03	18:01	08:26 (2)	18:52	20:47	21:37	22:06	21:49	20:54	19:42	18:32	16:25
22	08:36	07:43		06:39	06:27	05:33	05:14	05:41	06:31	07:23	08:15	08:48
	17:04	18:03		18:54	20:49	21:38	22:07	21:48	20:51	19:39	18:30	16:26
23	08:35	07:40		06:36	06:25	05:32	05:15	05:43	06:33	07:25	08:17	08:49
	17:06	18:05		18:56	20:50	21:40	22:07	21:47	20:49	19:37	18:28	16:26
24	08:34	07:38		06:34	06:23	05:30	05:15	05:44	06:34	07:26	08:19	08:49
	17:08	18:07		18:58	20:52	21:41	22:07	21:45	20:47	19:34	18:26	16:27
25	08:33	07:36		06:32	06:21	05:29	05:15	05:46	06:36	07:28	07:21	08:50
	17:10	18:09		18:59	20:54	21:43	22:07	21:44	20:45	19:32	17:24	16:27
26	08:31	07:34		06:29	06:19	05:28	05:16	05:47	06:38	07:30	07:23	08:50
	17:12	18:10		19:01	20:56	21:44	22:07	21:42	20:43	19:30	17:22	16:28
27	08:30	07:32		06:27	06:17	05:27	05:16	05:49	06:39	07:31	07:25	08:50
	17:13	18:12		19:03	20:57	21:45	22:07	21:41	20:40	19:27	17:20	16:29
28	08:28	07:30		06:24	06:15	05:26	05:17	05:50	06:41	07:33	07:26	08:50
	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	08:50
	17:17			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	05:18	05:53	06:44	07:37	07:30	08:51
	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	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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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	08:22	07:27	07:15	06:09	05:22	05:51 (2)	05:19	05:50 (2)	05:56	06:48	07:38	07:34	08:26	
2	16:34	17:23	18:16	20:12	21:04	21:52	05:56 (2)	22:06	13	06:03 (2)	21:33	20:29	19:18	17:10	16:28
3	08:50	08:21	07:25	07:13	06:07	05:21	05:50 (2)	05:19	05:51 (2)	05:58	06:49	07:40	07:36	08:28	08:28
4	16:35	17:25	18:18	20:13	21:06	21:53	05:56 (2)	22:05	12	06:03 (2)	21:31	20:27	19:16	17:08	16:28
5	08:50	08:19	07:23	07:10	06:05	05:20	05:50 (2)	05:20	05:52 (2)	05:59	06:51	07:42	07:37	08:29	08:29
6	16:36	17:27	18:20	20:15	21:08	21:54	05:57 (2)	22:05	12	06:04 (2)	21:29	20:24	19:13	17:06	16:27
7	08:50	08:17	07:21	07:08	06:03	05:19	05:49 (2)	05:21	05:52 (2)	06:01	06:53	07:43	07:39	08:31	08:31
8	16:37	17:29	18:22	20:17	21:09	21:55	05:57 (2)	22:05	11	06:03 (2)	21:27	20:22	19:11	17:04	16:26
9	08:50	08:16	07:18	07:06	06:01	05:19	05:49 (2)	05:22	05:53 (2)	06:03	06:54	07:45	07:41	08:32	08:32
10	16:38	17:30	18:23	20:19	21:11	21:56	05:58 (2)	22:04	10	06:03 (2)	21:26	20:20	19:08	17:03	16:26
11	08:49	08:14	07:16	07:03	05:59	05:18	05:48 (2)	05:22	05:54 (2)	06:04	06:56	07:47	07:43	08:33	08:33
12	16:40	17:32	18:25	20:20	21:13	21:57	05:58 (2)	22:04	10	06:04 (2)	21:24	20:17	19:06	17:01	16:25
13	08:49	08:12	07:14	07:01	05:57	05:17	05:48 (2)	05:23	05:55 (2)	06:06	06:58	07:49	07:45	08:34	08:34
14	16:41	17:34	18:27	20:22	21:15	21:58	05:58 (2)	22:03	9	06:04 (2)	21:22	20:15	19:04	16:59	16:25
15	08:48	08:10	07:11	06:59	05:55	05:17	05:47 (2)	05:24	05:56 (2)	06:08	06:59	07:50	07:47	08:36	08:36
16	16:42	17:36	18:29	20:24	21:16	21:59	05:58 (2)	22:02	8	06:04 (2)	21:20	20:13	19:01	16:57	16:25
17	08:48	08:08	07:09	06:56	05:54	05:16	05:47 (2)	05:25	05:57 (2)	06:09	07:01	07:52	07:49	08:37	08:37
18	16:44	17:38	18:31	20:26	21:18	22:00	05:58 (2)	22:02	8	06:05 (2)	21:18	20:10	18:59	16:56	16:24
19	08:47	08:07	07:07	06:54	05:52	05:16	05:46 (2)	05:26	05:58 (2)	06:11	07:03	07:54	07:50	08:38	08:38
20	16:45	17:40	18:33	20:28	21:20	22:00	05:58 (2)	22:01	7	06:05 (2)	21:16	20:08	18:57	16:54	16:24
21	08:47	08:05	07:05	06:52	05:50	05:15	05:46 (2)	05:27	05:59 (2)	06:13	07:05	07:56	07:52	08:39	08:39
22	16:47	17:42	18:34	20:29	21:21	22:01	05:58 (2)	22:00	6	06:05 (2)	21:14	20:06	18:55	16:52	16:24
23	08:46	08:03	07:02	06:49	05:48	05:15	05:46 (2)	05:29	06:00 (2)	06:14	07:06	07:57	07:54	08:40	08:40
24	16:48	17:44	18:36	20:31	21:23	22:02	05:59 (2)	21:59	5	06:05 (2)	21:12	20:03	18:52	16:51	16:24
25	08:45	08:01	07:00	06:47	05:47	05:15	05:46 (2)	05:30	06:01 (2)	06:16	07:08	07:59	07:56	08:41	08:41
26	16:50	17:46	18:38	20:33	21:24	22:03	05:59 (2)	21:58	3	06:04 (2)	21:10	20:01	18:50	16:49	16:24
27	08:44	07:59	06:58	06:45	05:45	05:15	05:45 (2)	05:31	06:02 (2)	06:18	07:10	08:01	07:58	08:42	08:42
28	16:51	17:48	18:40	20:35	21:26	22:03	05:58 (2)	21:57	2	06:04 (2)	21:08	19:58	18:48	16:48	16:24
29	08:44	07:57	06:55	06:43	05:43	05:14	05:45 (2)	05:32	06:03 (2)	06:19	07:11	08:03	08:00	08:43	08:43
30	16:53	17:50	18:42	20:36	21:28	22:04	05:59 (2)	21:56	1	06:04 (2)	21:06	19:56	18:46	16:46	16:24
31	08:43	07:55	06:53	06:40	05:42	05:14	05:45 (2)	05:33	06:21	07:13	08:05	08:01	08:01	08:44	08:44
32	16:54	17:52	18:43	20:38	21:29	22:04	05:59 (2)	21:55	21:04	19:54	18:43	16:45	16:45	16:24	16:24
33	08:42	07:53	06:50	06:38	05:40	05:14	05:45 (2)	05:35	06:23	07:15	08:06	08:03	08:03	08:45	08:45
34	16:56	17:53	18:45	20:40	21:31	22:05	05:59 (2)	21:54	21:02	19:51	18:41	16:43	16:43	16:24	16:24
35	08:41	07:51	06:48	06:36	05:39	05:14	05:45 (2)	05:36	06:24	07:16	08:08	08:05	08:05	08:46	08:46
36	16:58	17:55	18:47	20:42	21:32	22:05	05:59 (2)	21:53	21:00	19:49	18:39	16:42	16:42	16:24	16:24
37	08:40	07:49	06:46	06:34	05:37	05:14	05:45 (2)	05:37	06:26	07:18	08:10	08:07	08:07	08:46	08:46
38	16:59	17:57	18:49	20:43	21:34	22:06	05:59 (2)	21:52	20:58	19:46	18:37	16:41	16:41	16:24	16:24
39	08:39	07:47	06:43	06:32	05:36	05:14	05:46 (2)	05:39	06:28	07:20	08:12	08:08	08:08	08:47	08:47
40	17:01	17:59	18:51	20:45	21:35	22:06	06:00 (2)	21:51	20:56	19:44	18:35	16:39	16:39	16:25	16:25
41	08:38	07:45	06:41	06:29	05:34	05:14	05:46 (2)	05:40	06:29	07:21	08:14	08:10	08:10	08:48	08:48
42	17:03	18:01	18:52	20:47	21:37	22:06	06:00 (2)	21:49	20:54	19:42	18:32	16:38	16:38	16:25	16:25
43	08:36	07:43	06:39	06:27	05:33	05:15	05:46 (2)	05:41	06:31	07:23	08:15	08:12	08:12	08:48	08:48
44	17:05	18:03	18:54	20:49	21:38	22:06	06:00 (2)	21:48	20:51	19:39	18:30	16:37	16:37	16:26	16:26
45	08:35	07:40	06:36	06:25	05:32	05:15	05:46 (2)	05:43	06:33	07:25	08:17	08:13	08:13	08:49	08:49
46	17:06	18:05	18:56	20:50	21:40	22:07	06:00 (2)	21:47	20:49	19:37	18:28	16:36	16:36	16:26	16:26
47	08:34	07:38	06:34	06:23	05:30	05:15	05:47 (2)	05:44	06:34	07:26	08:19	08:15	08:15	08:49	08:49
48	17:08	18:07	18:58	20:52	21:41	22:07	06:01 (2)	21:45	20:47	19:34	18:26	16:35	16:35	16:27	16:27
49	08:33	07:36	06:32	06:21	05:29	05:15	05:47 (2)	05:46	06:36	07:28	08:21	08:17	08:17	08:49	08:49
50	17:10	18:09	18:59	20:54	21:43	22:07	06:01 (2)	21:44	20:45	19:32	17:24	16:34	16:34	16:27	16:27
51	08:31	07:34	06:29	06:19	05:28	05:16	05:47 (2)	05:47	06:38	07:30	08:23	08:18	08:18	08:50	08:50
52	17:12	18:10	19:01	20:56	21:44	22:07	06:01 (2)	21:42	20:43	19:30	17:22	16:33	16:33	16:28	16:28
53	08:30	07:32	06:27	06:17	05:27	05:16	05:48 (2)	05:49	06:39	07:31	08:25	08:20	08:20	08:50	08:50
54	17:14	18:12	19:03	20:57	21:45	22:07	06:02 (2)	21:41	20:40	19:27	17:20	16:32	16:32	16:29	16:29
55	08:28	07:30	06:24	06:15	05:26	05:17	05:48 (2)	05:50	06:41	07:33	08:26	08:22	08:22	08:50	08:50
56	17:15	18:14	19:05	20:59	21:47	22:07	06:02 (2)	21:39	20:38	19:25	17:18	16:31	16:31	16:30	16:30
57	08:27	07:22	06:13	06:03	05:25	05:17	05:49 (2)	05:52	06:43	07:35	08:28	08:23	08:23	08:50	08:50
58	17:17	18:16	19:07	21:01	21:48	2	06:02 (2)	21:38	20:36	19:23	17:16	16:30	16:30	16:31	16:31
59	08:25	07:20	06:11	06:01	05:24	05:18	05:49 (2)	05:53	06:44	07:37	08:30	08:25	08:25	08:50	08:50
60	17:19	18:18	19:09	21:03	21:49	3	06:02 (2)	21:36	20:34	19:20	17:14	16:29	16:29	16:31	16:31
61	08:24	07:17	06:08	05:59	05:23	05:17	06:02 (2)	21:35	20:36	19:22	17:12	16:27	16:27	16:30	16:30
62	17:21	18:20	19:11	21:05	21:50	4	05:56 (2)	21:34	20:31	19:18	17:10	16:25	16:25	16:32	16:32
63	Potential sun hours	256	276	367	418	488	503	506	456	381	330	263	240		
64	Total, worst case					9									
65	Sun reduction					0.37									
66	Oper. time red.					1.00									
67	Wind dir. red.					0.62									
68	Total reduction					0.23									
69	Total, real					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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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 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	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	06:07 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 16:28
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	07:37 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	07:06 20:19	06:01 21:11	05:19 21:56	05:22 22:04	06:03 21:25	06:54 20:19	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 22:03	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	06:59 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 16:44	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	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 16:46	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 16:24
13	08:45 16:49	08:01 17:46	07:00 18:38	06:47 20:33	05:47 21:24	05:15 22:02	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	06:57 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 16:48	08:42 16:23
15	08:43 16:53	07:57 17:50	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	07:59 16:46	08:43 16:24
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 16:58	07:51 17:55	06:48 18:47	06:36 20:41	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	08:45 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	05:37 21:52	06:26 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	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	07:45 18:01	06:41 18:52	06:29 20:47	05:34 21:37	05:14 22:06	05:40 21:49	06:29 20:53	07:21 19:42	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	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 22:06	05:43 21:46	06:32 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	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	08:32 17:10	07:36 18:08	06:31 18:59	06:21 20:54	05:29 21:42	05:15 22:07	05:46 21:44	06:36 20:45	07:28 19:32	07:21 17:24	08:17 16:34	08:49 16:27
26	08:31 17:12	07:34 18:10	06:29 19:01	06:19 20:55	05:28 21:44	05:16 22:07	05:47 21:42	06:38 20:42	07:30 19:30	07:23 17:22	08:18 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 22:06	05:48 21:41	06:39 20:40	07:31 19:27	07:24 17:20	08:20 16:32	08:50 16:29
28	08:28 17:15	07:29 18:14	06:24 19:05	06:15 20:59	05:26 21:46	05:17 22:06	05:50 21:39	06:41 20:38	07:33 19:25	07:26 17:18	08:21 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 21:37	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	05:53 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		05:55 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	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)
	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: 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
1.30 2.04 2.89 4.92 5.79 4.99 4.32 4.35 3.60 2.54 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	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	05:19 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	07:52 18:59	07:48 16:55	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	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	18:13 (3) 06:45	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	18:11 (3) 06:42	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	18:12 (3) 06:40	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	18:17 (3) 06:38	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	18:11 (3) 06:36	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	08:45 16:24
19	08:40 16:59	07:49 17:57	06:46 18:49	18:13 (3) 06:34	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	18:13 (3) 06:31	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	18:16 (3) 06:29	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	18:23 (3) 06:27	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	5 19:07 (3) 18:58 (3)	08:17 18:28	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	11 19:09 (3) 18:57 (3)	08:19 18:26	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	10 19:07 (3) 18:55 (3)	08:17 18:24	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	9 19:04 (3) 18:54 (3)	08:18 18:23	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	8 19:02 (3) 18:53 (3)	08:19 18:24	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	7 19:00 (3) 18:52 (3)	08:21 18:28	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	5 18:57 (3) 18:55 (3)	08:23 17:16	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	3 18:55 (3)	08:25 17:14	08:50 16:31
31	08:24 17:21	07:17 18:20	06:19 19:10	06:09 21:10	05:23 21:50	05:55 21:34	06:46 20:31	06:46 19:20	07:32 17:12	17:12	08:50	16:32
Potential sun hours	256	276	367	418	489	503	506	456	381	330	263	240
Total, worst case												
Sun reduction				55					102			
Oper. time red.				0.24					0.28			
Wind dir. red.				1.00					1.00			
Total reduction				0.67					0.68			
Total, real				0.16					0.19			
				9					20			

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: 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
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	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 19:16	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 21:09	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 17:04	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 17:01	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 18:35 (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 18:36	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	08:10 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 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	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	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 22:07	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	07:27 18:17	06:22 19:06	06:13 21:01	05:25 21:48	05:17 22:06	06:43 21:38	07:35 20:36	07:36 19:23	08:28 18:16	08:23 16:30	08:50 16:30
30	08:25 17:19	07:25 18:19	06:20 19:08	06:11 21:03	05:24 21:49	05:18 22:06	06:44 21:36	07:37 20:34	07:37 19:20	08:29 18:14	08:25 16:29	08:51 16:31
31	08:24 17:21	07:24 18:21	06:17 19:10	06:17 20:10	05:23 21:51	05:15 22:06	06:46 21:34	07:38 20:31	07:38 19:12	08:30 18:04 (2)	08:26 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										108	1	
Oper. time red.										0.24	0.19	
Wind dir. red.										1.00	0.67	
Total reduction										0.67	0.12	
Total, real										17	0	

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: 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) 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:** 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	07:08	06:03	05:19
	16:37	17:28	18:21	7 07:52 (8)	20:17	21:09
5	08:50	08:16	07:18	07:50 (8)	07:06	06:01
	16:38	17:30	18:23	11 08:01 (8)	20:19	21:11
6	08:49	08:14	07:16	07:49 (8)	07:03	05:59
	16:39	17:32	18:25	14 08:03 (8)	20:20	21:13
7	08:49	08:12	07:14	07:47 (8)	07:01	05:57
	16:41	17:34	18:27	15 08:02 (8)	20:22	21:15
8	08:48	08:10	07:11	07:47 (8)	06:59	05:55
	16:42	17:36	18:29	16 08:03 (8)	20:24	21:16
9	08:48	08:08	07:09	07:47 (8)	06:56	05:53
	16:43	17:38	18:31	16 08:03 (8)	20:26	21:18
10	08:47	08:07	07:07	07:47 (8)	06:54	05:52
	16:45	17:40	18:32	14 08:01 (8)	20:27	6 07:33 (10)
11	08:47	08:05	07:04	07:48 (8)	06:52	07:25 (10)
	16:46	17:42	18:34	13 08:01 (8)	20:29	11 07:36 (10)
12	08:46	08:03	07:02	07:49 (8)	06:49	07:23 (10)
	16:48	17:44	18:36	10 07:59 (8)	20:31	14 07:37 (10)
13	08:45	08:01	07:00	07:51 (8)	06:47	07:23 (10)
	16:49	17:46	18:38	5 07:56 (8)	20:33	15 07:38 (10)
14	08:44	07:59	06:57	06:45	07:21 (10)	05:45
	16:51	17:48	18:40	20:35	17 07:38 (10)	21:26
15	08:44	07:57	06:55	06:43	07:21 (10)	05:43
	16:52	17:49	18:41	20:36	17 07:38 (10)	21:28
16	08:43	07:55	06:53	06:40	07:21 (10)	05:42
	16:54	17:51	18:43	20:38	17 07:38 (10)	21:29
17	08:42	07:53	08:20 (6)	06:50	07:21 (10)	05:40
	16:56	17:53	6 08:26 (6)	18:45	20:40	16 07:37 (10)
18	08:41	07:51	08:19 (6)	06:48	06:36	07:21 (10)
	16:57	17:55	9 08:28 (6)	18:47	20:42	16 07:37 (10)
19	08:40	07:49	08:18 (6)	06:46	06:34	07:21 (10)
	16:59	17:57	11 08:29 (6)	18:49	20:43	14 07:35 (10)
20	08:39	07:47	08:16 (6)	06:43	06:31	07:22 (10)
	17:01	17:59	12 08:28 (6)	18:50	20:45	11 07:33 (10)
21	08:38	07:45	08:17 (6)	06:41	06:29	07:24 (10)
	17:03	18:01	11 08:28 (6)	18:52	20:47	7 07:31 (10)
22	08:36	07:43	08:17 (6)	06:39	06:27	05:33
	17:04	18:03	11 08:28 (6)	18:54	20:49	21:38
23	08:35	07:40	08:18 (6)	06:36	07:03 (9)	06:25
	17:06	18:05	10 08:28 (6)	18:56	8 07:11 (9)	20:50
24	08:34	07:38	08:19 (6)	06:34	07:02 (9)	06:23
	17:08	18:07	7 08:26 (6)	18:57	10 07:12 (9)	20:52
25	08:33	07:36	06:31	07:01 (9)	06:21	05:29
	17:10	18:08	12 07:13 (9)	20:54	21:43	22:07
26	08:31	07:34	06:29	06:59 (9)	06:19	05:28
	17:12	18:10	14 07:13 (9)	20:56	21:44	22:07
27	08:30	07:32	06:27	06:59 (9)	06:17	05:27
	17:13	18:12	14 07:13 (9)	20:57	21:45	22:07
28	08:28	07:29	06:24	06:59 (9)	06:14	05:26
	17:15	18:14	13 07:12 (9)	20:59	21:47	22:07
29	08:27		07:22	08:00 (9)	06:12	05:25
	17:17		20:06	11 08:11 (9)	21:01	21:48
30	08:25		07:20	08:01 (9)	06:10	05:23
	17:19		20:08	9 08:10 (9)	21:03	21:49
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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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

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	07:50 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 16:45	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	08:25 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	08:27 18:17	08:21 16:30	08:50 16:29
29	08:27 17:17	07:22 18:20	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	08:29 18:15	08:23 16:30	08:50 16:30
30	08:25 17:19	07:20 18:08	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 18:14	08:25 16:29	08:50 16:31
31	08:24 17:21	07:17 18:10	06:19 19:10	06:08 21:10	05:23 21:50	05:16 21:34	05:54 20:31	06:46 19:31	07:37 17:12	08:31 17:12	08:26 16:32	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)	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: 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
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	08:13 (2) 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 22:01	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	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 17:59	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 18:45	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 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 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 17:14	08:25 16:29	08:51 16:31
31	08:24 17:21		07:17 20:10	06:10 21:04	05:23 21:51	05:15 22:06	06:46 21:34	07:38 20:31	07:38 17:12	08:26 16:28	08:26 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												
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:** 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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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) 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: 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	07:34 17:10	08:02 (2) 16:28
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	05:59 22:06	06:49 21:31	07:40 20:27	07:36 17:08	08:04 (2) 16:28
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	07:38 17:06	08:06 (2) 16:27
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	07:39 17:04	08:09 (2) 16:26
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	07:41 17:03	08:08 (2) 16:26
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	07:43 17:01	08:33 16:25
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	07:45 16:59	08:35 16:25
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	07:47 16:57	08:36 16:24
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	07:49 16:56	08:37 16:24
10	08:47 16:45	08:07 17:40	08:39 (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	07:50 16:54	08:38 16:24
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	07:52 16:52	08:39 16:24
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	07:54 16:51	08:40 16:24
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	07:56 16:49	08:41 16:24
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	07:58 16:48	08:42 16:24
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	08:00 16:46	08:43 16:24
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	08:01 16:45	08:44 16:24
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	08:03 16:43	08:45 16:24
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	08:05 16:42	08:46 16:24
19	08:40 16:59	07:49 17:57		06:46 18:49	05:37 20:43	05:14 21:34	05:37 22:06	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	05:36 20:45	05:14 21:36	05:38 22:06	06:28 20:56	07:20 19:44	08:12 18:35	08:08 16:39	08:47 16:25
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	08:10 16:38	08:48 16:25
22	08:36 17:04	07:43 18:03		06:39 18:54	05:33 20:49	05:14 21:38	05:41 22:07	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	05:32 20:50	05:15 21:40	05:43 22:07	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	05:30 20:52	05:15 21:41	05:44 22:07	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	05:29 20:54	05:15 21:43	05:46 22:07	06:36 20:45	07:28 19:32	08:17 18:24	08:17 16:34	08:50 16:27
26	08:31 17:12	07:34 18:10		06:29 19:01	05:28 20:56	05:16 21:44	05:47 22:07	06:38 20:43	07:30 19:30	08:19 18:22	08:19 16:33	08:50 16:28
27	08:30 17:13	07:32 18:12		06:27 19:03	05:27 20:57	05:16 21:45	05:49 22:07	06:39 20:40	07:31 19:27	08:20 18:20	08:20 16:32	08:50 16:29
28	08:28 17:15	07:30 18:14		06:24 19:05	05:26 20:59	05:17 21:47	05:50 22:07	06:41 20:38	07:33 19:25	08:22 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	05:52 22:06	06:43 20:36	07:35 19:23	08:23 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	05:53 22:06	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			07:17 20:10	06:08 21:05	05:23 21:51	05:55 22:06	06:46 20:31	07:32 19:12	08:26 18:09	08:26 16:29	08:51 16:32
Potential sun hours	256	276		367	418	489	503	506	456	381	330	240
Total, worst case												
Sun reduction			97								86	13
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
			13								14	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: 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 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	08:27 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 21:59	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 16:45	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	08:46 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 20:11 (3)	05:14 21:31	05:34 22:05	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	2 20:13 (3)	05:39 21:32	05:14 22:05	06:24 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	3 20:14 (3)	05:37 21:34	05:14 22:05	06:26 21:52	20:21 (3)	07:18 19:46	08:10 18:37	08:46 16:24
20	08:38 17:01	07:47 17:59	06:43 18:50	06:31 20:45	5 20:15 (3)	05:36 21:35	05:14 22:06	06:27 21:50	6 20:19 (3)	07:19 19:44	08:12 18:34	08:47 16:25
21	08:37 17:03	07:44 18:01	06:41 18:52	06:29 20:47	7 20:17 (3)	05:34 21:37	05:14 22:06	06:29 21:49	8 20:27 (3)	07:21 19:41	08:13 18:32	08:47 16:25
22	08:36 17:04	07:42 18:03	06:38 18:54	06:27 20:48	8 20:19 (3)	05:33 21:38	05:14 22:06	06:31 21:51	9 20:25 (3)	07:23 19:41	08:15 18:32	08:48 16:25
23	08:35 17:06	07:40 18:05	06:36 18:56	06:25 20:50	8 20:20 (3)	05:32 21:39	05:15 22:06	06:32 21:52	7 20:23 (3)	07:24 19:39	08:17 18:30	08:48 16:26
24	08:34 17:08	07:38 18:06	06:34 18:57	06:23 20:52	9 20:22 (3)	05:30 21:40	05:15 22:06	06:34 21:46	6 20:21 (3)	07:26 19:37	08:19 18:28	08:49 16:26
25	08:32 17:10	07:36 18:08	06:31 18:59	06:21 20:54	5 20:21 (3)	05:29 21:41	05:15 22:07	06:36 21:45	5 20:19 (3)	07:28 19:34	08:21 18:26	08:49 16:27
26	08:31 17:11	07:34 18:10	06:29 19:01	06:19 20:55	20:14 (3)	05:28 21:42	05:16 22:07	06:37 21:42	3 20:17 (3)	07:30 19:32	08:23 18:24	08:50 16:27
27	08:30 17:13	07:32 18:12	06:27 19:03	06:17 20:57	20:13 (3)	05:27 21:43	05:16 22:08	06:39 21:41	1 20:14 (3)	07:31 19:30	08:24 18:22	08:50 16:28
28	08:28 17:15	07:29 18:14	06:24 19:04	06:14 20:59	05:26 21:46	05:17 22:09	05:50 21:39	06:41 21:38	07:33 19:25	07:26 18:18	08:21 18:16	08:50 16:29
29	08:27 17:17	07:22 18:14	06:12 20:06	06:12 21:01	05:25 21:48	05:17 22:10	05:51 21:37	06:42 21:36	07:35 19:22	07:28 18:16	08:23 18:16	08:50 16:30
30	08:25 17:19	07:20 18:15	06:10 20:08	06:10 21:02	05:24 21:49	05:18 22:11	05:53 21:36	06:44 21:33	07:36 19:20	07:30 18:14	08:25 18:14	08:50 16:31
31	08:24 17:21	07:17 18:10	06:11 20:10	06:11 21:03	05:23 21:50	05:19 22:12	05:55 21:34	06:46 21:31	07:37 19:21	07:32 18:12	08:26 18:12	08:50 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)	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: 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) 22:06	05:57 (2) 22:06	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) 22:05	05:57 (2) 22:05	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) 22:07	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	05:56 (2) 22:02	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	05:56 (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 20:06	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	05:15 22:02	05:54 (2) 22:00	06:00 (2) 22:00	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	05:55 (2) 22:00	06:01 (2) 22:00	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	05:55 (2) 22:00	06:02 (2) 22:00	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) 22:00	06:03 (2) 22:00	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) 22:00	06:04 (2) 22:00	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) 22:00	06:05 (2) 22:00	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) 22:00	06:07 (2) 22:00	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	06:02 (2) 22:00	06:08 (2) 22:00	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) 22:00	06:09 (2) 22:00	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) 22:00	06:10 (2) 22:00	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) 22:00	06:18 (2) 22:00	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) 22:00	06:19 (2) 22:00	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) 22:00	06:20 (2) 22:00	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) 22:00	06:21 (2) 22:00	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) 22:00	06:22 (2) 22:00	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) 22:00	06:23 (2) 22:00	07:31 19:27	08:24 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) 22:00	06:24 (2) 22:00	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 20:52	05:25 21:48	05:17 22:07	06:19 (2) 22:00	06:25 (2) 22:00	07:35 19:23	08:28 18:16	08:23 16:31	08:50 16:31
30	08:25 17:19	07:20 18:08	06:11 19:03	06:11 20:53	05:24 21:49	05:18 22:06	06:20 (2) 22:00	06:26 (2) 22:00	07:37 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	06:03 20:54	05:23 21:50	05:13 22:06	06:21 (2) 22:00	06:27 (2) 22:00	07:38 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					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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

6778 Moanmore Lower WF

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

Jennings O'Donovan

IE-F91 RHH9 Sligo

Kathryn Feeney / kfeeney@jodireland.com

16/12/2024 15:13/4.0.552

Calculation: 6778 Moanmore Lower Worst Case
Assumptions for shadow calculations

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

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

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

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

windPRO 4.0.552 by EMD International A/S. Tel. +45 69 16 48 50. www.emd-international.com. support@emd.dk

16/12/2024 15:18 / 188

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)		22:05
19	08:40	07:49		08:39 (8)	06:46		06:34				05:14
	16:59	17:57	16	08:55 (8)	18:49	4	07:32 (9)	20:43	13	07:43 (10)	22:06
20	08:39	07:47		08:37 (8)	06:43		07:23 (9)	06:31		07:28 (10)	05:14
	17:01	17:59	18	08:55 (8)	18:50	12	07:35 (9)	20:45	17	07:45 (10)	22:06
21	08:37	07:45		08:36 (8)	06:41		07:22 (9)	06:29		07:26 (10)	05:14
	17:03	18:01	20	08:56 (8)	18:52	15	07:37 (9)	20:47	21	07:47 (10)	22:06
22	08:36	07:42		08:35 (8)	06:39		07:20 (9)	06:27		07:25 (10)	05:14
	17:04	18:03	22	08:57 (8)	18:54	18	07:38 (9)	20:49	23	07:48 (10)	22:06
23	08:35	07:40		08:35 (8)	06:36		07:19 (9)	06:25		07:24 (10)	05:14
	17:06	18:05	23	08:58 (8)	18:56	19	07:38 (9)	20:50	24	07:48 (10)	22:07
24	08:34	07:38		08:35 (8)	06:34		07:18 (9)	06:23		07:23 (10)	05:15
	17:08	18:07	23	08:58 (8)	18:57	20	07:38 (9)	20:52	26	07:49 (10)	22:07
25	08:33	07:36		08:34 (8)	06:31		07:18 (9)	06:21		07:22 (10)	05:15
	17:10	18:08	23	08:57 (8)	18:59	20	07:38 (9)	20:54	27	07:49 (10)	22:07
26	08:31	07:34		08:34 (8)	06:29		07:17 (9)	06:19		07:21 (10)	05:16
	17:11	18:10	23	08:57 (8)	19:01	20	07:37 (9)	20:56	29	07:50 (10)	22:07
27	08:30	07:32		08:34 (8)	06:27		07:18 (9)	06:17		07:21 (10)	05:16
	17:13	18:12	23	08:57 (8)	19:03	19	07:37 (9)	20:57	29	07:50 (10)	22:07
28	08:28	07:29		08:35 (8)	06:24		07:17 (9)	06:14		07:20 (10)	05:16
	17:15	18:14	21	08:56 (8)	19:05	19	07:36 (9)	20:59	30	07:50 (10)	22:07
29	08:27				07:22		08:18 (9)	06:12		07:20 (10)	05:17
	17:17				20:06	17	08:35 (9)	21:01	29	07:49 (10)	22:06
30	08:25				07:20		08:20 (9)	06:10		07:20 (10)	05:18
	17:19				20:08	13	08:33 (9)	21:03	29	07:49 (10)	22:06
31	08:24				07:17		08:21 (9)				
	17:21				20:10	9	08:30 (9)				
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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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		07:37 (10)	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		07:36 (10)	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		07:34 (10)	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		07:33 (10)	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		07:33 (10)	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		07:31 (10)	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		07:31 (10)	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		07:30 (10)	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		07:29 (10)	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		07:28 (10)	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		07:29 (10)	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		07:28 (10)	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		07:28 (10)	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		07:28 (10)	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		07:28 (10)	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		07:29 (10)	07:16	08:06 (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		07:28 (10)	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		07:29 (10)	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		07:30 (10)	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		07:31 (10)	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		07:33 (10)	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		07:35 (10)	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						08:49
	21:44	20:45			19:32						16:27
26	05:47	06:37			07:30						08:50
	21:42	20:42			19:30						16:28
27	05:48	06:39			07:31						08:50
	21:41	20:40			19:27						16:29
28	05:50	06:41			07:33						08:50
	21:39	20:38			19:25						16:29
29	05:51	06:43			07:35						08:50
	21:38	20:36			19:22						16:30
30	05:53	06:44			07:36						08:50
	21:36	20:33			19:20						16:31
31	05:55	06:46									08:50
	21:34	20:31									16:32
Potential sun hours	506	456		381		330		263		240	
Total, worst case			521	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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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

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: 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 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 16:45	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	08:46 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 16:23
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	08:45 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	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	05:31 21:40	05:14 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 17:24	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 17:22	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 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	05:16 22:06	05:50 21:39	06:41 20:38	07:33 19:25	08:26 17:18	08:21 16:30	08:50 16:29
29	08:27 17:17		07:22 20:06	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 17:16	08:23 16:30	08:50 16:30
30	08:25 17:19		07:20 20:08	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 17:14	08:25 16:29	08:50 16:31
31	08:24 17:21		07:17 20:10		05:22 21:50		05:54 21:34	06:46 20:31		07:32 17:12		08:50 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: 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	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
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
	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
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	16:26
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)	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: 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 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	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	05:19 22:05	05:58 21:31	06:49 20:26	07:40 19:15	07:35 17:08	08:27 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	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	05:19 21:56	05:21 22:04	06:03 21:25	06:54 20:19	07:45 19:08	07:41 17:03	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	06:59 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 16:44	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	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 16:46	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 16:24
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	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	08:44 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 16:48	08:42 16:23
15	08:43 16:53	07:57 17:49	06:55 18:41	06:43 20:36	05:43 21:27	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 16:24
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	05:39 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	08:45 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	05:37 21:52	06:26 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	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 16:26
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	05:43 21:46	06:32 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	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	08:32 17:10	07:36 18:08	06:31 18:59	06:21 20:54	05:29 21:42	05:15 22:06	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	08:31 17:12	07:34 18:10	06:29 19:01	06:19 20:55	05:28 21:44	05:16 22:06	05:47 21:42	06:37 20:42	07:30 19:30	07:23 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	05:48 21:41	06:39 20:40	07:31 19:27	07:24 17:20	08:20 16:32	08:50 16:29
28	08:28 17:15	07:29 18:14	06:24 19:04	06:15 20:59	05:26 21:46	05:17 22:06	05:50 21:39	06:41 20:38	07:33 19:25	07:26 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	05:51 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	05:53 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		05:55 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												
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: 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 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	07:21 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	07:23 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	07:25 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	07:26 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	07:28 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	07:30 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:** 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
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	16:28
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	16:23
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	05:46	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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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
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	17:31	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	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
	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	08:44	07:59	06:58	06:45	05:45	05:15	05:31	06:18	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	05:35	06:23	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	05:39	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
25	08:33	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	08:25	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	07:30	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)	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: 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
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)	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: 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	06:36	08:09 (8)	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	06:34	08:08 (8)	06:23	07:05 (10)	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	06:31	08:06 (8)	06:21	07:02 (10)	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	06:29	08:06 (8)	06:19	06:59 (10)	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	06:27	08:06 (8)	06:17	06:59 (10)	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	06:24	08:06 (8)	06:14	06:57 (10)	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		06:12	07:57 (10)	05:25	05:17
	17:17		20:06	15 08:12 (10)	21:01		21:48	22:06
30	08:25		07:20		06:10	07:58 (10)	05:23	05:18
	17:19		20:08	13 08:11 (10)	21:03		21:49	22:06
31	08:24		07:17		05:23	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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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	08:26
	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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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: 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
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)	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: 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
	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
	16:47	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	05:15	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
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	18:42	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	17:52	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	08:45
	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	05:39	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
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)	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: 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 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	07:48 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 16:45	08:06 17:40	07:07 18:32	06:54 20:27	05:51 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	08:46 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 17:47	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 16:23
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	08:45 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	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	05:31 21:40	05:14 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 22:06	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 17:24	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 19:29	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	06:16 20:57	05:27 21:45	05:16 22:06	05:48 21:41	06:39 20:40	07:31 19:27	08:24 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	05:16 22:06	05:50 21:39	06:41 20:38	07:33 19:25	08:26 17:18	08:21 16:30	08:50 16:29
29	08:27 17:17		07:22 20:06	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 17:16	08:23 16:30	08:50 16:30
30	08:25 17:19		07:20 20:08	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 17:14	08:25 16:29	08:50 16:31
31	08:24 17:21		07:17 20:10		05:22 21:50		05:54 21:34	06:46 20:31		07:32 17:12		08:50 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: 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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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)	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: 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
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	21:27	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	05:52	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 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	06:51 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: 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 16:34	08:22 17:23	07:27 18:16	07:15 20:12	06:09 21:04	05:22 21:51	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	08:20 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	06:49 20:26	07:40 19:15	07:35 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	07:37 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	07:06 20:19	06:01 21:11	05:19 21:56	05:22 22:04	06:03 21:25	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 22:03	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	06:59 20:24	05:55 21:16	05:17 21:59	05:24 22:02	06:08 21:20	06:59 20:12	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 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	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 16:46	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 18:55	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	07:57 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	05:47 21:24	05:15 22:02	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	06:57 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 16:48	08:42 16:24
15	08:43 16:53	07:57 17:50	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	07:59 16:46	08:43 16:24
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	05:35 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 16:58	07:51 17:55	06:48 18:47	06:36 20:41	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	08:45 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	05:37 21:52	06:26 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	06:32 20:45	05:36 21:35	05:14 22:06	05:38 21:50	06:27 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 20:53	07:21 19:42	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	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 22:06	05:43 21:46	06:33 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	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	08:32 17:10	07:36 18:08	06:31 18:59	06:21 20:54	05:29 21:42	05:15 22:07	05:46 21:44	06:36 20:45	07:28 19:32	07:21 17:24	08:17 16:34	08:49 16:27
26	08:31 17:12	07:34 18:10	06:29 19:01	06:19 20:55	05:28 21:44	05:16 22:07	05:47 21:42	06:38 20:42	07:30 19:30	07:23 17:22	08:18 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 22:06	05:49 21:41	06:39 20:40	07:31 19:27	07:24 17:20	08:20 16:32	08:50 16:29
28	08:28 17:15	07:29 18:14	06:24 19:05	06:15 20:59	05:26 21:46	05:17 22:06	05:50 21:39	06:41 20:38	07:33 19:25	07:26 17:18	08:21 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 21:37	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	06:11 21:02	05:24 21:49	05:18 22:06	05:53 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		05:55 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	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)
	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: 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 16:34	08:22 17:23	07:27 18:16	07:15 18:16	06:08 18:16	05:22 18:16	05:18 18:16	05:56 18:16	06:48 18:16	07:38 18:16	08:11 (9) 17:10	07:34 16:28
2	08:50 16:35	08:21 17:25	07:25 18:18	07:13 18:18	06:06 18:18	05:21 18:18	05:19 18:18	05:58 18:18	06:49 18:18	07:40 18:18	08:11 (9) 17:10	07:36 16:28
3	08:50 16:36	08:19 17:26	07:23 18:20	07:10 18:20	06:05 18:20	05:20 18:20	05:20 18:20	05:59 18:20	06:51 18:20	07:42 18:20	08:10 (9) 17:10	07:37 16:29
4	08:50 16:37	08:17 17:28	07:21 18:21	07:08 18:21	06:03 18:21	05:19 18:21	05:21 18:21	06:01 18:21	06:53 18:21	07:43 18:21	08:11 (9) 17:10	07:39 16:31
5	08:50 16:38	08:16 17:30	07:18 18:23	07:06 18:23	06:01 18:23	05:18 18:23	05:21 18:23	06:03 18:23	06:54 18:23	07:45 18:23	08:13 (9) 17:10	07:41 16:32
6	08:49 16:39	08:14 17:32	07:16 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	08:14 (9) 17:10	07:43 16:33
7	08:49 16:41	08:12 17:34	07:14 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	08:15 (9) 17:10	07:45 16:35
8	08:48 16:42	08:10 17:36	07:11 18:29	06:59 18:29	05:55 18:29	05:17 18:29	05:24 18:29	06:07 18:29	06:59 18:29	07:50 18:29	08:16 (9) 17:10	07:47 16:36
9	08:48 16:43	08:08 17:38	07:09 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	08:17 (9) 17:10	07:49 16:37
10	08:47 16:45	08:07 17:40	07:07 18:32	06:54 18:32	05:52 18:32	05:16 18:32	05:26 18:32	06:11 18:32	07:03 18:32	07:54 18:32	08:18 (9) 17:10	07:50 16:38
11	08:47 16:46	08:05 17:42	07:04 18:34	06:52 18:34	05:50 18:34	05:15 18:34	05:27 18:34	06:12 18:34	07:04 18:34	07:56 18:34	08:19 (9) 17:10	07:52 16:39
12	08:46 16:48	08:03 17:44	07:02 18:36	06:49 18:36	05:48 18:36	05:15 18:36	05:28 18:36	06:14 18:36	07:06 18:36	07:57 18:36	08:20 (9) 17:10	07:54 16:40
13	08:45 16:49	08:01 17:46	07:00 18:38	06:47 18:38	05:46 18:38	05:15 18:38	05:29 18:38	06:16 18:38	07:08 18:38	07:59 18:38	08:21 (9) 17:10	07:56 16:41
14	08:44 16:51	07:59 17:48	06:57 18:40	06:45 18:40	05:45 18:40	05:14 18:40	05:31 18:40	06:17 18:40	07:09 18:40	08:01 18:40	08:22 (9) 17:10	07:58 16:42
15	08:44 16:52	07:57 17:49	06:55 18:41	06:43 18:41	05:43 18:41	05:14 18:41	05:32 18:41	06:19 18:41	07:11 18:41	08:03 18:41	08:23 (9) 17:10	07:59 16:43
16	08:43 16:54	07:55 17:51	06:53 18:43	06:40 18:43	05:42 18:43	05:14 18:43	05:33 18:43	06:21 18:43	07:13 18:43	08:05 18:43	08:24 (9) 17:10	07:59 16:44
17	08:42 16:56	07:53 17:53	06:50 18:45	06:38 18:45	05:40 18:45	05:14 18:45	05:34 18:45	06:22 18:45	07:14 18:45	08:06 18:45	08:25 (9) 17:10	07:59 16:45
18	08:41 16:57	07:51 17:55	06:48 18:47	06:36 18:47	05:39 18:47	05:14 18:47	05:36 18:47	06:24 18:47	07:16 18:47	08:08 18:47	08:26 (9) 17:10	07:59 16:46
19	08:40 16:59	07:49 17:57	06:46 18:49	06:34 18:49	05:37 18:49	05:14 18:49	05:37 18:49	06:26 18:49	07:18 18:49	08:10 18:49	08:27 (9) 17:10	07:59 16:47
20	08:39 17:01	07:47 17:59	06:43 18:50	06:31 18:50	05:36 18:50	05:14 18:50	05:38 18:50	06:27 18:50	07:20 18:50	08:12 18:50	08:28 (9) 17:10	07:59 16:48
21	08:38 17:03	07:45 18:01	06:41 18:52	06:29 18:52	05:34 18:52	05:14 18:52	05:40 18:52	06:29 18:52	07:21 18:52	08:14 18:52	08:29 (9) 17:10	07:59 16:49
22	08:36 17:04	07:43 18:03	06:39 18:54	06:27 18:54	05:33 18:54	05:14 18:54	05:41 18:54	06:31 18:54	07:23 18:54	08:15 18:54	08:30 (9) 17:10	07:59 16:50
23	08:35 17:06	07:40 18:05	06:36 18:56	06:25 18:56	05:32 18:56	05:15 18:56	05:42 18:56	06:32 18:56	07:25 18:56	08:17 18:56	08:31 (9) 17:10	07:59 16:51
24	08:34 17:08	07:38 18:07	06:34 18:58	06:23 18:58	05:30 18:58	05:15 18:58	05:44 18:58	06:34 18:58	07:26 18:58	08:19 18:58	08:32 (9) 17:10	07:59 16:52
25	08:33 17:10	07:36 18:08	06:31 18:59	06:21 18:59	05:29 18:59	05:15 18:59	05:45 18:59	06:36 18:59	07:28 18:59	08:20 18:59	08:33 (9) 17:10	07:59 16:53
26	08:31 17:12	07:34 18:10	06:29 19:01	06:19 19:01	05:28 19:01	05:16 19:01	05:47 19:01	06:37 19:01	07:30 19:01	08:22 19:01	08:34 (9) 17:10	07:59 16:54
27	08:30 17:13	07:32 18:12	06:27 19:03	06:17 19:03	05:27 19:03	05:16 19:03	05:48 19:03	06:39 19:03	07:31 19:03	08:23 19:03	08:35 (9) 17:10	07:59 16:55
28	08:28 17:15	07:29 18:14	06:24 19:05	06:14 19:05	05:26 19:05	05:17 19:05	05:50 19:05	06:41 19:05	07:33 19:05	08:25 19:05	08:36 (9) 17:10	07:59 16:56
29	08:27 17:17	07:22 18:17	06:19 19:06	06:12 19:06	05:25 19:06	05:17 19:06	05:51 19:06	06:43 19:06	07:35 19:06	08:27 19:06	08:37 (9) 17:10	07:59 16:57
30	08:25 17:19	07:20 18:19	06:18 19:07	06:10 19:07	05:23 19:07	05:18 19:07	05:53 19:07	06:44 19:07	07:37 19:07	08:29 19:07	08:38 (9) 17:10	07:59 16:58
31	08:24 17:21	07:17 18:20	06:17 19:08	06:09 19:08	05:23 19:08	05:19 19:08	05:55 19:08	06:46 19:08	07:39 19:08	08:31 19:08	08:39 (9) 17:10	07:59 16:59
Potential sun hours	255	276	367	418	489	503	506	456	381	330	263	240
Total, worst case		86	167							135		
Sun reduction		0.21	0.24							0.28		
Oper. time red.		1.00	1.00							1.00		
Wind dir. red.		0.67	0.68							0.67		
Total reduction		0.14	0.16							0.16		
Total, real		12	28							23		

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:** 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
	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
	16:49	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
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	16:26
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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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 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	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	05:19 22:05	05:58 21:31	06:49 20:26	07:40 19:15	07:35 17:08	08:27 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	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	05:19 21:56	05:21 22:04	06:03 21:25	06:54 20:19	07:45 19:08	07:41 17:03	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	06:59 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 16:44	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	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 16:46	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 16:24
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	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	08:44 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 16:48	08:42 16:23
15	08:43 16:53	07:57 17:49	06:55 18:41	06:43 20:36	05:43 21:27	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 16:24
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	05:39 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	08:45 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	05:37 21:52	06:26 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	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 16:26
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	05:43 21:46	06:32 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	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	08:32 17:10	07:36 18:08	06:31 18:59	06:21 20:54	05:29 21:42	05:15 22:06	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	08:31 17:12	07:34 18:10	06:29 19:01	06:19 20:55	05:28 21:44	05:16 22:06	05:47 21:42	06:37 20:42	07:30 19:30	07:23 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	05:48 21:41	06:39 20:40	07:31 19:27	07:24 17:20	08:20 16:32	08:50 16:29
28	08:28 17:15	07:29 18:14	06:24 19:04	06:15 20:59	05:26 21:46	05:17 22:06	05:50 21:39	06:41 20:38	07:33 19:25	07:26 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	05:51 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	05:53 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		05:55 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	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)
	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:** 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)	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: 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)	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

January	February	March	April	May	June
---------	----------	-------	-------	-----	------

1	08:50		08:22	09:04 (8)	07:27		08:02 (9)	07:15	06:08	05:22
	16:34		17:23	09:20 (6)	18:16	11	08:13 (9)	20:12	21:04	21:52
2	08:50		08:21	09:01 (8)	07:25		08:01 (9)	07:13	06:06	05:21
	16:35		17:25	09:17 (6)	18:18	13	08:14 (9)	20:13	21:06	21:53
3	08:50		08:19	09:01 (8)	07:23		08:00 (9)	07:10	06:04	05:20
	16:36		17:26	09:14 (8)	18:20	15	08:15 (9)	20:15	21:08	21:54
4	08:50		08:17	09:00 (8)	07:21		07:58 (9)	07:08	06:03	05:19
	16:37		17:28	09:15 (8)	18:21	17	08:15 (9)	20:17	21:09	21:55
5	08:50		08:16	08:59 (8)	07:18		07:58 (9)	07:06	06:01	05:18
	16:38		17:30	09:15 (8)	18:23	17	08:15 (9)	20:19	21:11	21:56
6	08:49		08:14	08:58 (8)	07:16		07:59 (9)	07:03	05:59	05:18
	16:39		17:32	09:16 (8)	18:25	16	08:15 (9)	20:20	21:13	21:57
7	08:49		08:12	08:58 (8)	07:14		07:58 (9)	07:01	05:57	05:17
	16:41		17:34	09:16 (8)	18:27	15	08:13 (9)	20:22	21:15	21:58
8	08:48		08:10	08:58 (8)	07:11		07:59 (9)	06:59	05:55	05:17
	16:42		17:36	09:16 (8)	18:29	14	08:13 (9)	20:24	21:16	21:59
9	08:48		08:08	08:58 (8)	07:09		08:01 (9)	06:56	05:53	05:16
	16:43		17:38	09:16 (8)	18:31	10	08:11 (9)	20:26	21:18	22:00
10	08:47		08:07	08:59 (8)	07:07		08:03 (9)	06:54	05:52	05:16
	16:45		17:40	09:16 (8)	18:32	4	08:07 (9)	20:27	21:20	22:01
11	08:47		08:05	08:59 (8)	07:04			06:52	05:50	05:15
	16:46		17:42	09:15 (8)	18:34			20:29	21:21	22:01
12	08:46		08:03	09:00 (8)	07:02			06:49	05:48	05:15
	16:48		17:44	09:14 (8)	18:36			20:31	21:23	22:02
13	08:45		08:01	09:02 (8)	07:00			06:47	05:46	05:14
	16:49		17:46	09:13 (8)	18:38			20:33	21:24	22:03
14	08:44		07:59	09:04 (8)	06:57			06:45	05:45	05:14
	16:51		17:48	09:11 (8)	18:40			20:35	21:26	22:03
15	08:44		07:57		06:55			06:43	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	05:42	05:14
	16:54		17:51		18:43	9	07:47 (10)	20:38	21:29	22:04
17	08:42		07:53		06:50			07:36 (10)	06:38	05:40
	16:56		17:53		18:45	14	07:50 (10)	20:40	21:31	22:05
18	08:41		07:51		06:48			07:33 (10)	06:36	05:38
	16:57		17:55		18:47	17	07:50 (10)	20:42	21:32	22:05
19	08:40		07:49		06:46			07:32 (10)	06:34	05:37
	16:59		17:57		18:49	20	07:52 (10)	20:43	21:34	22:06
20	08:39		07:47		06:43			07:30 (10)	06:31	05:36
	17:01		17:59		18:50	21	07:51 (10)	20:45	21:35	22:06
21	08:38		07:45		06:41			07:30 (10)	06:29	05:34
	17:03		18:01		18:52	22	07:52 (10)	20:47	21:37	22:06
22	08:36		07:43		06:39			07:30 (10)	06:27	05:33
	17:04	6	09:17 (6)	18:03	18:54	22	07:52 (10)	20:49	21:38	22:06
23	08:35		09:09 (6)	07:40	06:36			07:29 (10)	06:25	05:32
	17:06	9	09:18 (6)	18:05	18:56	22	07:51 (10)	20:50	21:40	22:07
24	08:34		09:09 (6)	07:38	06:34			07:29 (10)	06:23	05:30
	17:08	10	09:19 (6)	18:07	18:57	22	07:51 (10)	20:52	21:41	22:07
25	08:33		09:09 (6)	07:36	06:31			07:30 (10)	06:21	05:29
	17:10	12	09:21 (6)	18:08	18:59	21	07:51 (10)	20:54	21:43	22:07
26	08:31		09:08 (6)	07:34	06:29			07:30 (10)	06:19	05:28
	17:11	13	09:21 (6)	18:10	19:01	19	07:49 (10)	20:56	21:44	22:07
27	08:30		09:08 (6)	07:32	06:27			07:31 (10)	06:17	05:27
	17:13	13	09:21 (6)	18:12	19:03	17	07:48 (10)	20:57	21:45	22:07
28	08:28		09:09 (6)	07:29	06:24			07:31 (10)	06:14	05:26
	17:15	13	09:22 (6)	18:14	19:05	14	07:45 (10)	20:59	21:47	22:07
29	08:27		09:09 (6)		07:22			08:34 (10)	06:12	05:24
	17:17	12	09:21 (6)		20:06	9	08:43 (10)	21:01	21:48	22:06
30	08:25		09:10 (6)		07:20			06:10	05:23	05:18
	17:19	12	09:22 (6)		20:08			21:03	21:49	22:06
31	08:24		09:11 (6)		07:17				05:22	
	17:21	10	09:21 (6)		20:10				21:50	
Potential sun hours	255		276		367		418		489	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	05:56	06:48	07:38	07:34	08:28 (8)	08:26			
	22:06	21:33	20:29	19:18	17:10	17	08:45 (8)	16:28		
2	05:19	05:58	06:49	07:40	07:36	08:28 (8)	08:28			
	22:06	21:31	20:27	19:15	17:08	18	08:46 (8)	16:27		
3	05:20	05:59	06:51	07:42	07:37	08:28 (8)	08:29			
	22:05	21:29	20:24	19:13	17:06	18	08:46 (8)	16:27		
4	05:21	06:01	06:53	07:43	08:39 (9)	07:39	08:28 (8)	08:31		
	22:05	21:27	20:22	19:11	8	08:47 (9)	17:04	18	08:46 (8)	16:26
5	05:21	06:02	06:54	07:45	08:37 (9)	07:41	08:28 (8)	08:32		
	22:04	21:26	20:20	19:08	12	08:49 (9)	17:02	17	08:45 (8)	16:26
6	05:22	06:04	06:56	07:47	08:36 (9)	07:43	08:29 (8)	08:33		
	22:04	21:24	20:17	19:06	14	08:50 (9)	17:01	16	08:45 (8)	16:25
7	05:23	06:06	06:58	07:49	08:34 (9)	07:45	08:30 (8)	08:35		
	22:03	21:22	20:15	19:04	16	08:50 (9)	16:59	14	08:44 (8)	16:25
8	05:24	06:07	06:59	07:50	08:34 (9)	07:47	08:31 (8)	08:36		
	22:02	21:20	20:13	19:01	16	08:50 (9)	16:57	12	08:43 (8)	16:24
9	05:25	06:09	07:01	07:52	08:33 (9)	07:49	08:32 (8)	08:37		
	22:02	21:18	20:10	18:59	17	08:50 (9)	16:55	13	08:48 (6)	16:24
10	05:26	06:11	07:03	07:54	08:34 (9)	07:50	08:35 (8)	08:38		
	22:01	21:16	20:08	18:57	15	08:49 (9)	16:54	13	08:51 (6)	16:24
11	05:27	06:12	07:04	07:56	08:34 (9)	07:52	08:41 (6)	08:39		
	22:00	21:14	20:05	18:54	15	08:49 (9)	16:52	11	08:52 (6)	16:24
12	05:28	06:14	07:06	07:57	08:34 (9)	07:54	08:41 (6)	08:40		
	21:59	21:12	20:03	18:52	13	08:47 (9)	16:51	12	08:53 (6)	16:23
13	05:29	06:16	07:08	07:59	08:36 (9)	07:56	08:41 (6)	08:41		
	21:58	21:10	20:01	18:50	9	08:45 (9)	16:49	12	08:53 (6)	16:23
14	05:31	06:17	07:09	8	08:25 (10)	08:01	07:58	08:41 (6)	08:42	
	21:57	21:08	19:58	8	08:33 (10)	18:48	16:47	13	08:54 (6)	16:23
15	05:32	06:19	07:11	08:22 (10)	08:03	07:59	08:41 (6)	08:43		
	21:56	21:06	19:56	13	08:35 (10)	18:45	16:46	13	08:54 (6)	16:23
16	05:33	06:21	07:13	08:19 (10)	08:05	08:01	08:41 (6)	08:44		
	21:55	21:04	19:54	17	08:36 (10)	18:43	16:45	13	08:54 (6)	16:23
17	05:34	06:22	07:14	08:18 (10)	08:06	08:03	08:42 (6)	08:45		
	21:54	21:02	19:51	19	08:37 (10)	18:41	16:43	12	08:54 (6)	16:24
18	05:36	06:24	07:16	08:17 (10)	08:08	08:05	08:43 (6)	08:46		
	21:53	21:00	19:49	21	08:38 (10)	18:39	16:42	10	08:53 (6)	16:24
19	05:37	06:26	07:18	08:16 (10)	08:10	08:07	08:44 (6)	08:46		
	21:52	20:58	19:46	22	08:38 (10)	18:37	16:40	9	08:53 (6)	16:24
20	05:38	06:27	07:19	08:16 (10)	08:12	08:08	08:46 (6)	08:47		
	21:51	20:56	19:44	22	08:38 (10)	18:34	16:39	6	08:52 (6)	16:25
21	05:40	06:29	07:21	08:15 (10)	08:14	08:10		08:48		
	21:49	20:54	19:42	23	08:38 (10)	18:32	16:38		16:25	
22	05:41	06:31	07:23	08:15 (10)	08:15	08:12		08:48		
	21:48	20:51	19:39	22	08:37 (10)	18:30	16:37		16:25	
23	05:42	06:32	07:25	08:15 (10)	08:17	08:13		08:49		
	21:47	20:49	19:37	21	08:36 (10)	18:28	16:36		16:26	
24	05:44	06:34	07:26	08:16 (10)	08:19	08:15		08:49		
	21:45	20:47	19:34	20	08:36 (10)	18:26	16:34		16:27	
25	05:45	06:36	07:28	08:16 (10)	07:21	08:17		08:49		
	21:44	20:45	19:32	17	08:33 (10)	17:24	16:33		16:27	
26	05:47	06:37	07:30	08:17 (10)	07:23	08:18		08:50		
	21:42	20:42	19:30	15	08:32 (10)	17:22	16:32		16:28	
27	05:48	06:39	07:31	08:19 (10)	07:24	08:20		08:50		
	21:41	20:40	19:27	11	08:30 (10)	17:20	16:31		16:29	
28	05:50	06:41	07:33		07:26	08:33 (8)	08:22		08:50	
	21:39	20:38	19:25		17:18	8	08:41 (8)	16:30	16:29	
29	05:51	06:43	07:35		07:28	08:31 (8)	08:23		08:50	
	21:38	20:36	19:22		17:16	12	08:43 (8)	16:30	16:30	
30	05:53	06:44	07:37		07:30	08:30 (8)	08:25		08:50	
	21:36	20:33	19:20		17:14	14	08:44 (8)	16:29	16:31	
31	05:55	06:46			07:32	08:29 (8)		08:50		
	21:34	20:31			17:12	16	08:45 (8)		16:32	
Use of sun	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)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

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	06:07 22:02	06:59 21:20	07:50 20:13		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	06:09 22:02	07:01 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 18:32	07:32 (9) 07:43 (9)	06:54 20:27	05:52 21:20	05:16 22:01	06:11 22:01	07:03 21:16	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	07:32 (9) 07:43 (9)	06:52 20:29	05:50 21:21	05:15 22:01	06:12 22:00	07:04 21:14	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	07:32 (9) 07:43 (9)	06:49 20:31	05:48 21:23	05:15 22:02	06:14 21:59	07:06 21:12	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	07:32 (9) 07:41 (9)	06:47 20:33	05:46 21:25	05:15 22:03	06:16 21:58	07:08 21:10	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	07:34 (9) 07:40 (9)	06:45 20:35	05:45 21:26	05:14 22:03	06:17 21:57	07:09 19:58	08:01 18:48		07:58 16:48	08:42 16:23
15	08:44 16:52	07:57 17:49	06:55 18:41	06:43 18:41	05:43 20:36	05:14 21:28	05:32 22:04	06:19 21:56	07:11 19:56	08:03 18:45	08:45 (8) 08:51 (8)	08:00 16:46	08:43 16:23
16	08:43 16:54	07:55 17:51	06:53 18:43	06:40 18:43	05:42 20:38	05:14 21:29	05:33 22:04	06:21 21:55	07:13 19:54	08:05 18:43	08:44 (8) 08:53 (8)	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 18:06	08:43 (8) 08:54 (8)	08:03 16:43	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	08:08 18:39	08:42 (8) 08:54 (8)	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 21:10	05:14 22:06	05:37 21:52	06:26 20:58	07:18 19:46	08:06 18:06	08:42 (8) 08:54 (8)	08:07 16:40	08:46 16:24
20	08:39 17:01	07:47 17:59	06:43 18:50	06:31 20:45	05:36 21:35	05:14 22:06	05:38 21:51	06:27 20:56	07:20 19:44	08:06 18:06	08:42 (8) 08:54 (8)	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	08:07 18:07	08:42 (8) 08:54 (8)	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	06:31 20:51	07:23 19:39	08:08 18:30	08:44 (8) 08:50 (8)	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 22:07	05:43 21:47	06:32 20:49	07:25 19:37	08:07 18:28	08:45 (8) 08:56 (8)	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	07:26 20:47	07:26 19:34	08:07 18:26	08:51 (8) 08:04 (10)	08:15 16:34	08:49 16:27
25	08:33 17:10	07:36 18:08	06:31 18:59	06:21 20:54	05:29 21:43	05:15 22:07	05:45 21:44	06:36 20:45	07:28 19:32	08:06 18:24	08:06 (8) 08:18 (9)	08:17 16:33	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	06:37 20:43	07:30 19:30	08:05 18:22	08:13 (9) 08:20 (9)	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	05:48 21:41	06:39 20:40	07:31 19:27	08:20 17:20		08:20 16:31	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	07:33 20:38	07:33 19:25	08:22 17:18		08:22 16:31	08:50 16:29
29	08:27 17:17		07:22 20:06	06:12 20:20	05:25 21:01	05:17 21:48	05:51 22:06	06:43 20:36	07:35 19:22	08:23 17:16	08:15 (9) 08:18 (9)	08:23 16:30	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	08:24 17:14	08:13 (9) 08:20 (9)	08:25 16:29	08:50 16:31
31	08:24 17:21		07:17 20:10	06:03 21:50	05:13 21:50	05:06 22:06	05:55 21:34	06:46 20:31	07:32 19:20	08:24 17:12		08:24 16:32	08:50 16:32
Potential sun hours	255	276	367		418	489	503	506	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							18	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 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	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 16:27
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	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 17:28	07:21 18:22	07:08 20:17	06:03 21:09	05:19 21:55	05:21 22:05	06:01 21:27	06:53 20:22	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	05:18 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	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	06:59 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 16:43	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 18:32	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	07:04 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 18:55	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	07:57 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 21:25	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	07:59 17:48	06:57 18:40	06:45 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	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 18:45	08:00 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 19:54	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 16:57	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	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	06:31 20:45	05:36 21:36	05:14 22:06	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	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 16:25
23	08:35 17:06	07:40 18:05	06:36 18:56	06:25 20:50	05:32 21:40	05:15 22:07	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	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 18:08	06:32 18:59	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	08:17 16:33	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 17:22	08:19 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	05:48 21:41	06:39 20:40	07:31 19:27	07:25 17:20	08:20 16:31	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 17:18	08:22 16:31	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 19:23	07:28 17:16	08:23 16:30	08:50 16:30
30	08:25 17:19		07:20 20:08	06:10 21:03	05:24 21:49	05:18 22:06	05:53 21:36	06:44 20:34	07:37 19:20	07:30 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	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)	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: 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
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	07:57	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	16:24
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	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 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	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	08:27 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	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	05:19 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	06:59 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 16:44	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	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 16:46	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 16:24
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	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	08:44 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	07:57 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 21:27	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	08:42 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	05:39 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	08:45 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	05:37 21:52	06:26 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	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 16:26
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	05:43 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 18:07	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 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 22:06	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	08:31 17:12	07:34 18:10	06:29 19:01	06:19 20:55	05:28 21:44	05:16 22:06	05:47 21:42	06:37 20:42	07:30 19:30	07:23 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	05:48 21:41	06:39 20:40	07:31 19:27	07:24 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	05:50 21:39	06:41 20:38	07:33 19:25	07:26 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	05:51 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	05:53 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		05:55 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												
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: 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 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	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	06:07 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	08:27 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	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	07:06 20:19	06:01 21:11	05:19 21:56	05:21 22:04	06:03 21:25	06:54 20:19	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 22:03	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	06:59 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 16:44	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	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 16:46	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 16:24
13	08:45 16:49	08:01 17:46	07:00 18:38	06:47 20:33	05:47 21:24	05:15 22:02	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	08:44 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 16:48	08:42 16:23
15	08:43 16:53	07:57 17:50	06:55 18:41	06:43 20:36	05:43 21:27	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 16:24
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 16:58	07:51 17:55	06:48 18:47	06:36 20:41	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	08:45 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	05:37 21:52	06:26 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	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	07:45 18:01	06:41 18:52	06:29 20:47	05:34 21:37	05:14 22:06	05:40 21:49	06:29 20:53	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	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 22:06	05:43 21:46	06:32 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	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	08:32 17:10	07:36 18:08	06:31 18:59	06:21 20:54	05:29 21:42	05:15 22:06	05:45 21:44	06:36 20:45	07:28 19:32	07:21 17:24	08:17 16:34	08:49 16:27
26	08:31 17:12	07:34 18:10	06:29 19:01	06:19 20:55	05:28 21:44	05:16 22:06	05:47 21:42	06:38 20:42	07:30 19:30	07:23 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	05:48 21:41	06:39 20:40	07:31 19:27	07:24 17:20	08:20 16:32	08:50 16:29
28	08:28 17:15	07:29 18:14	06:24 19:04	06:15 20:59	05:26 21:46	05:17 22:06	05:50 21:39	06:41 20:38	07:33 19:25	07:26 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	05:52 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	05:53 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		05:55 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	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)
	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: 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 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	08:27 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	07:48 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 16:55	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	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 16:46	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	07:55 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	07:57 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 21:27	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	08:45 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	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 20:55	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 22:06	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 17:24	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 22:06	05:47 21:42	06:37 20:42	07:30 19:29	08:22 17:22	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 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	05:50 21:39	06:41 20:38	07:33 19:25	08:26 17:18	08:21 16:31	08:50 16:29
29	08:27 17:17		07:22 20:06	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 17:16	08:23 16:30	08:50 16:30
30	08:25 17:19		07:20 20:08	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 17:14	08:25 16:29	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	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:

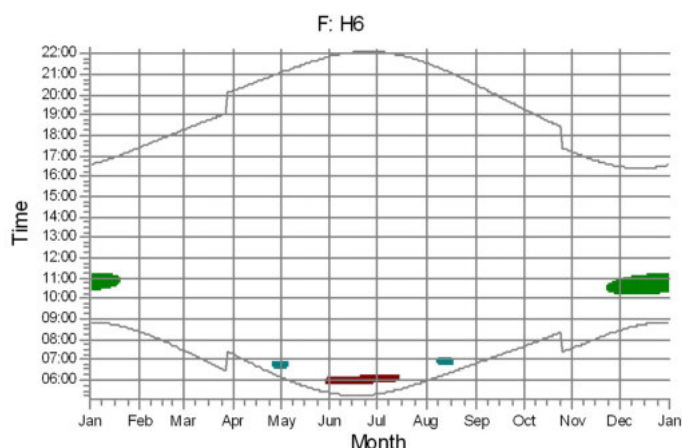
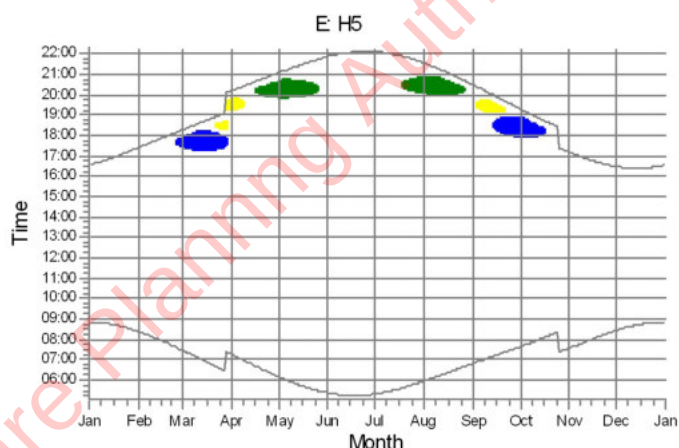
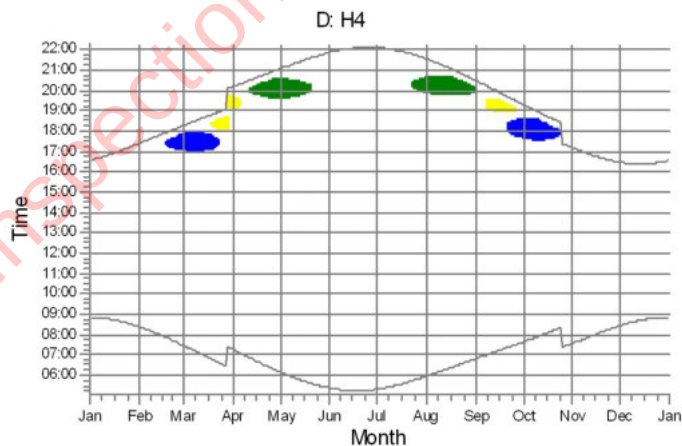
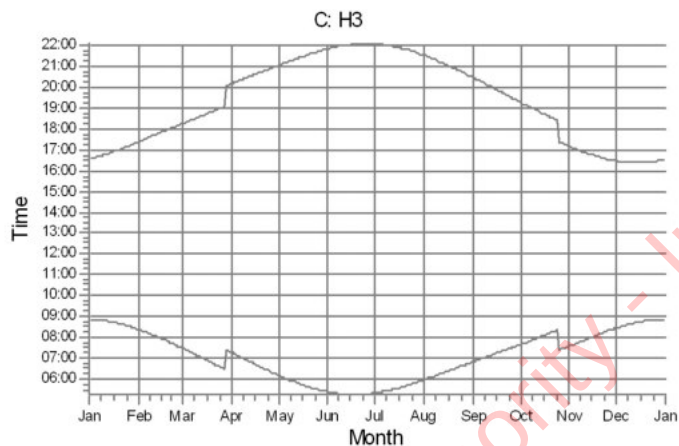
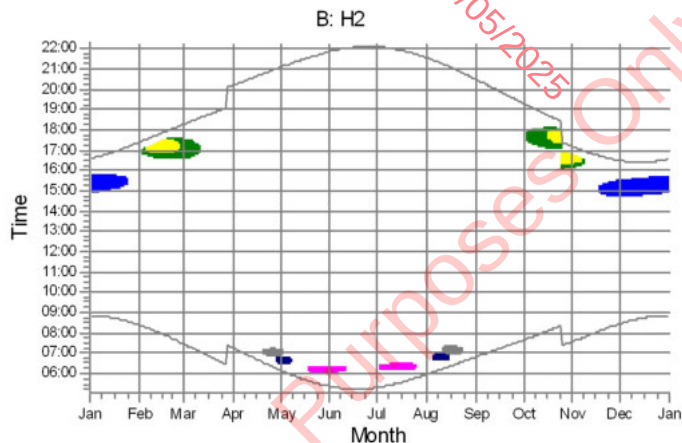
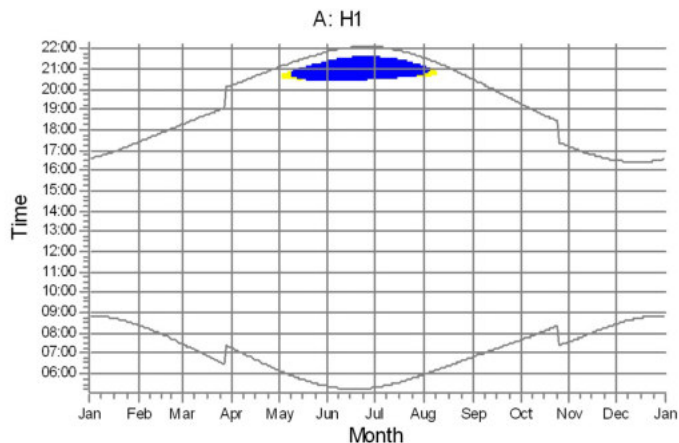
3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

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, graphical

Calculation: 6778 Moanmore Lower Worst Case



WTGs

	1: Moanmore Lower T1		4: Moanmore T1		7: Moanmore T4
	2: Moanmore Lower T2		5: Moanmore T2		8: Moanmore T5
	3: Moanmore Lower T3		6: Moanmore 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

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

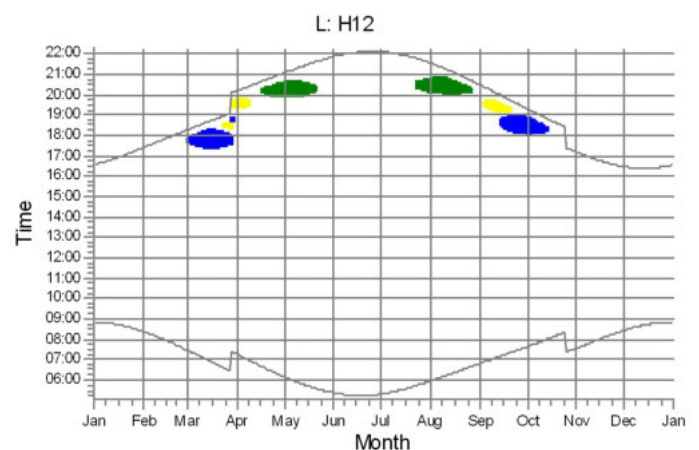
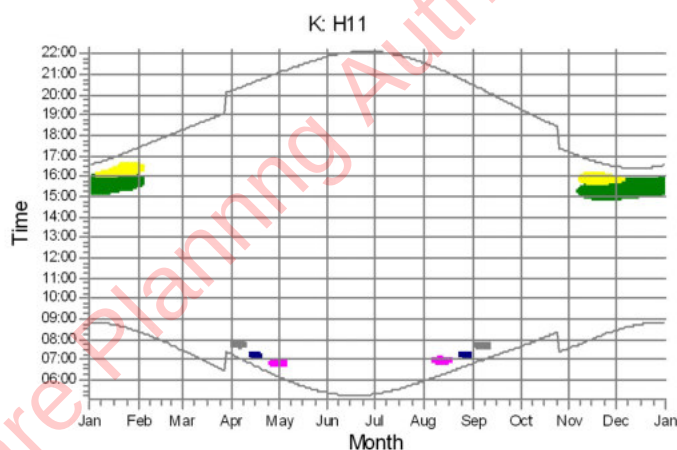
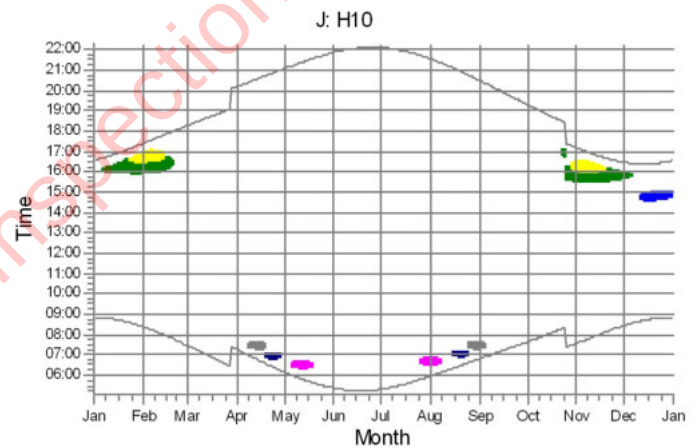
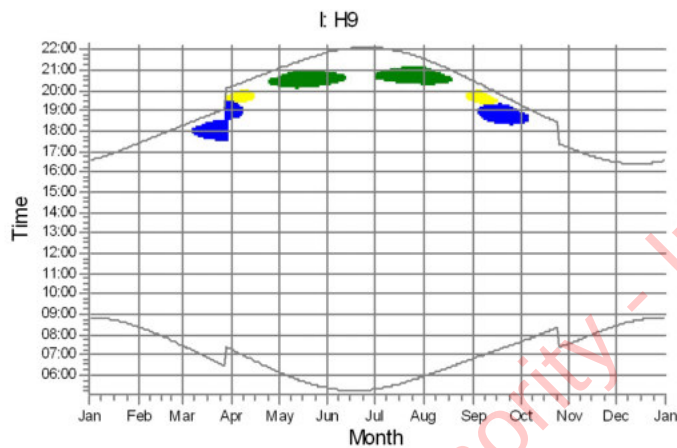
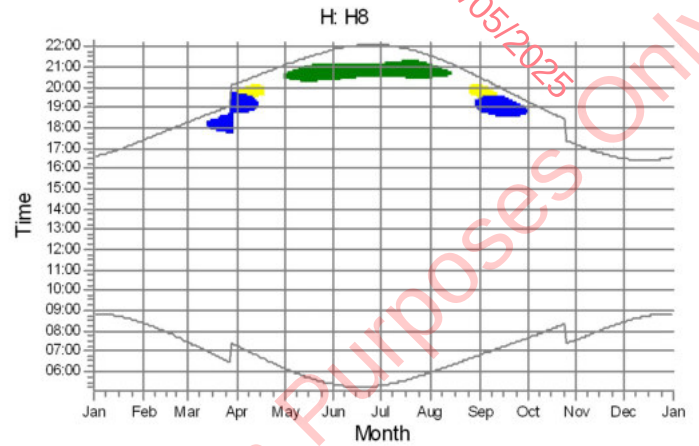
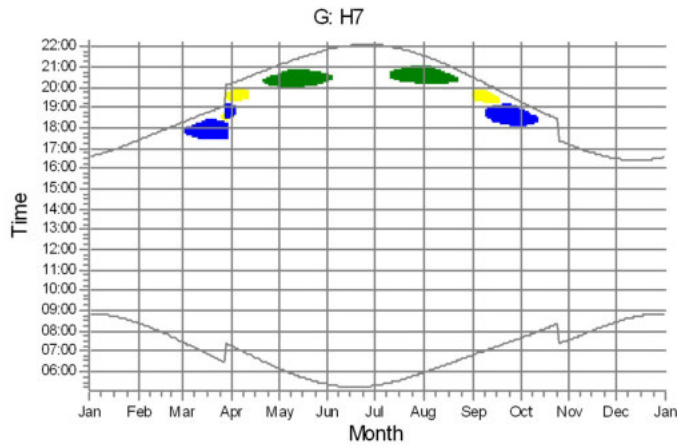
Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar, 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:

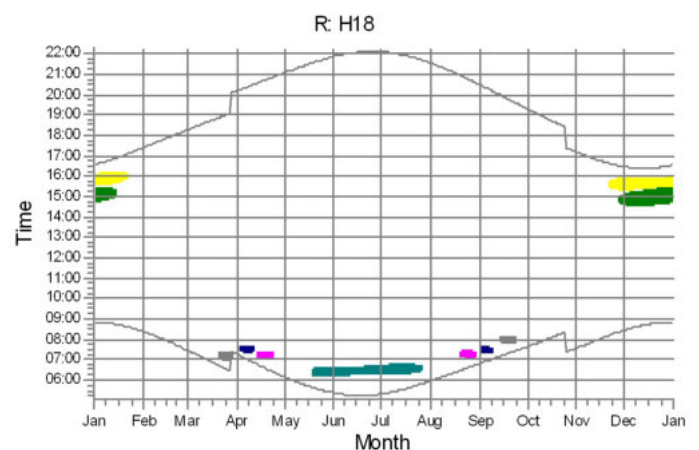
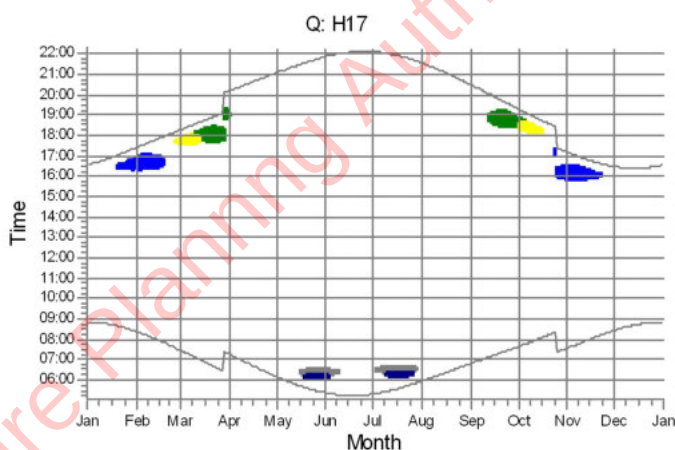
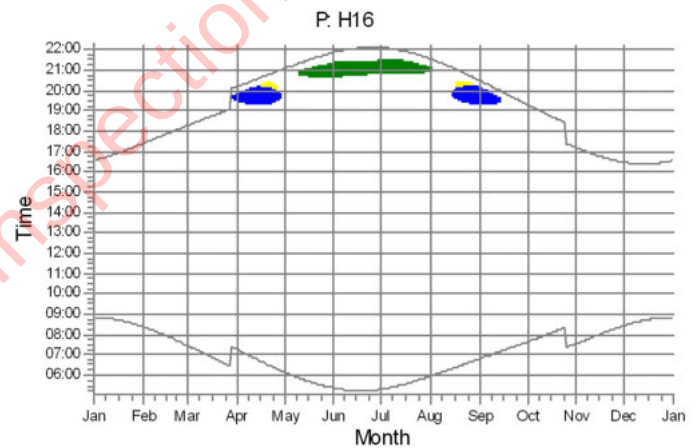
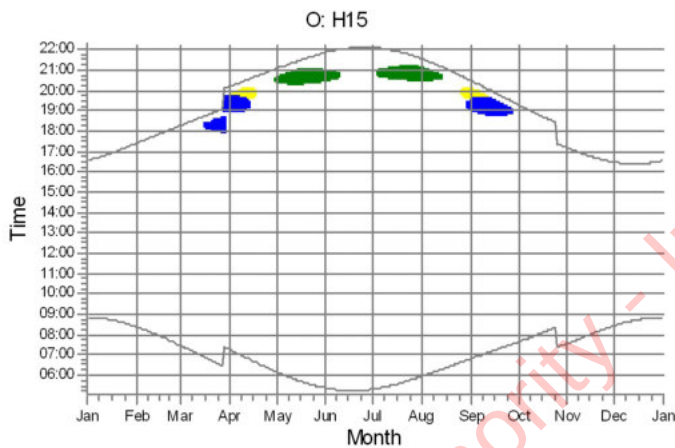
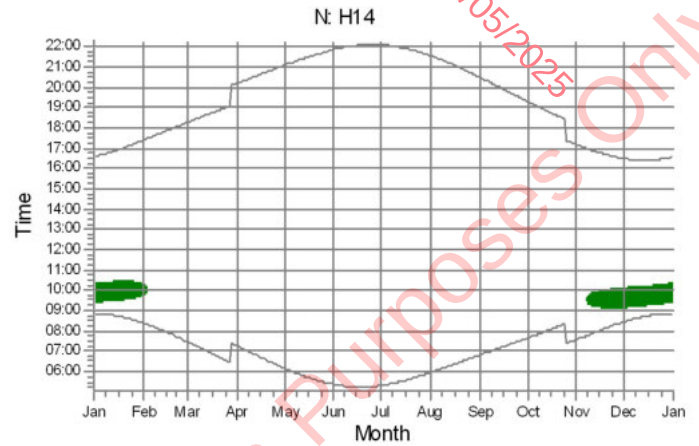
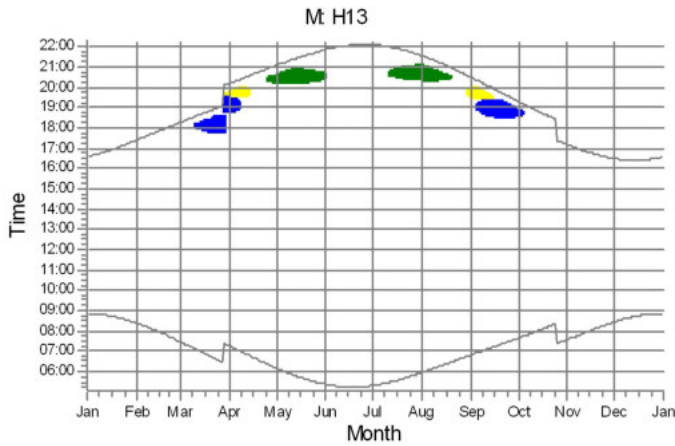
3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

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, 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

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

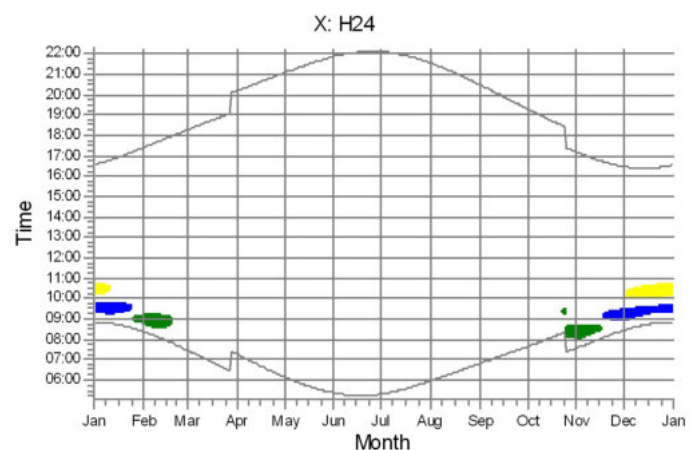
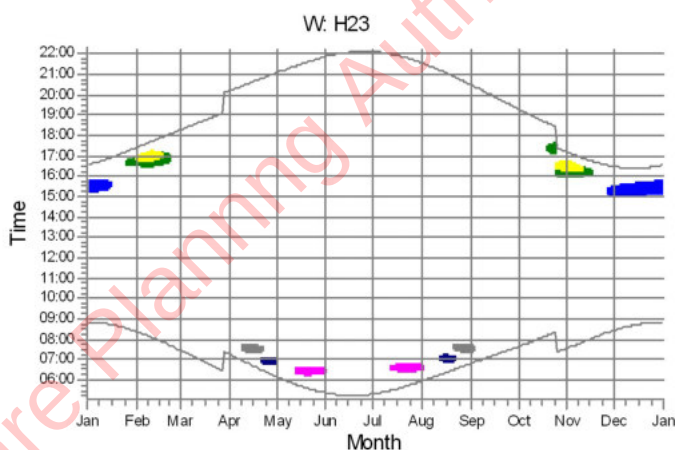
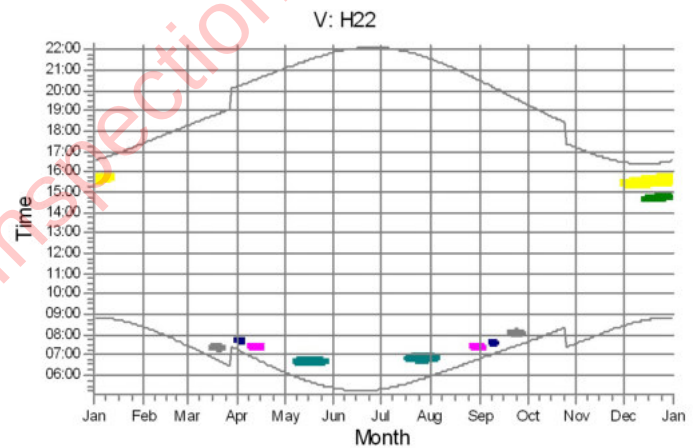
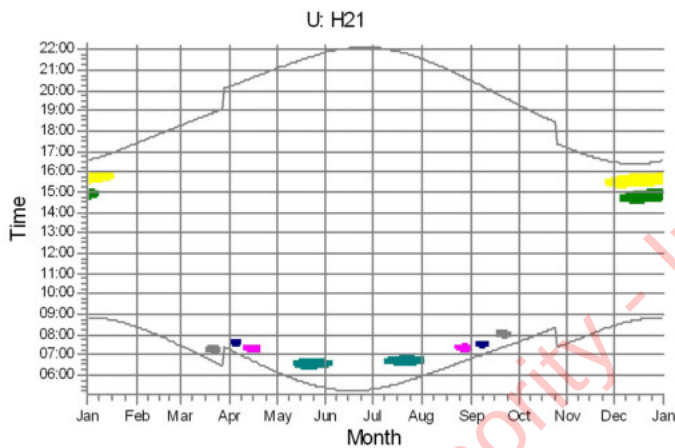
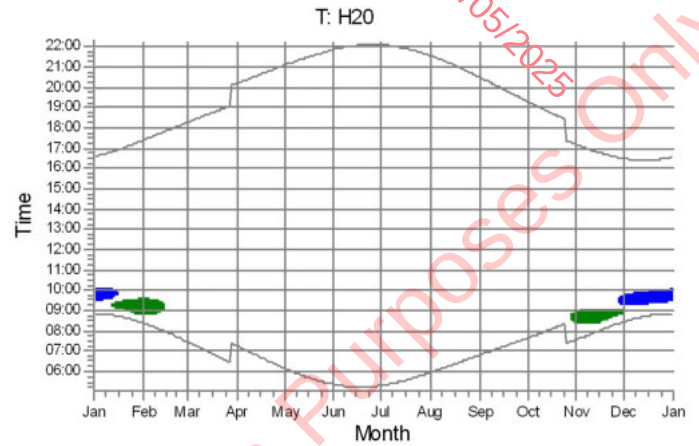
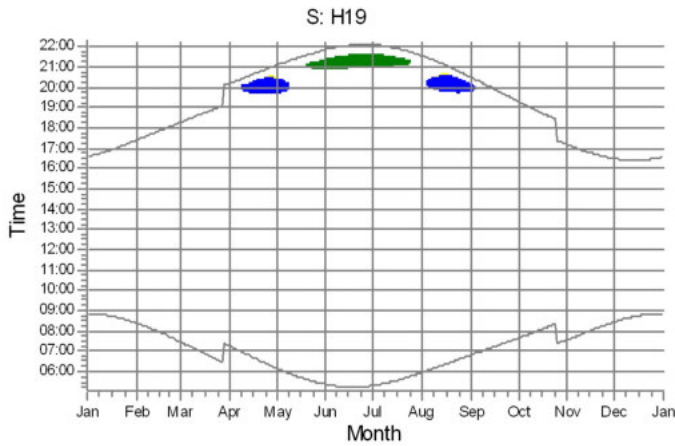
Kathryn Feeney / kfeeney@jodireland.com

Calculated:

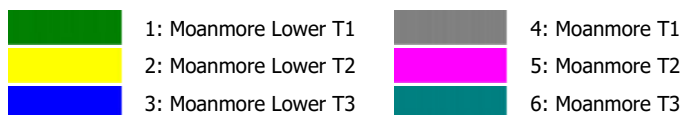
16/12/2024 15:13/4.0.552

SHADOW - Calendar, graphical

Calculation: 6778 Moanmore Lower Worst Case



WTGs



 7: Moanmore T4

Project:

6778 Moanmore Lower WF

Description:

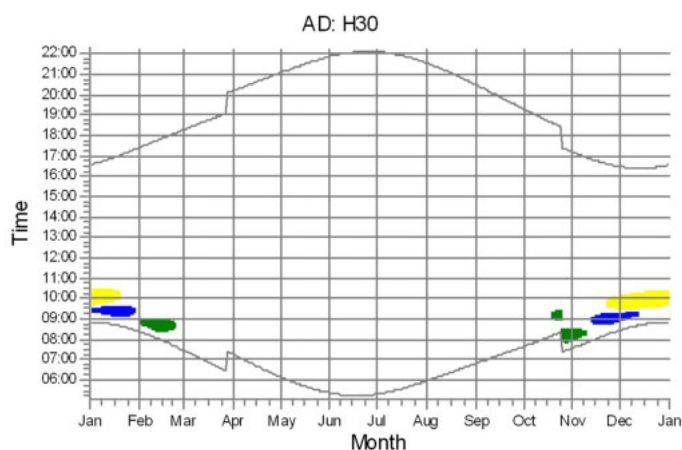
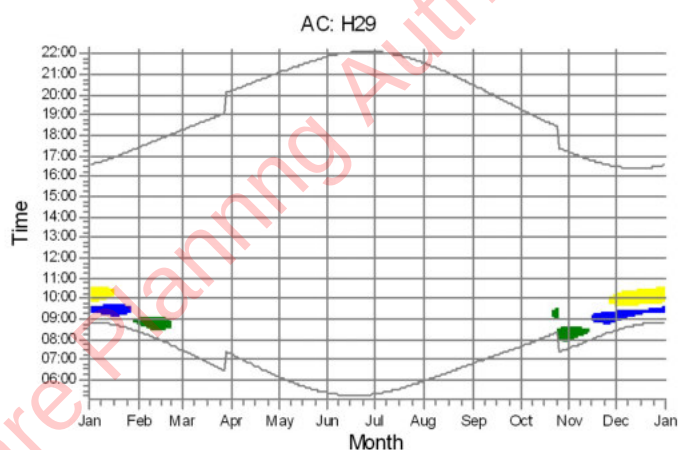
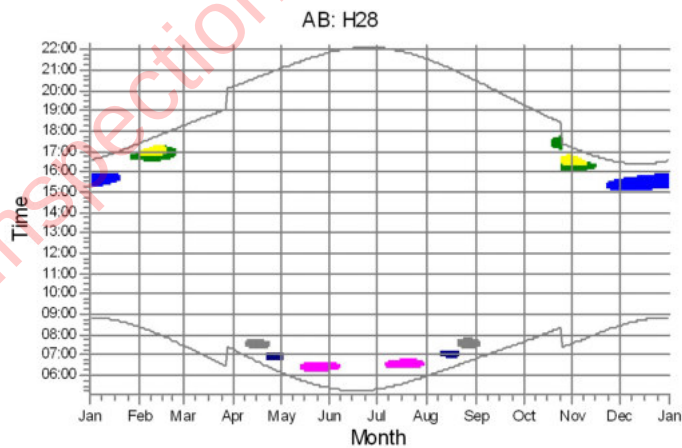
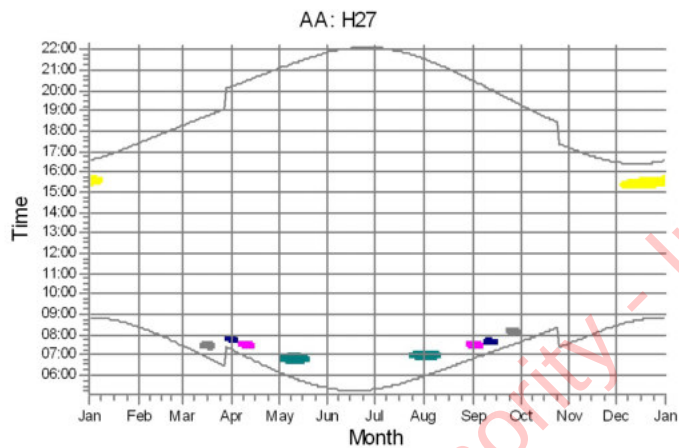
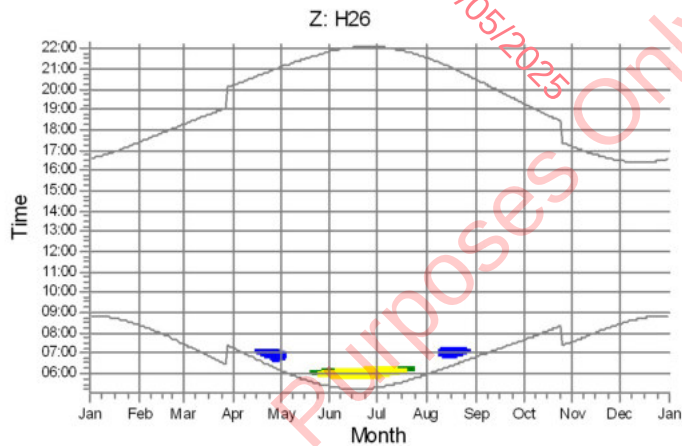
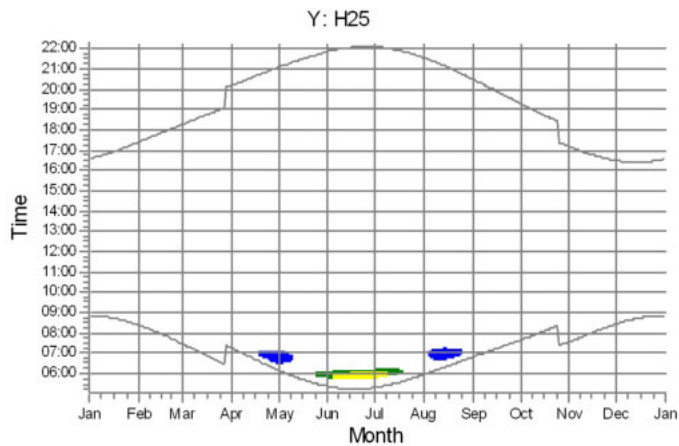
3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

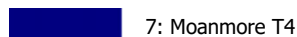
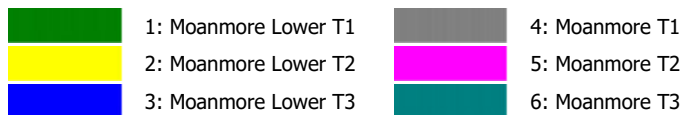
Jennings O'Donovan
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
Kathryn Feeney / kfeeney@jodireland.com
Calculated:
16/12/2024 15:13/4.0.552

SHADOW - Calendar, graphical

Calculation: 6778 Moanmore Lower Worst Case



WTGs



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

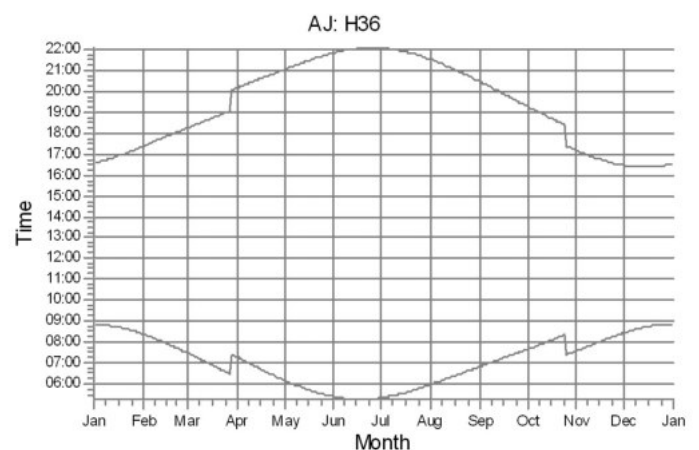
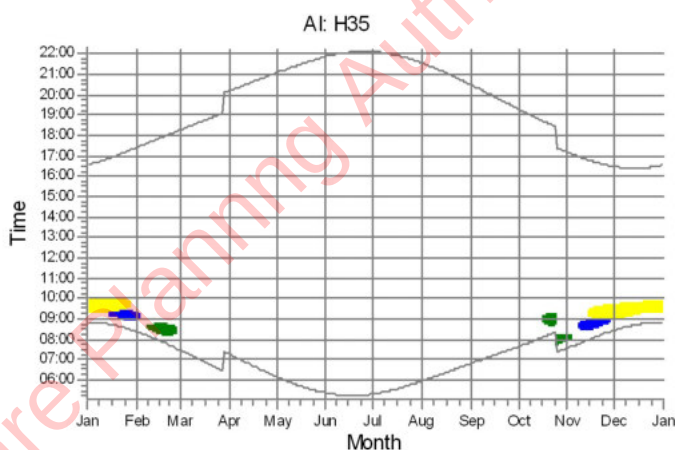
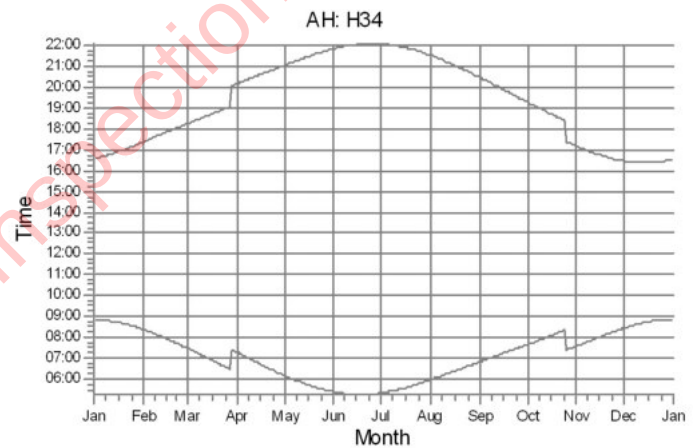
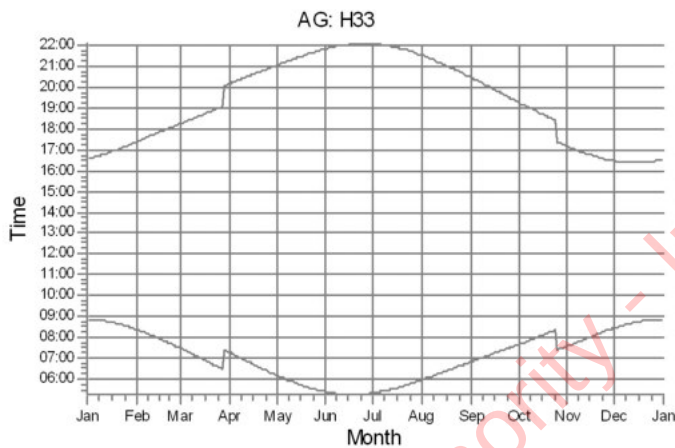
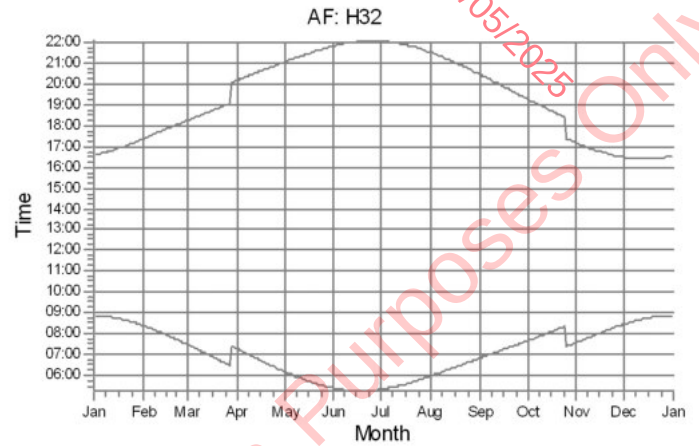
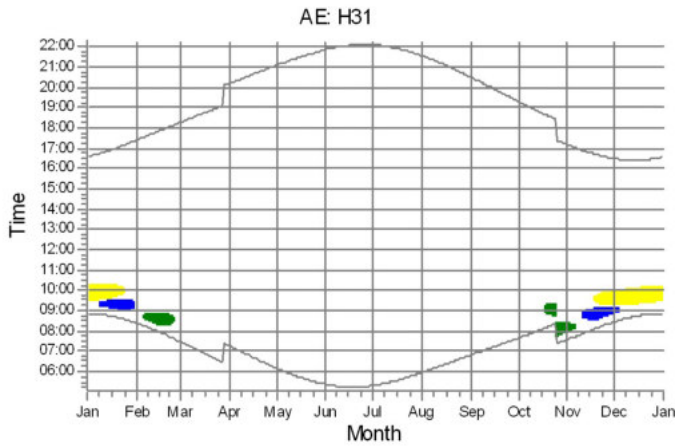
Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar, 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

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

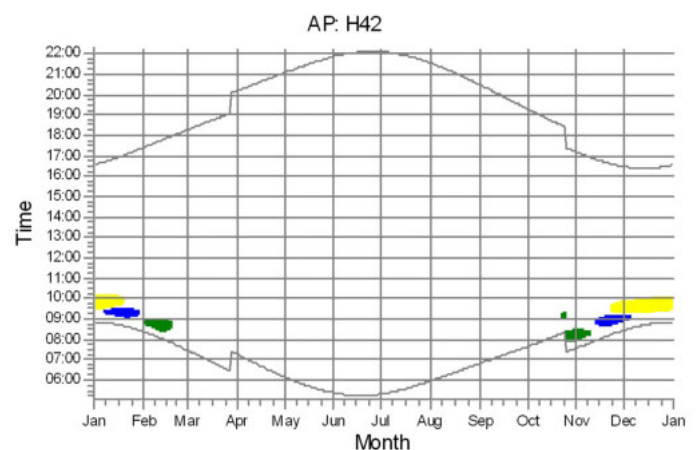
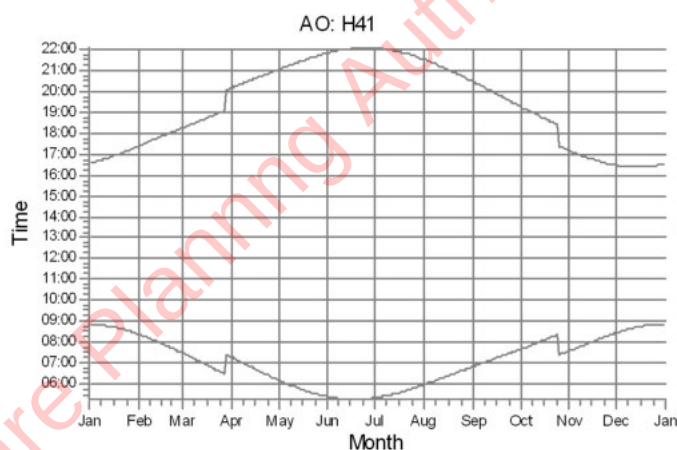
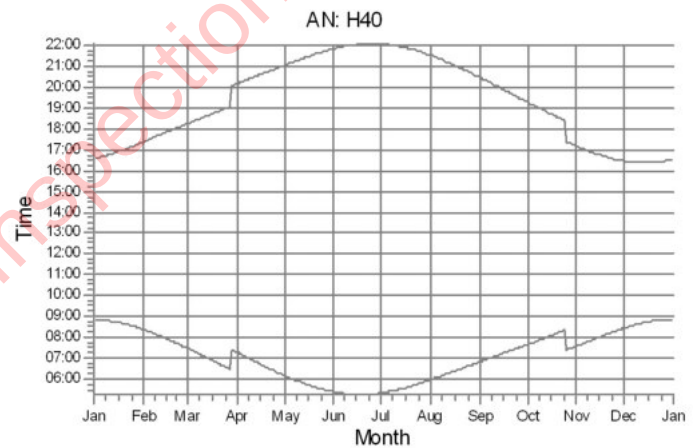
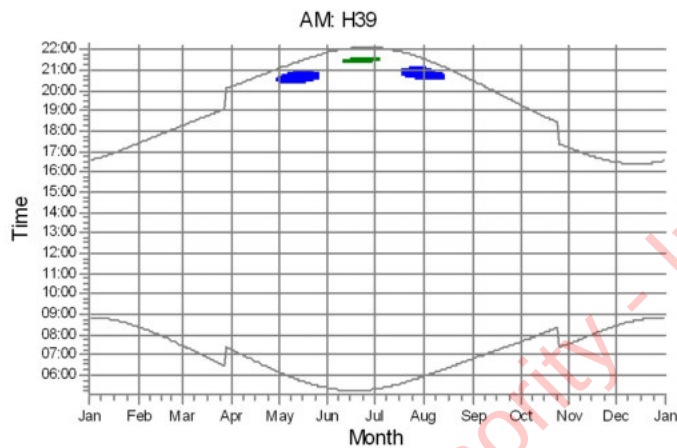
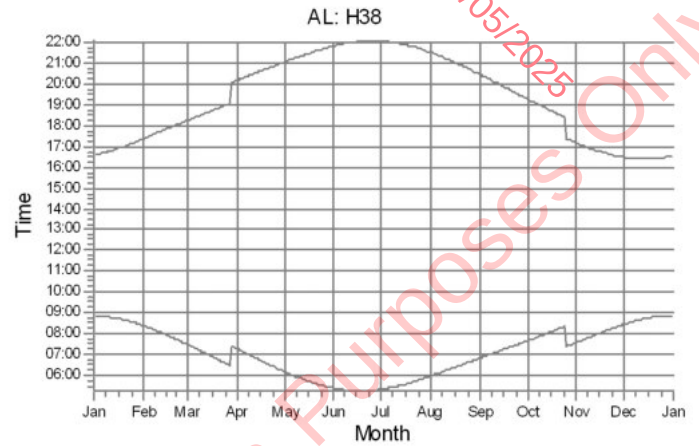
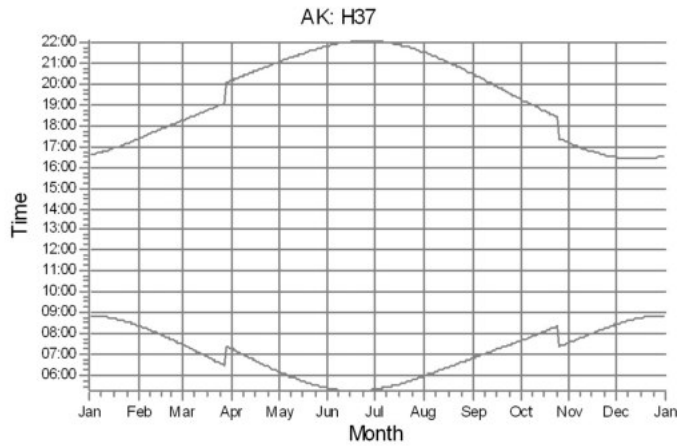
Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar, 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:

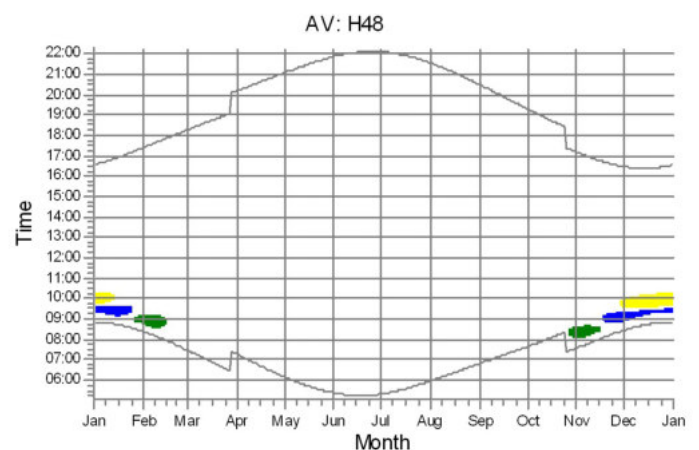
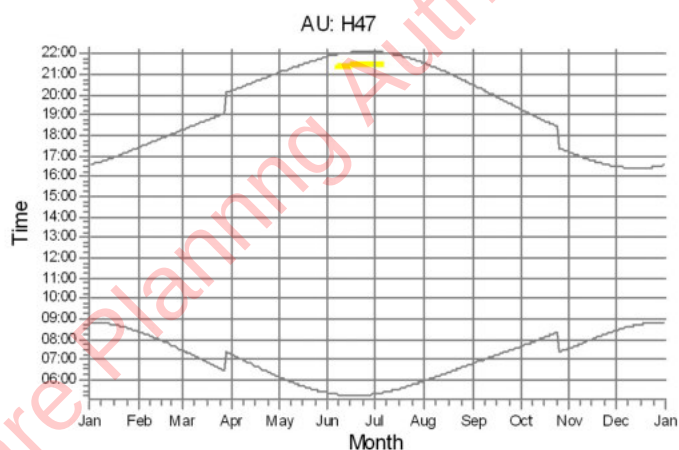
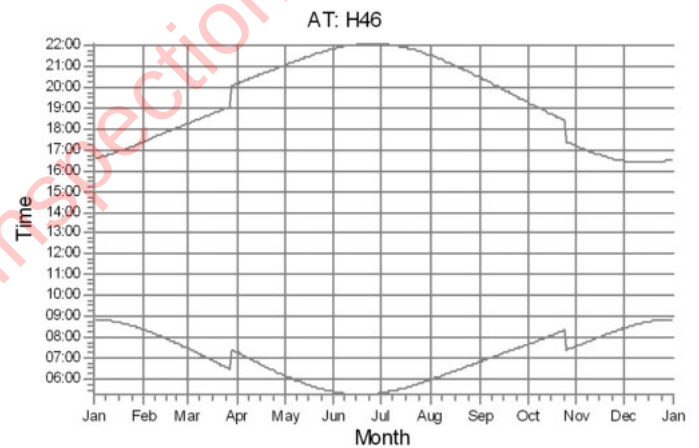
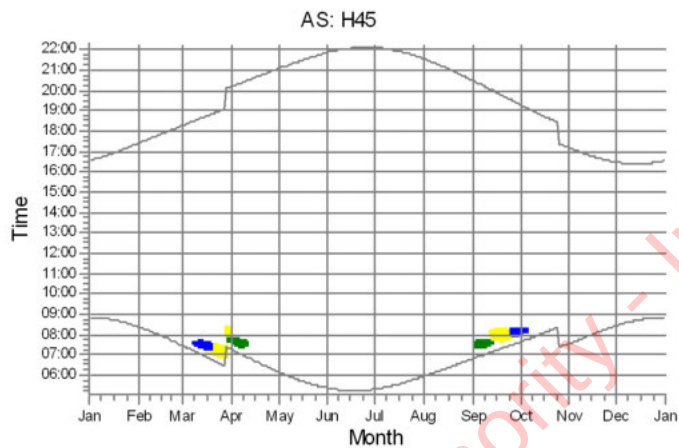
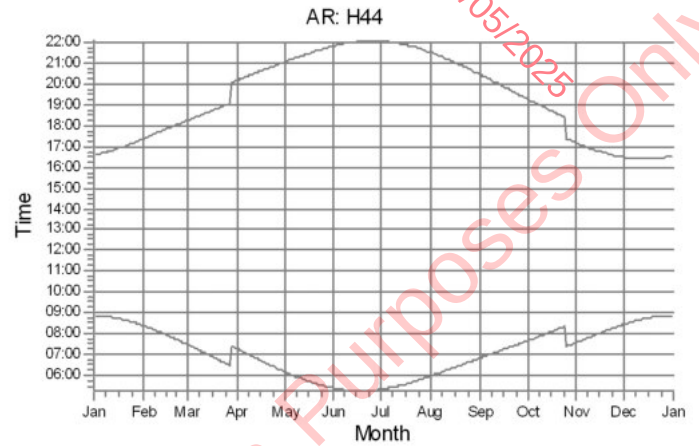
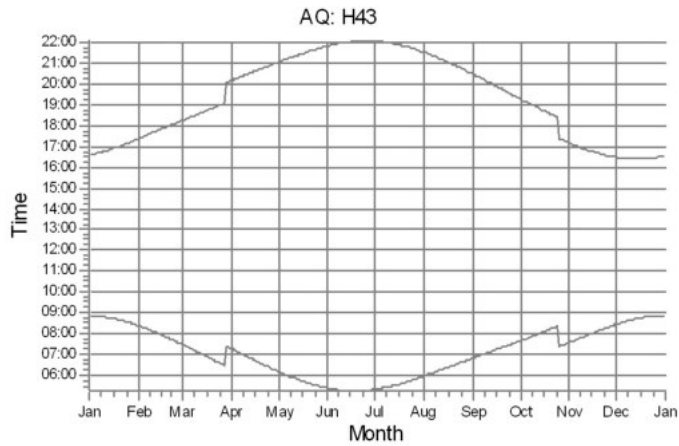
3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

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, 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:

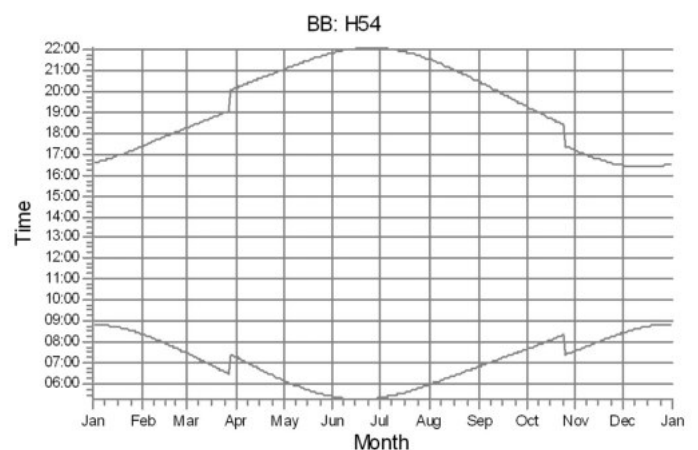
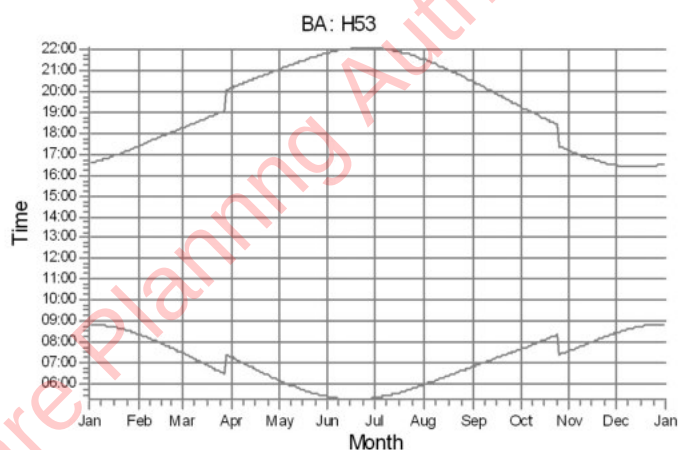
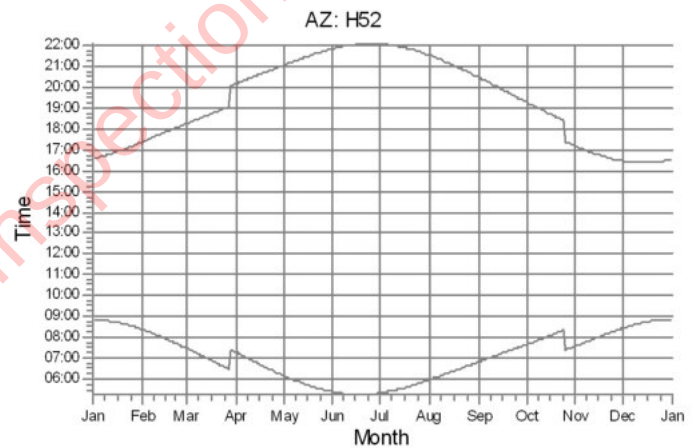
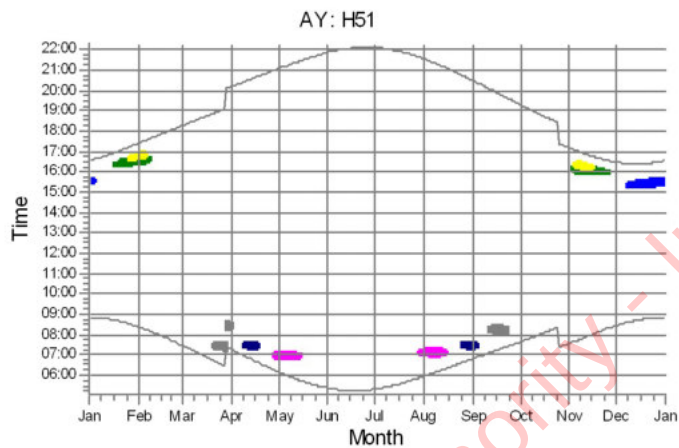
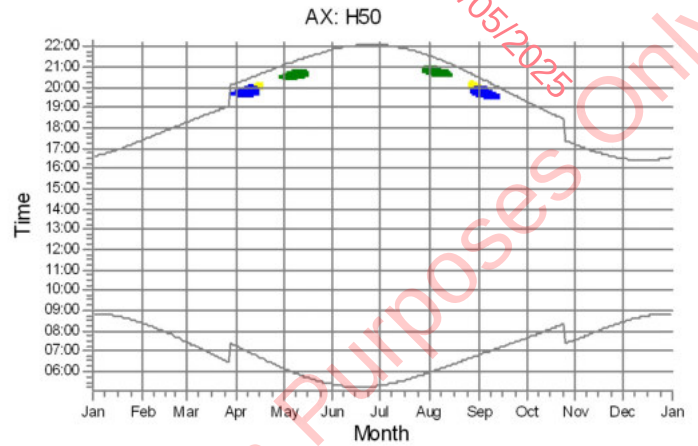
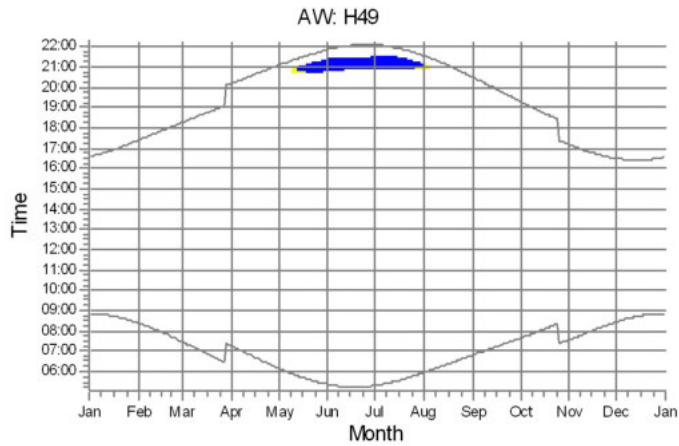
3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

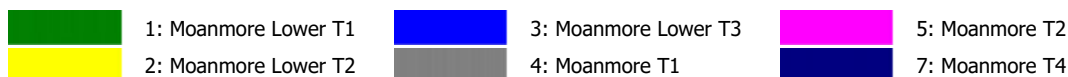
Jennings O'Donovan
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
Kathryn Feeney / kfeeney@jodireland.com
Calculated:
16/12/2024 15:13/4.0.552

SHADOW - Calendar, graphical

Calculation: 6778 Moanmore Lower Worst Case



WTGs



Project:

6778 Moanmore Lower WF

Description:

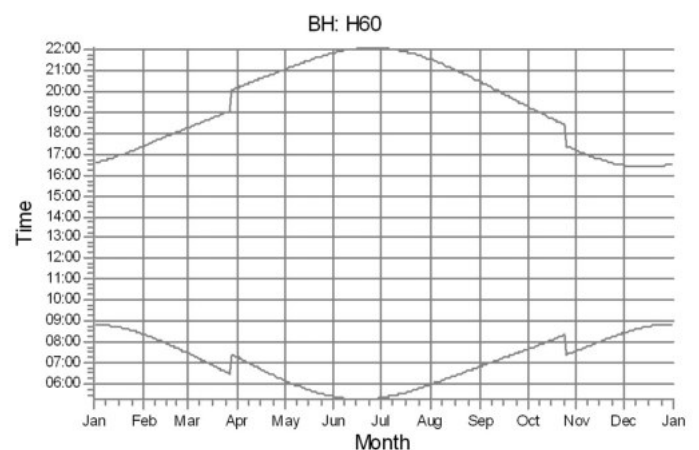
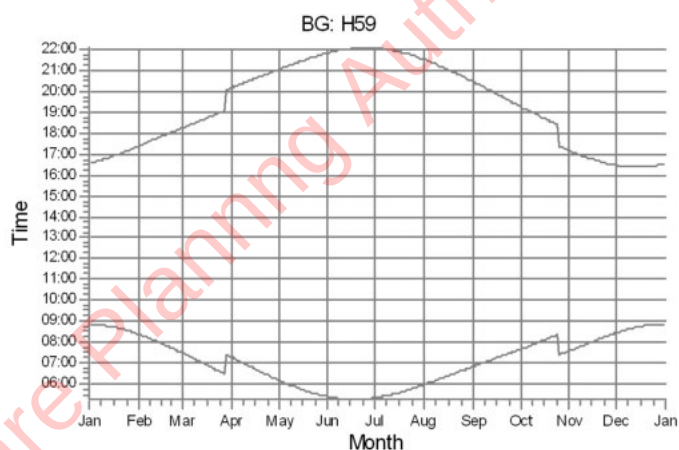
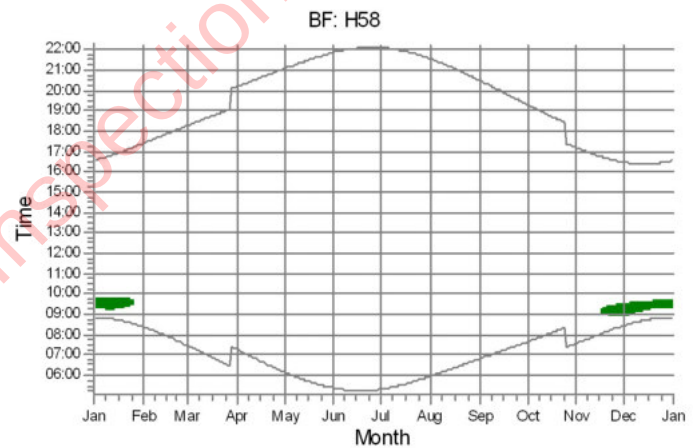
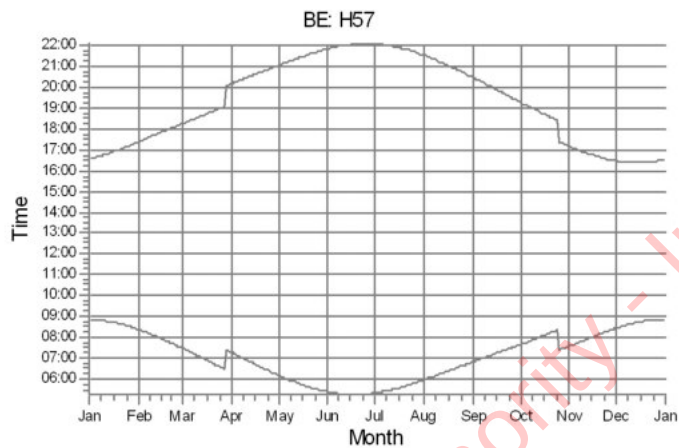
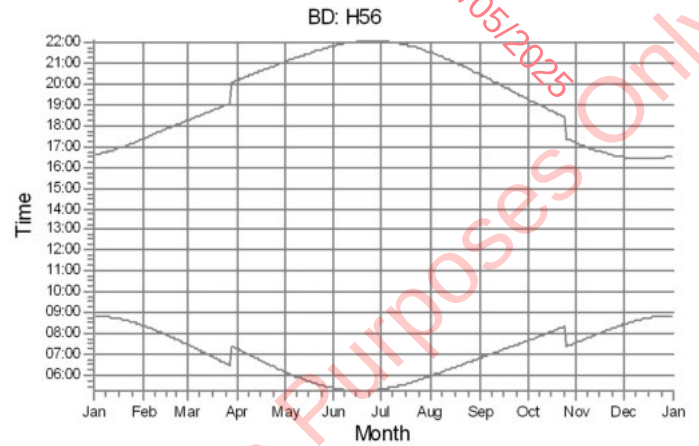
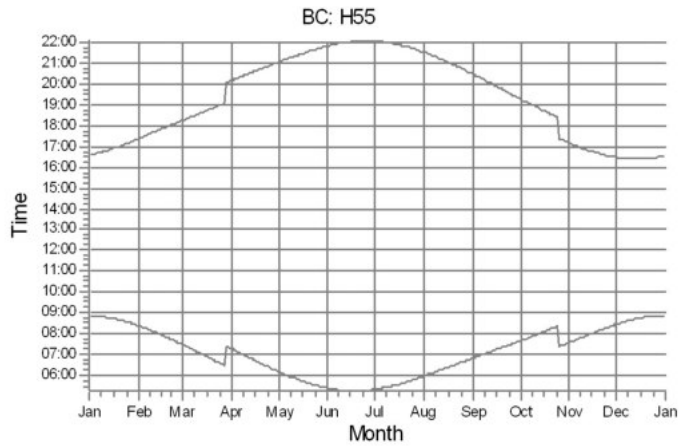
3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

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, graphical

Calculation: 6778 Moanmore Lower Worst Case



WTGs

1: Moanmore Lower T1

Project:

6778 Moanmore Lower WF

Description:

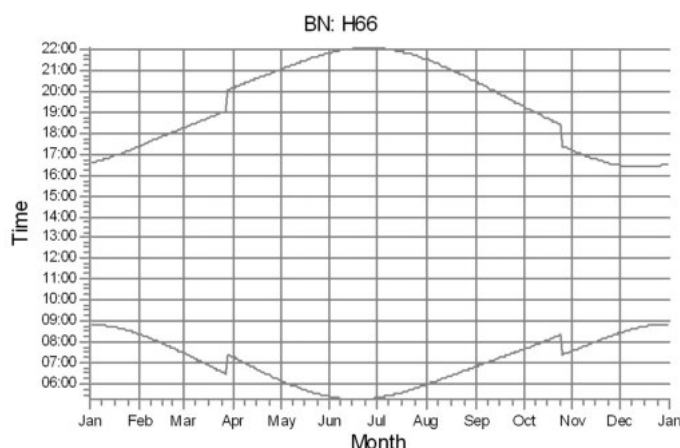
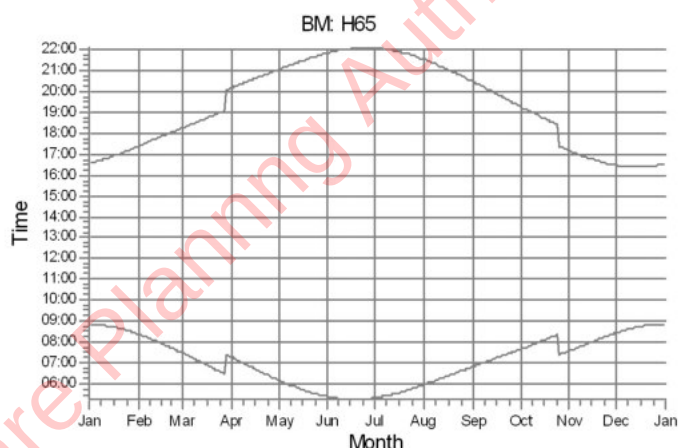
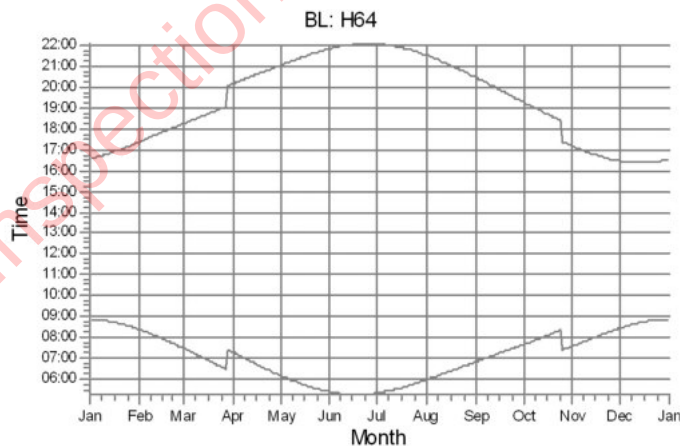
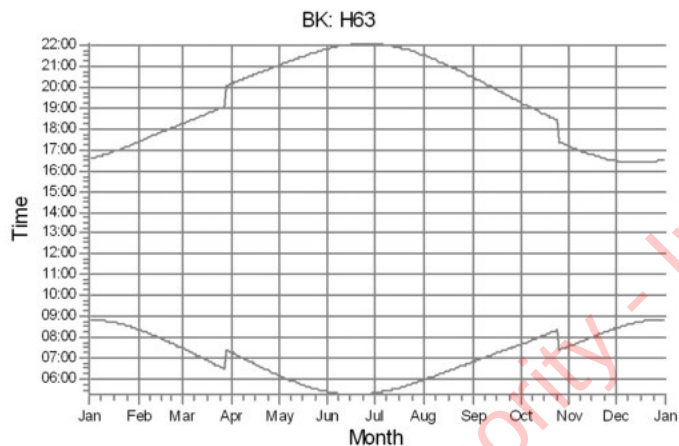
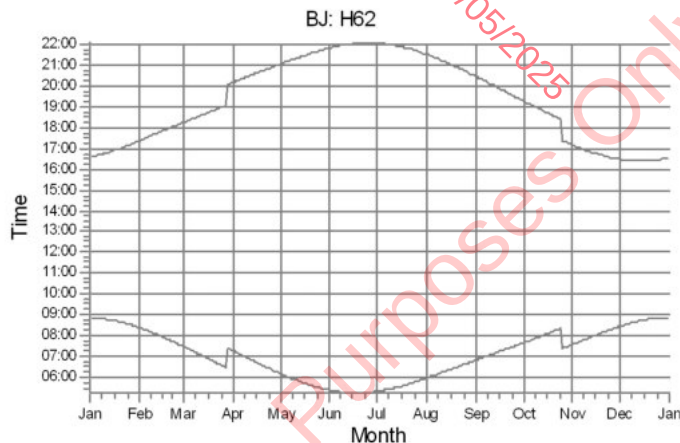
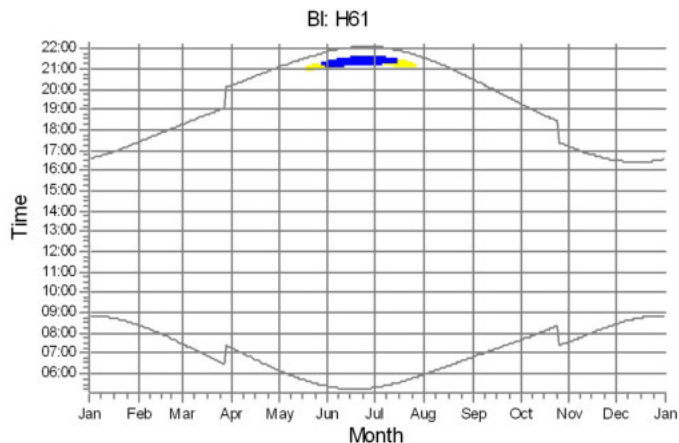
3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

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, graphical

Calculation: 6778 Moanmore Lower Worst Case



WTGs



2: Moanmore Lower T2



3: Moanmore Lower T3

Project:

6778 Moanmore Lower WF

Description:

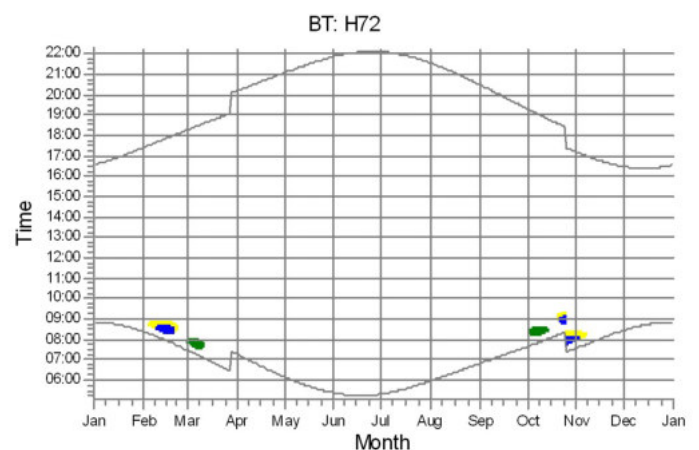
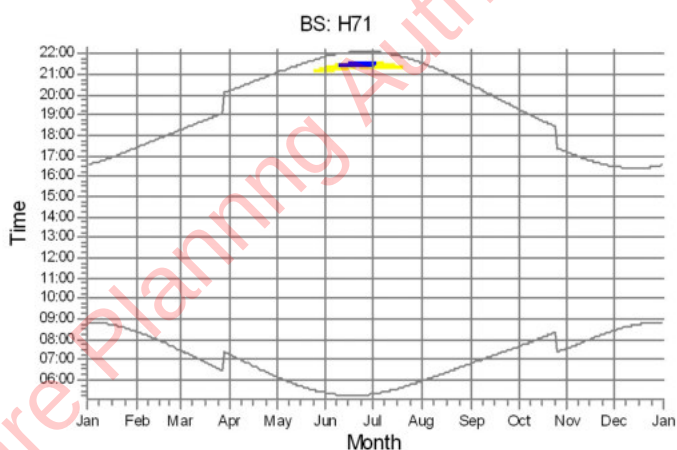
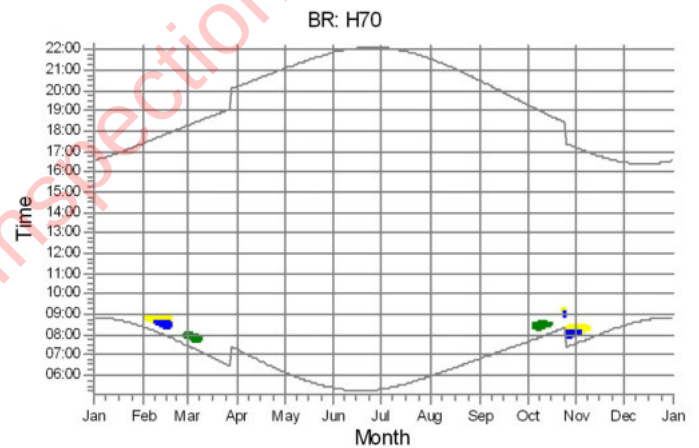
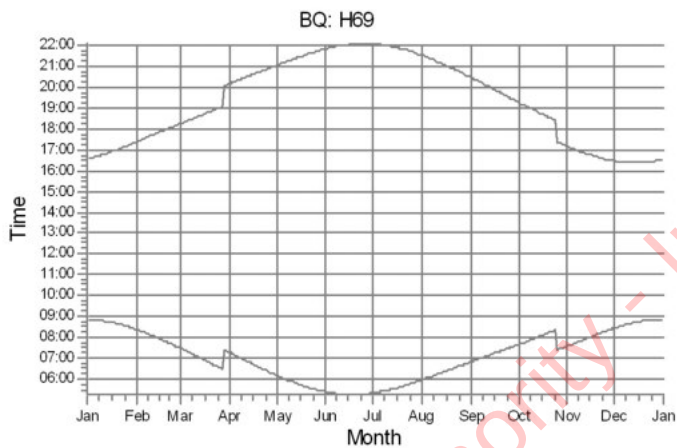
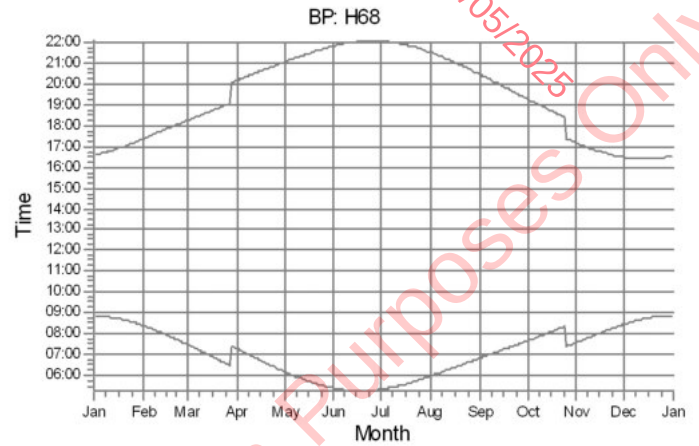
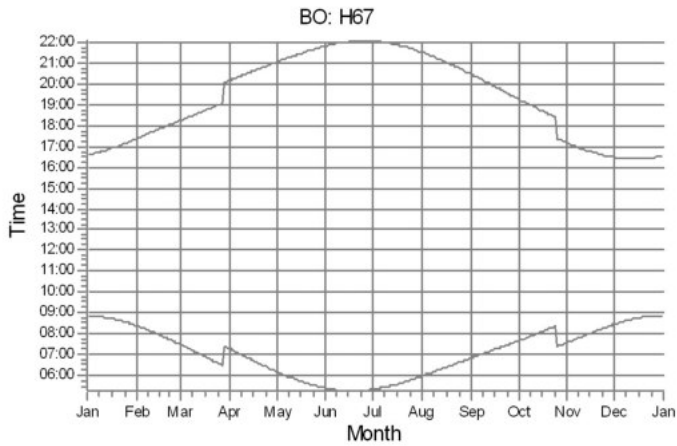
3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

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, 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:

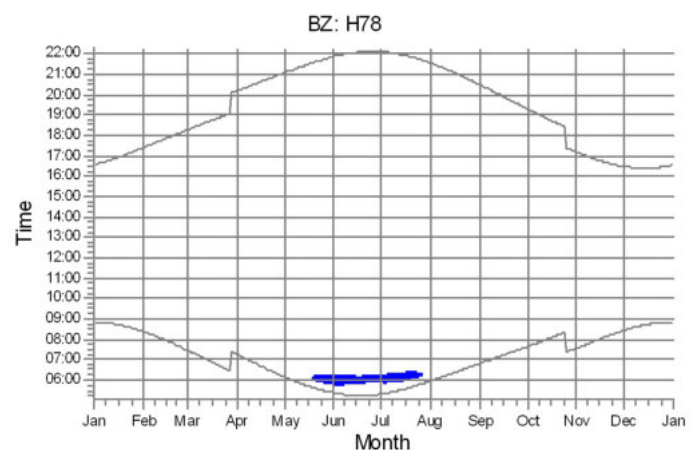
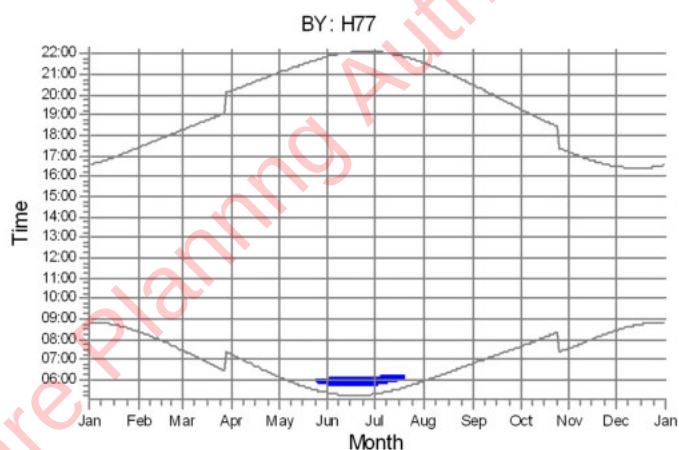
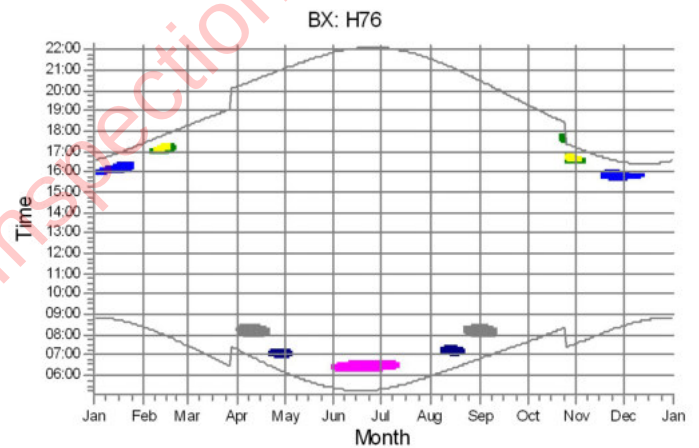
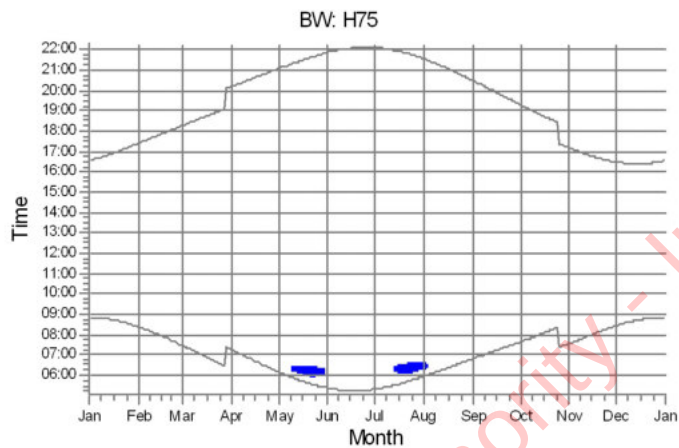
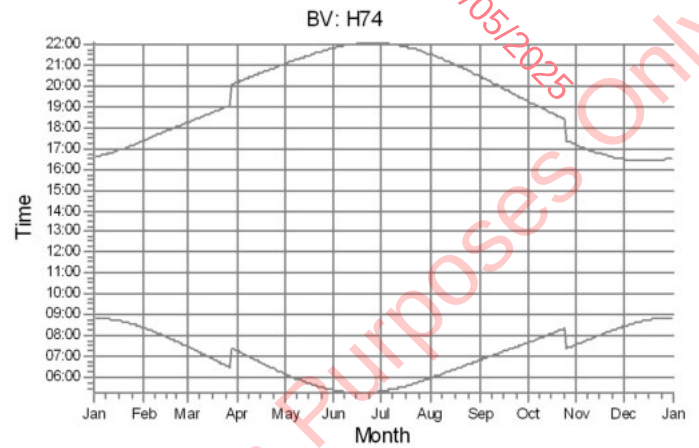
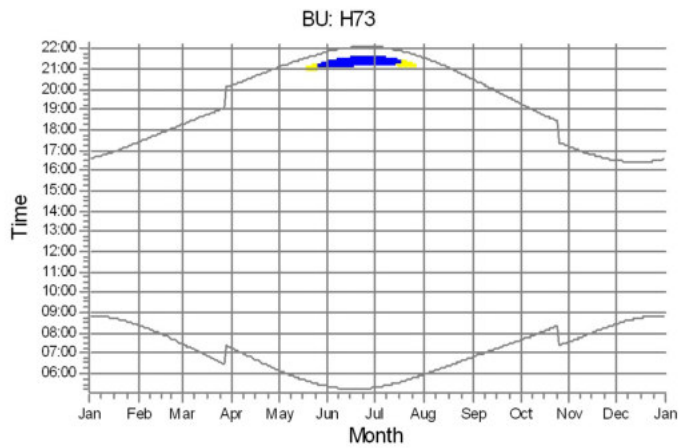
3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

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, 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:

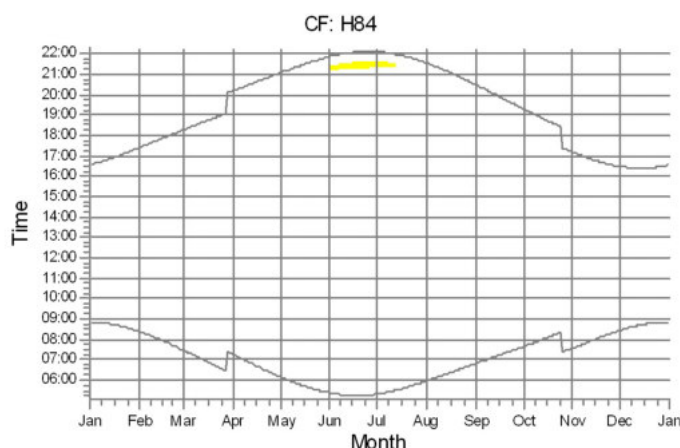
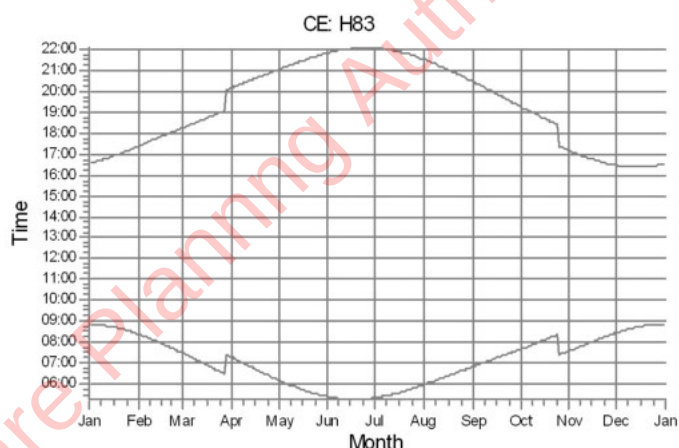
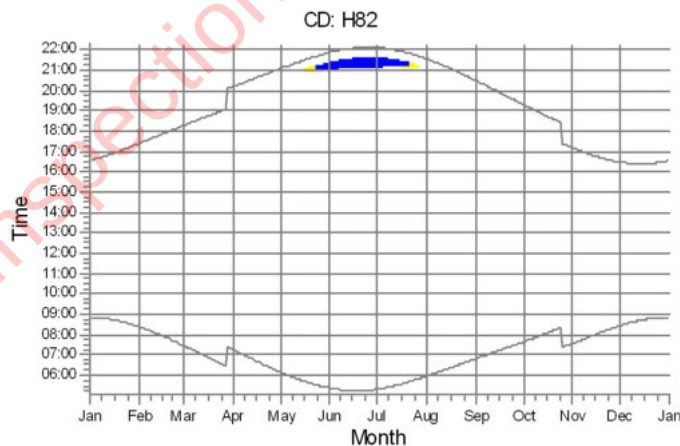
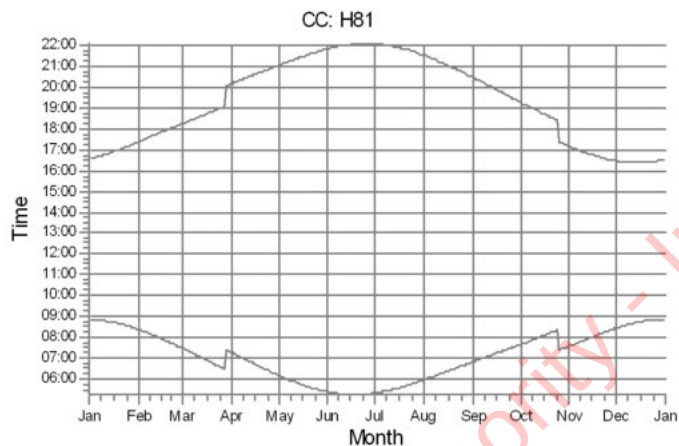
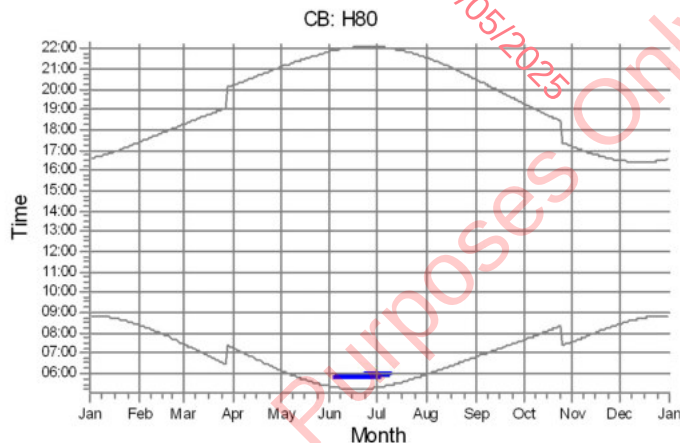
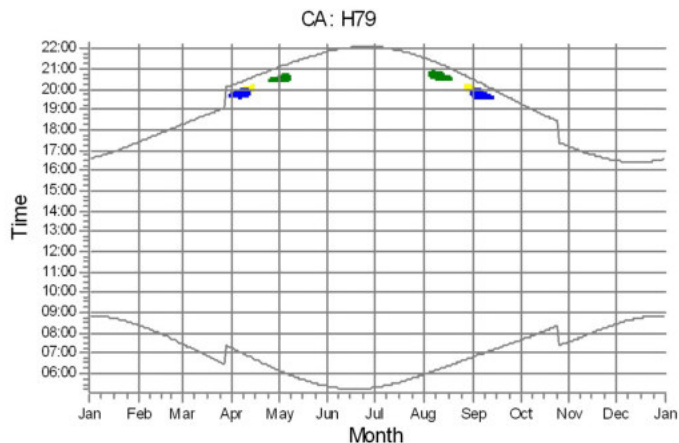
3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

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, 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:

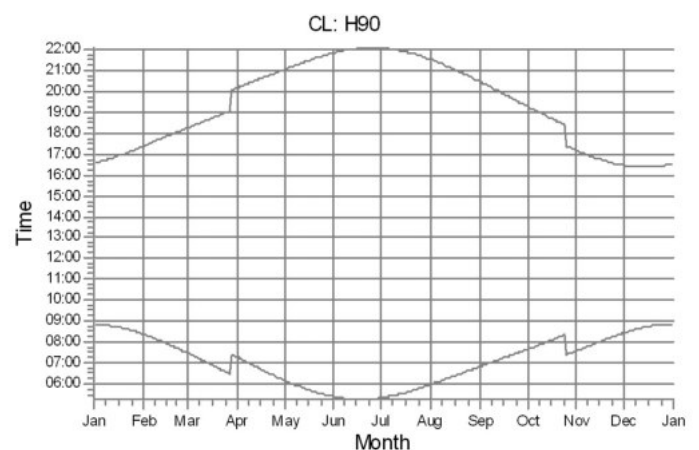
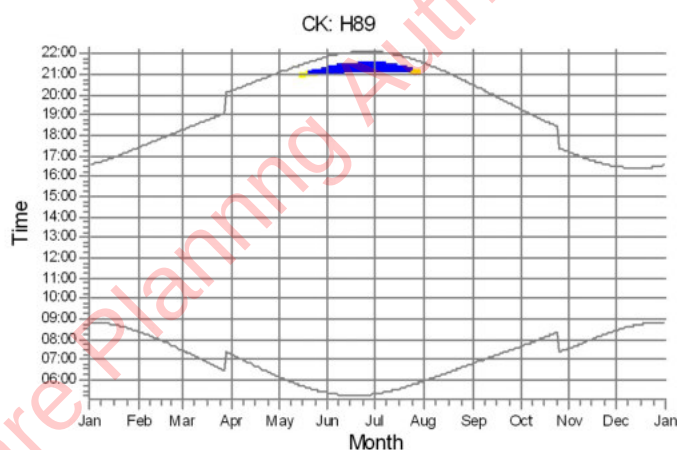
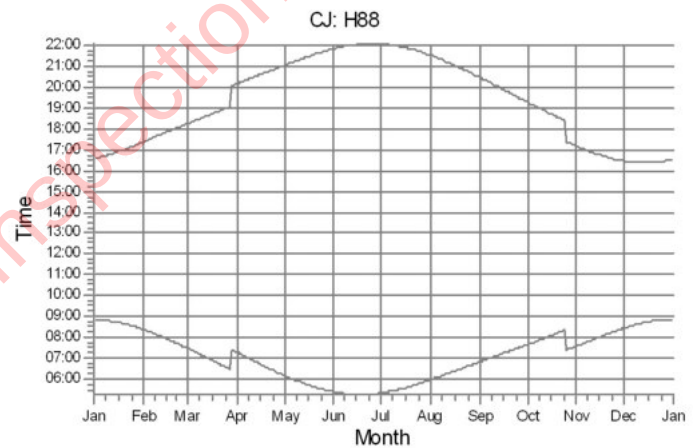
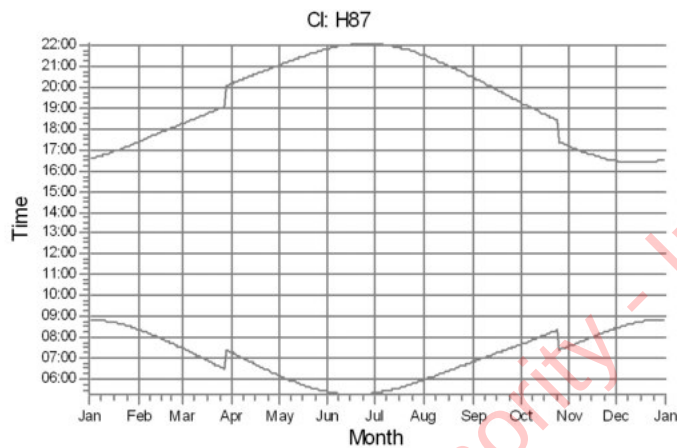
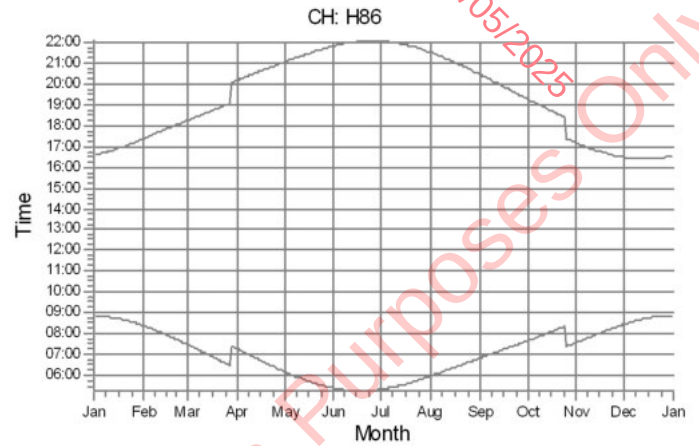
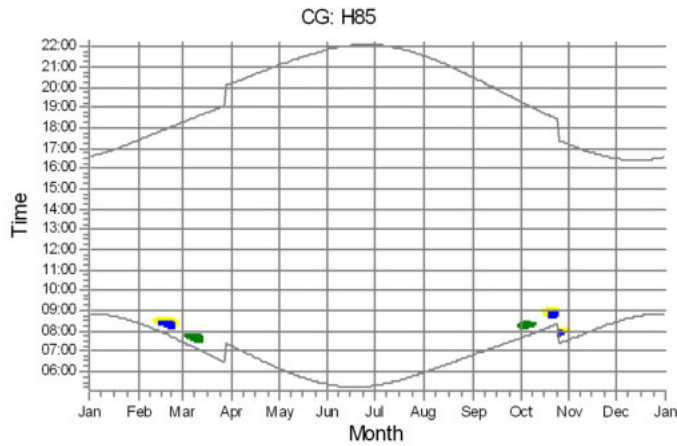
3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

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, 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:

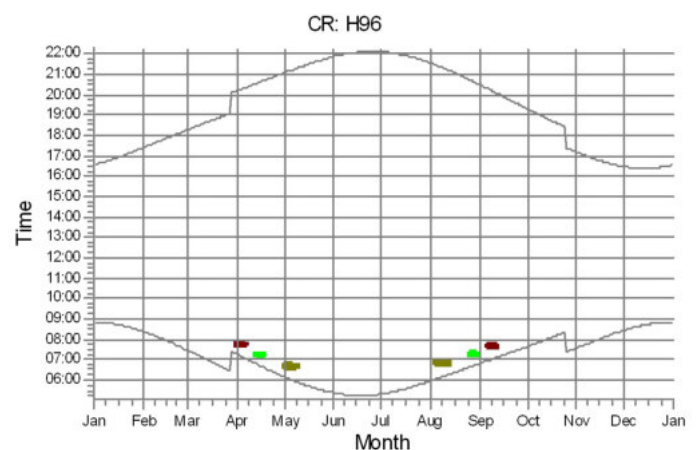
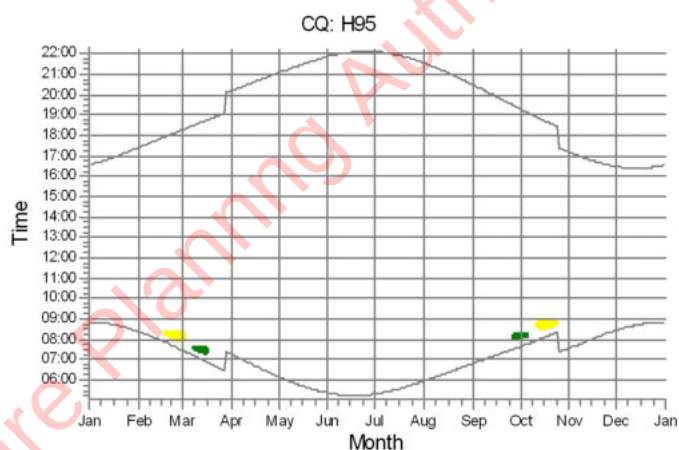
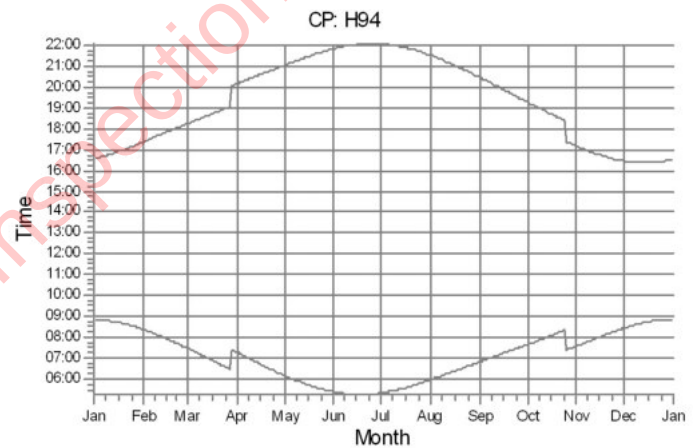
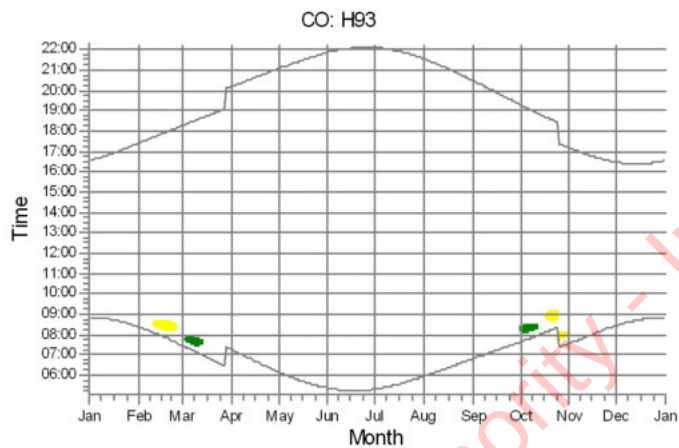
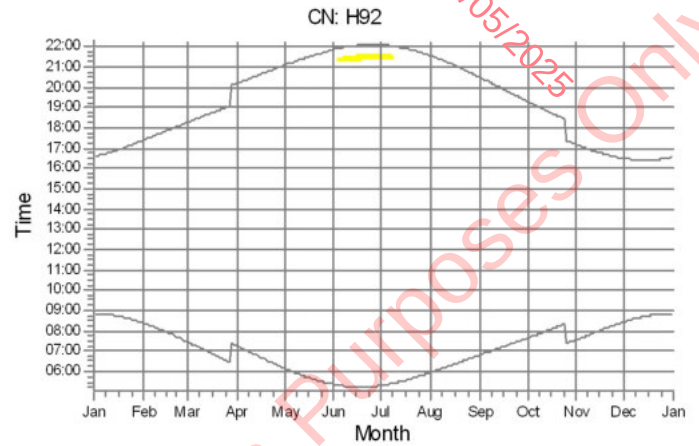
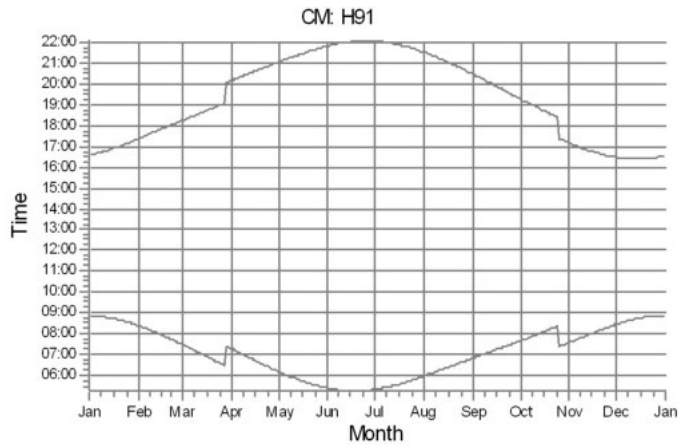
3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

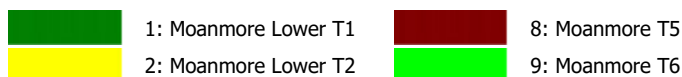
Jennings O'Donovan
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
Kathryn.Feeney / kfeeney@jodireland.com
Calculated:
16/12/2024 15:13/4.0.552

SHADOW - Calendar, graphical

Calculation: 6778 Moanmore Lower Worst Case



WTGs



Project:

6778 Moanmore Lower WF

Description:

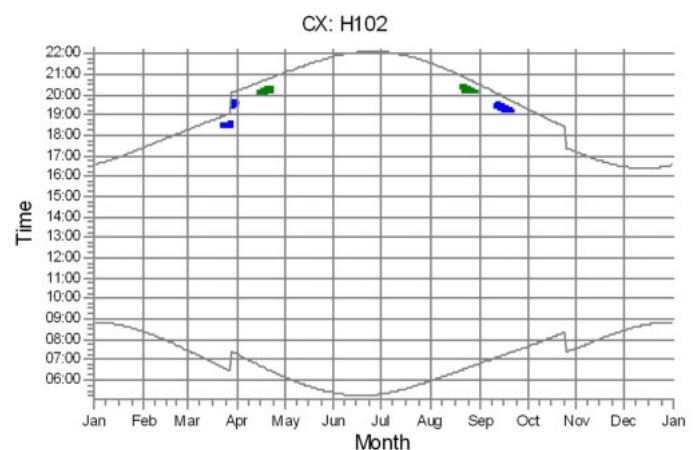
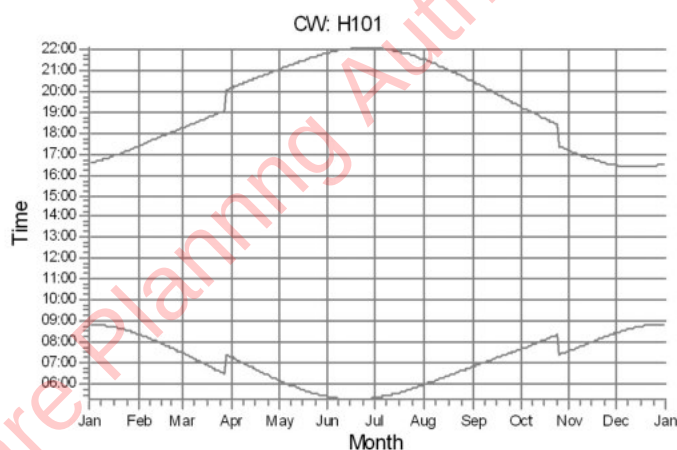
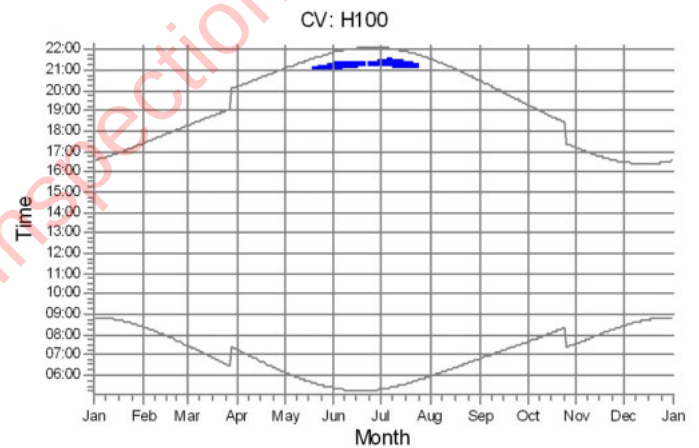
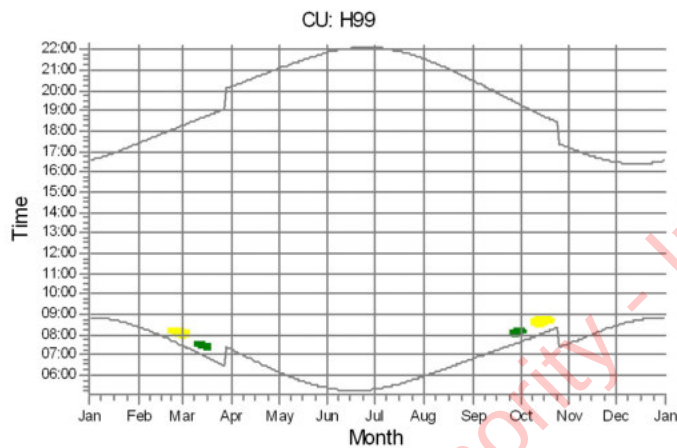
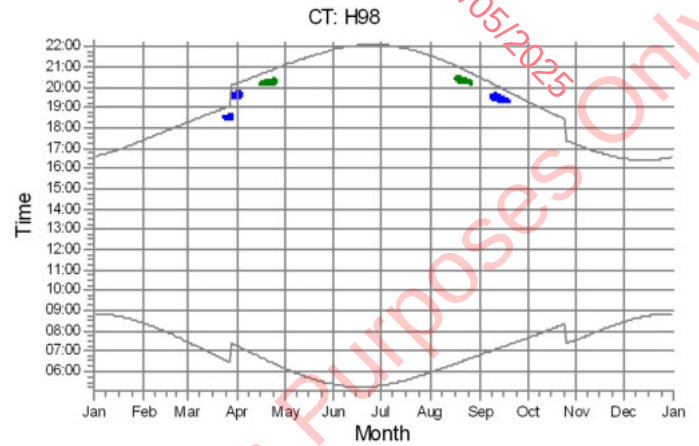
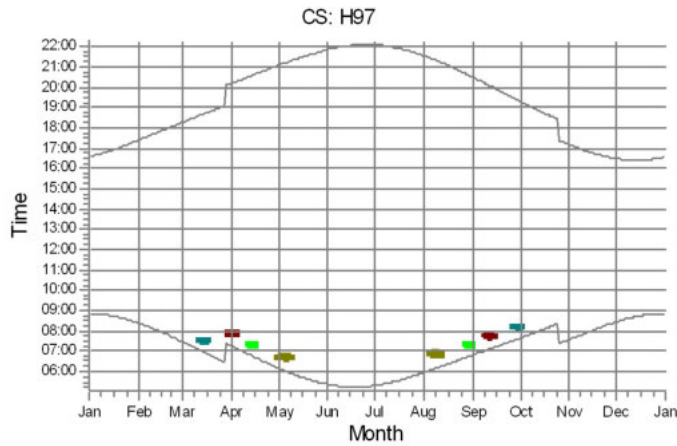
3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

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, 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:

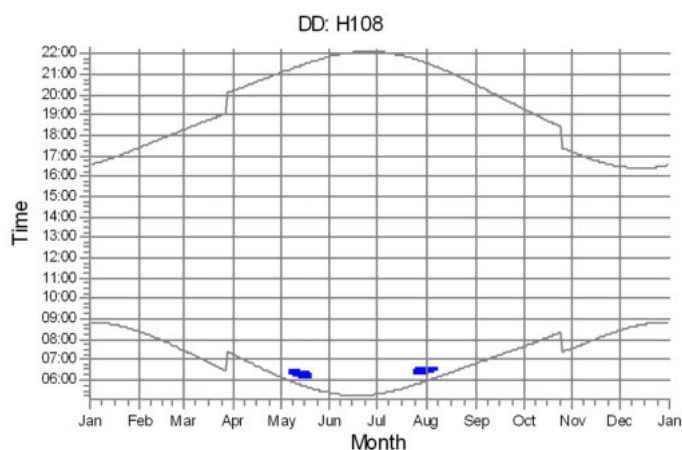
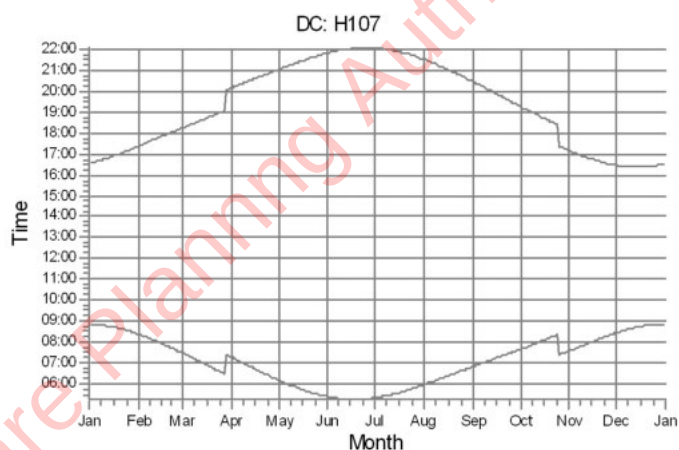
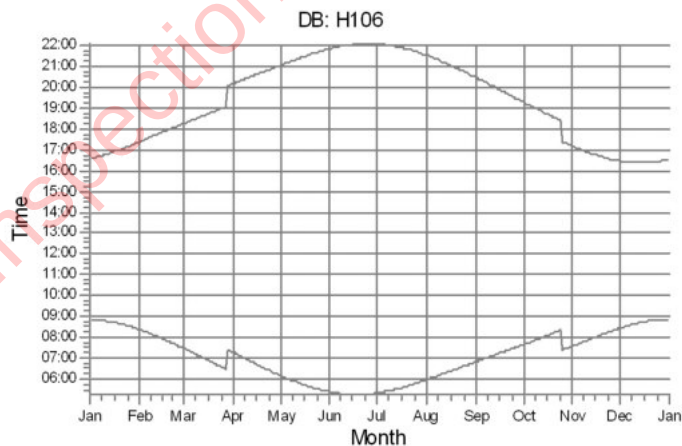
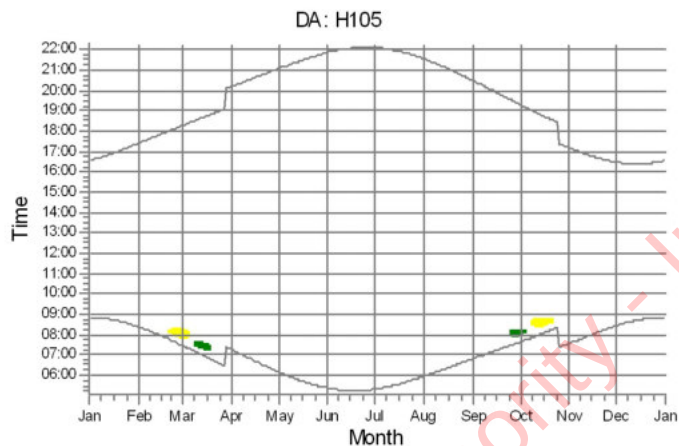
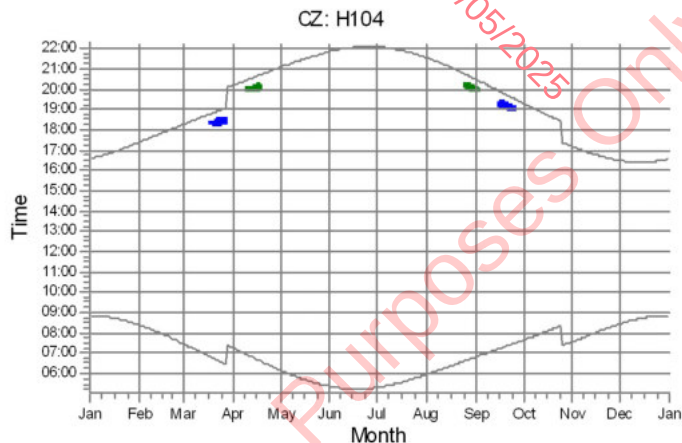
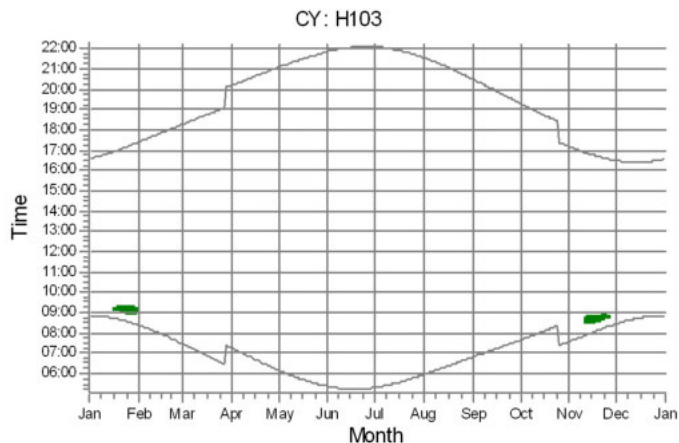
3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

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, 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

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

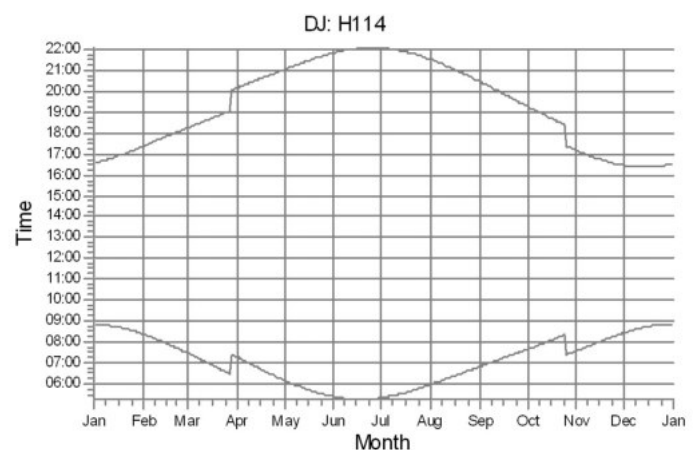
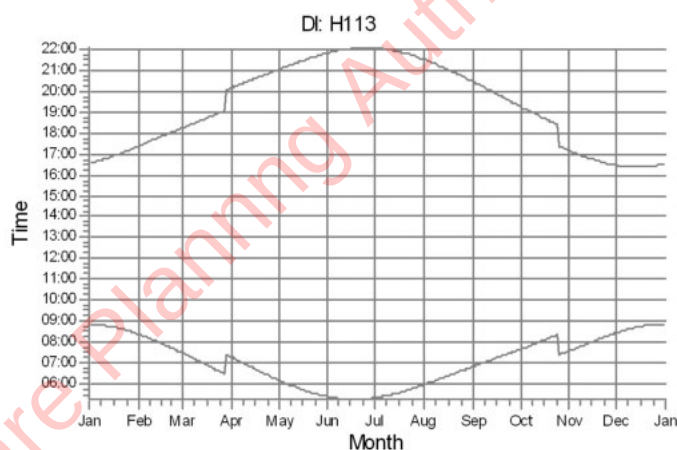
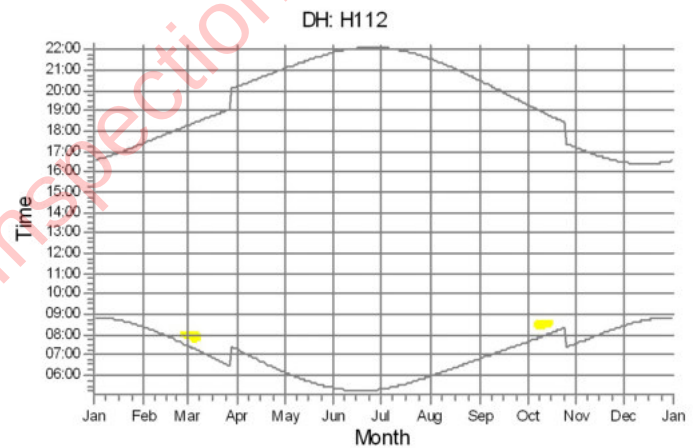
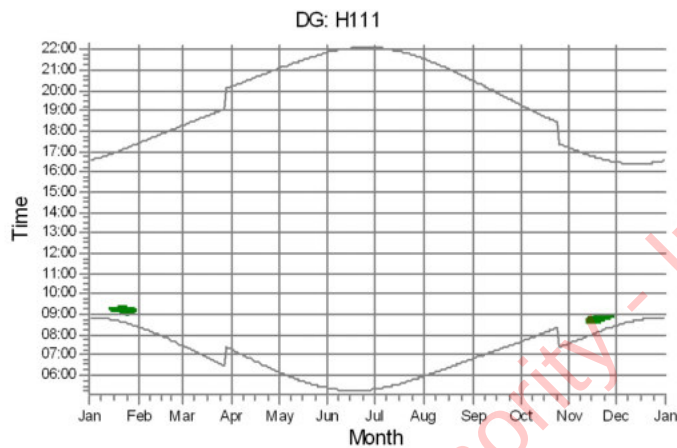
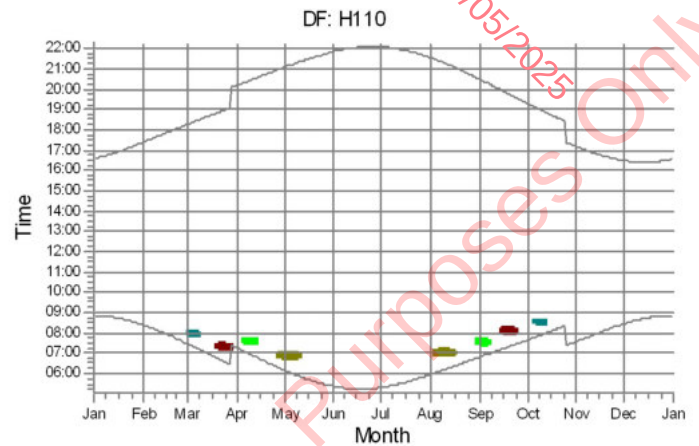
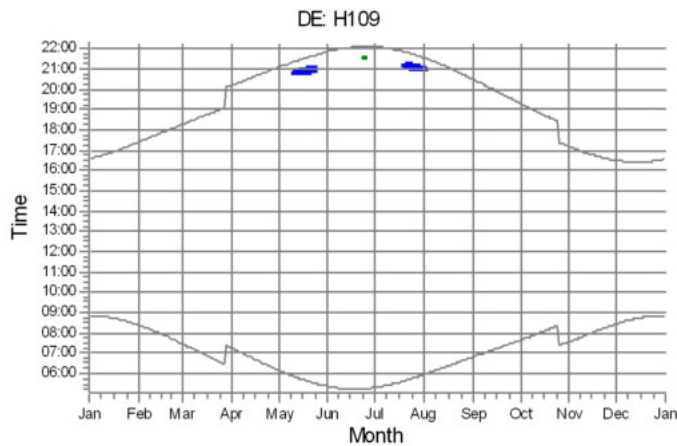
Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar, 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:

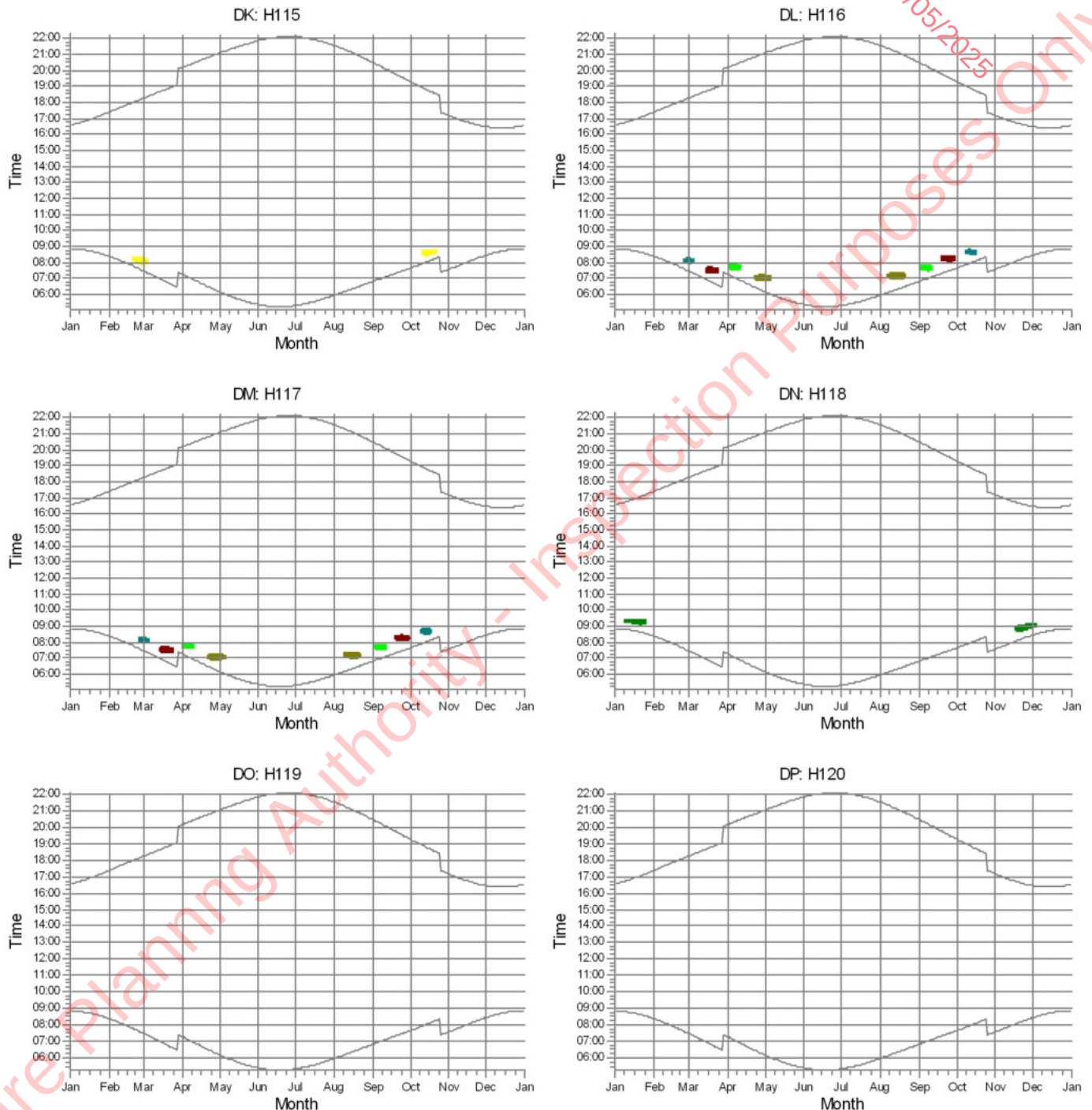
3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

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, 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:

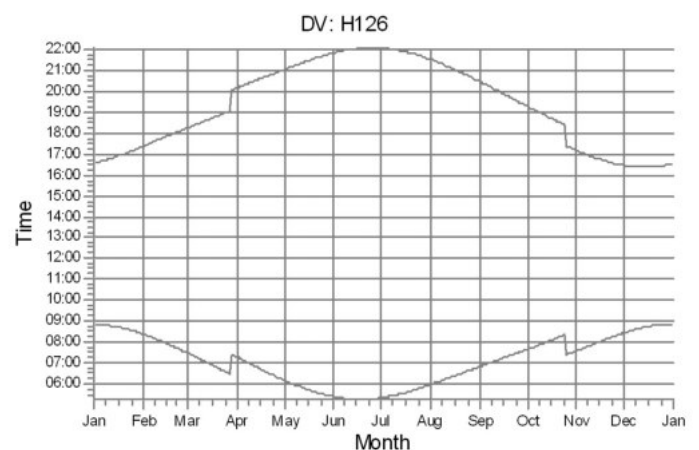
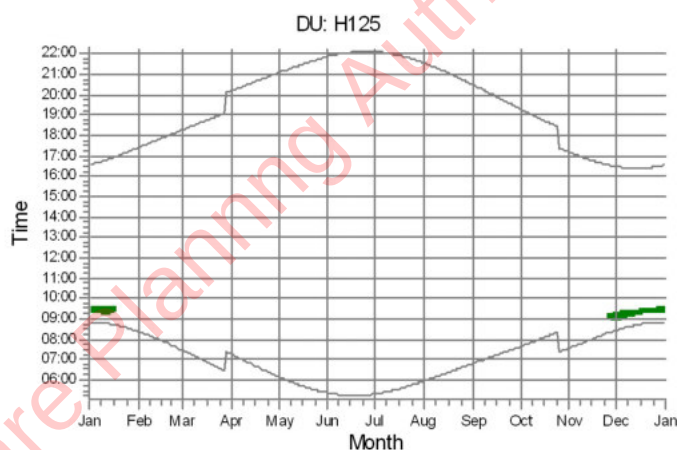
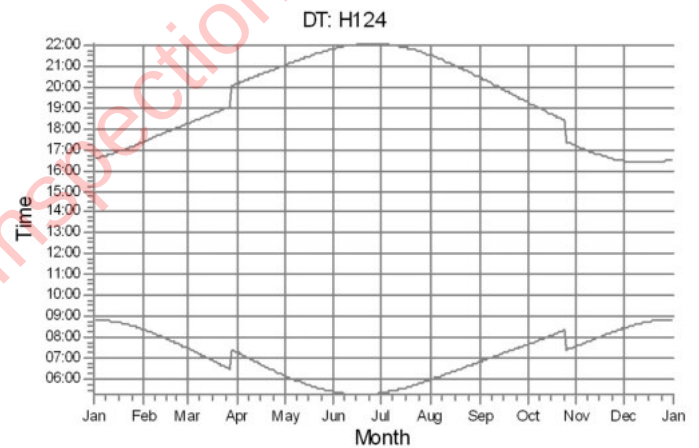
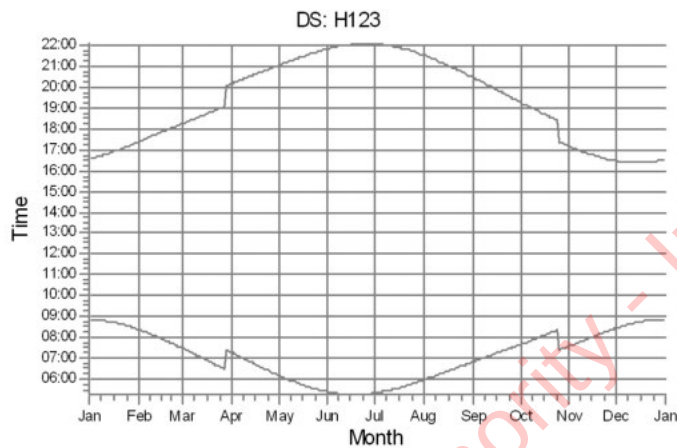
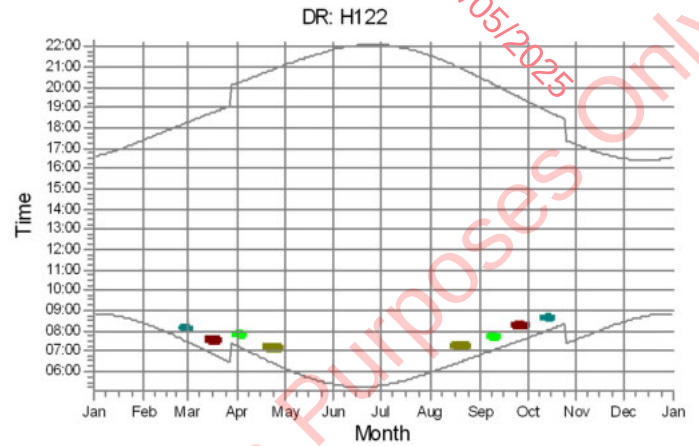
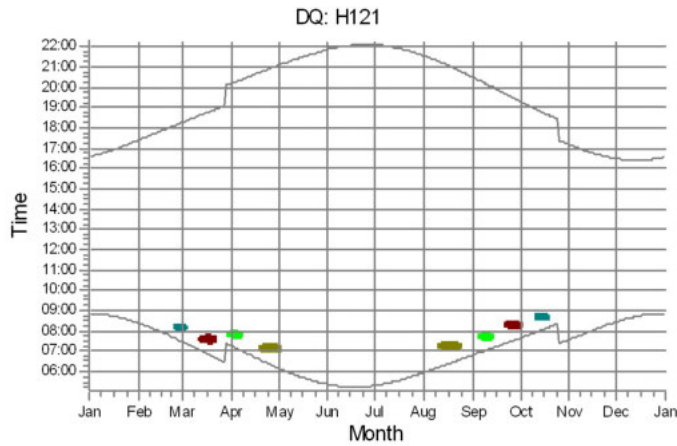
3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

Licensed user:

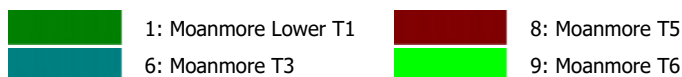
Jennings O'Donovan
Finisklin Business Park
IE-F91 RHH9 Sligo
+353719161416
Kathryn.Feeney / kfeeney@jodireland.com
Calculated:
16/12/2024 15:13/4.0.552

SHADOW - Calendar, graphical

Calculation: 6778 Moanmore Lower Worst Case



WTGs



Project:

6778 Moanmore Lower WF

Description:

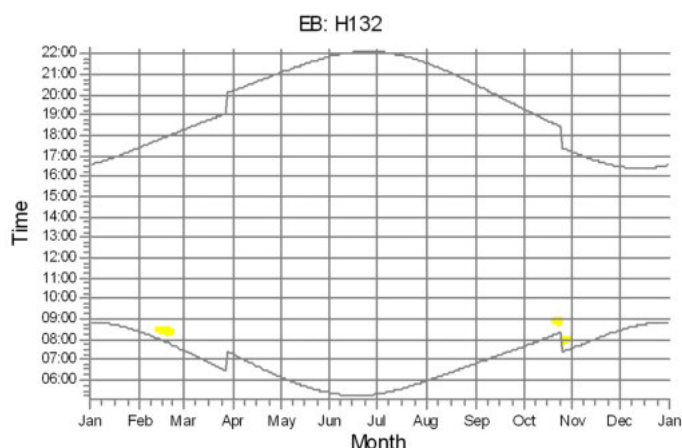
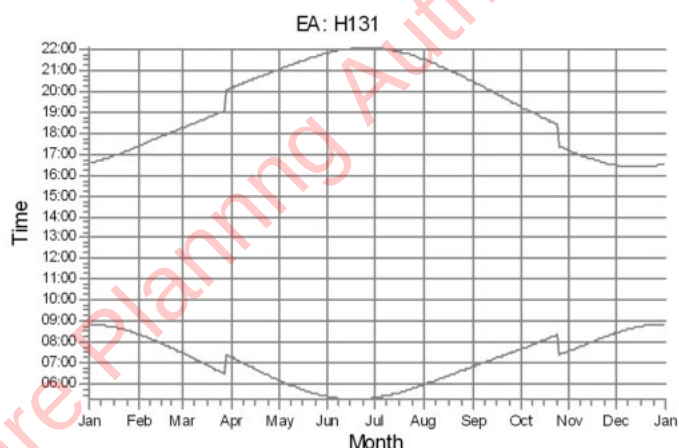
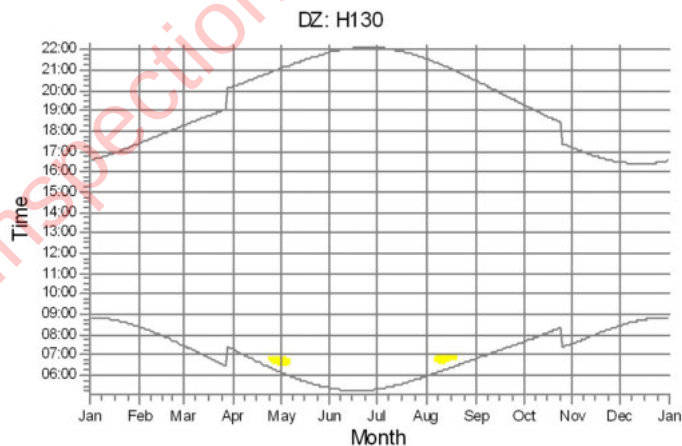
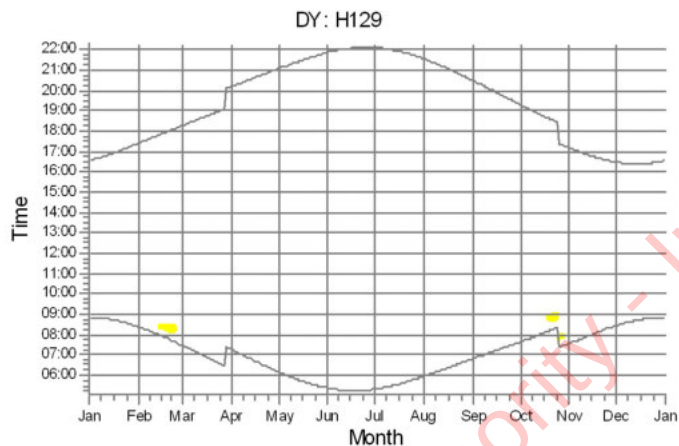
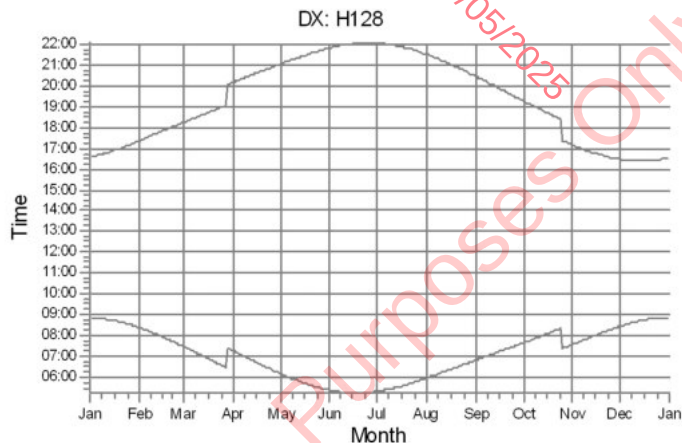
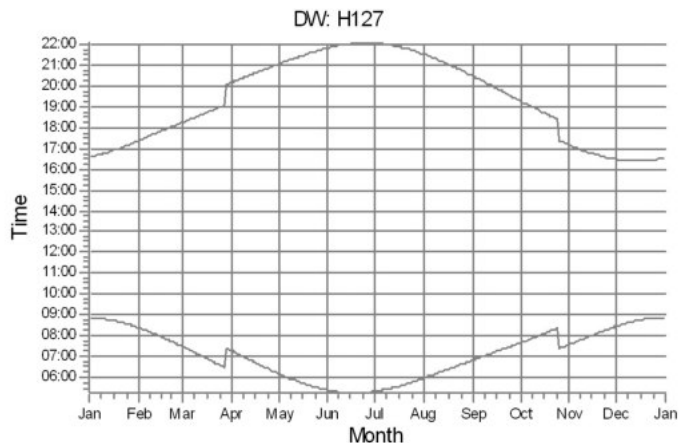
3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

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, graphical

Calculation: 6778 Moanmore Lower Worst Case



WTGs

2: Moanmore Lower T2

Project:

6778 Moanmore Lower WF

Description:

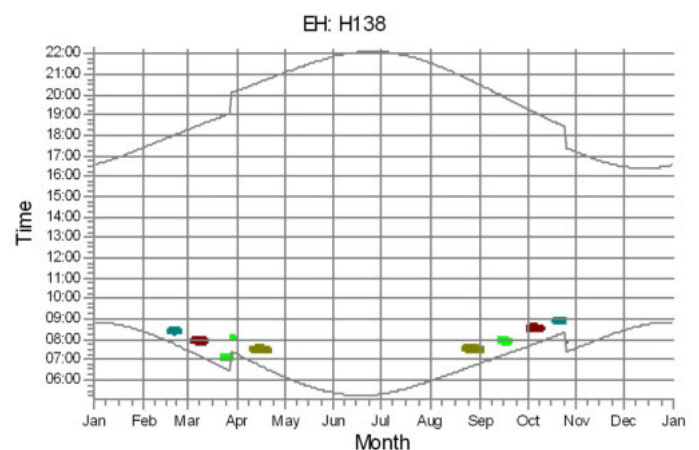
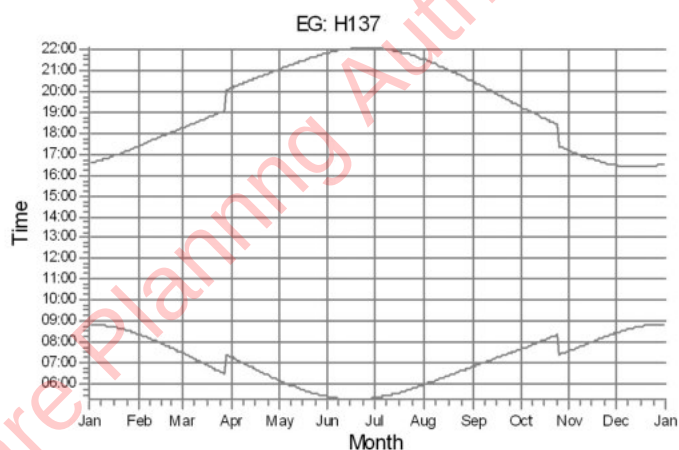
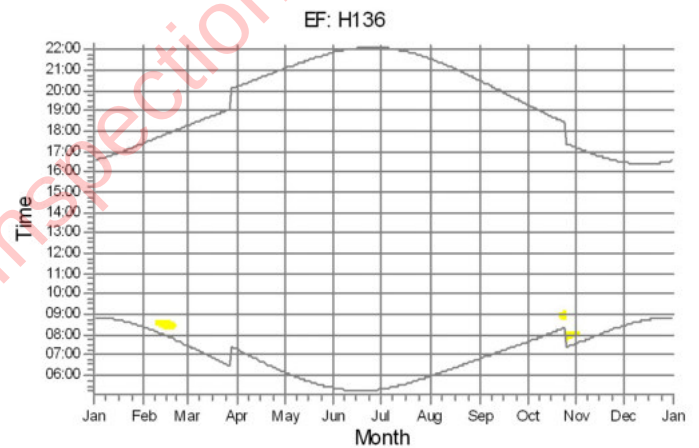
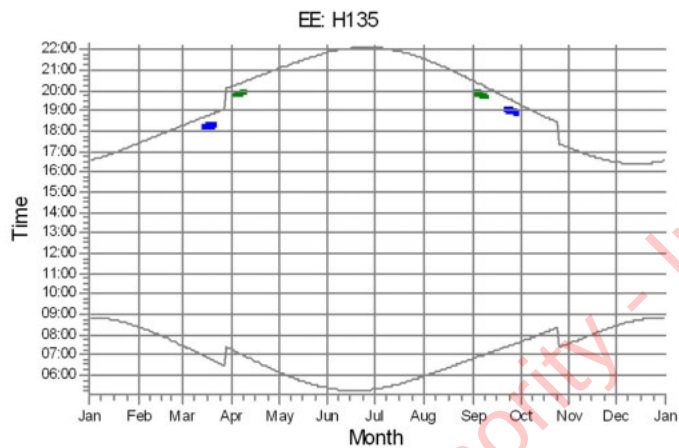
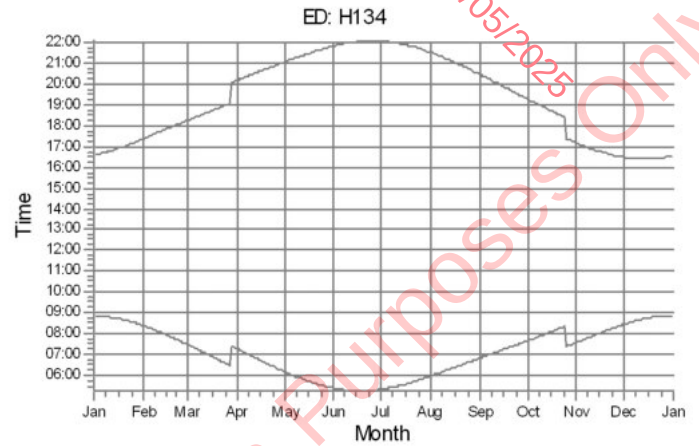
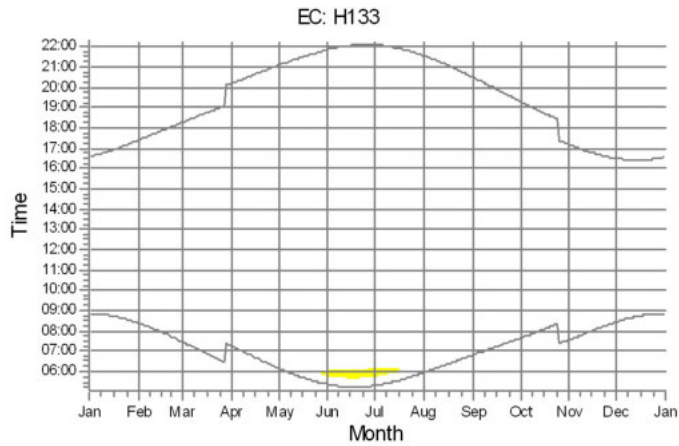
3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

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, 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
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

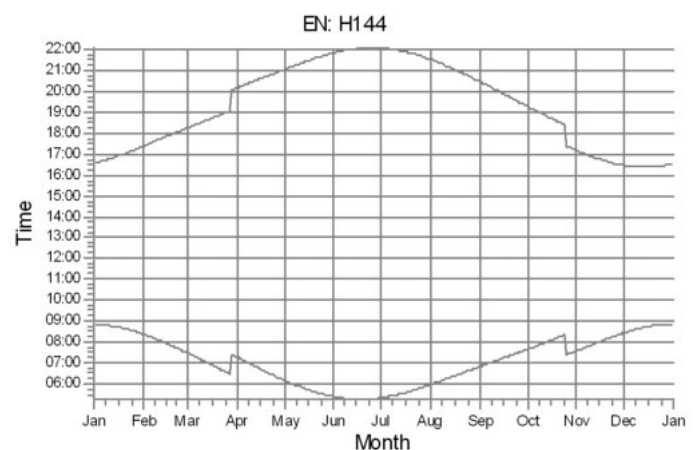
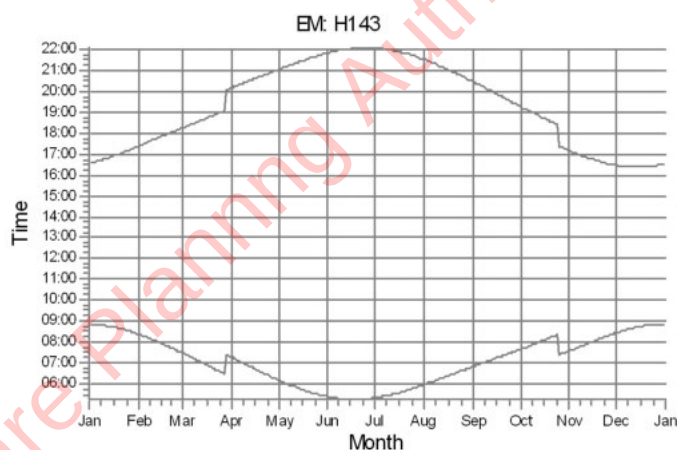
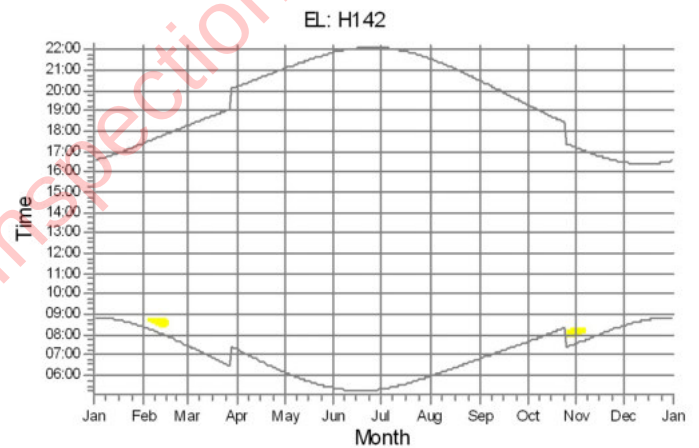
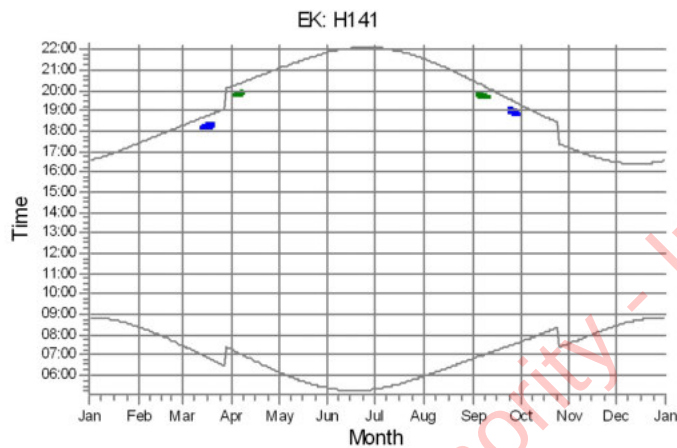
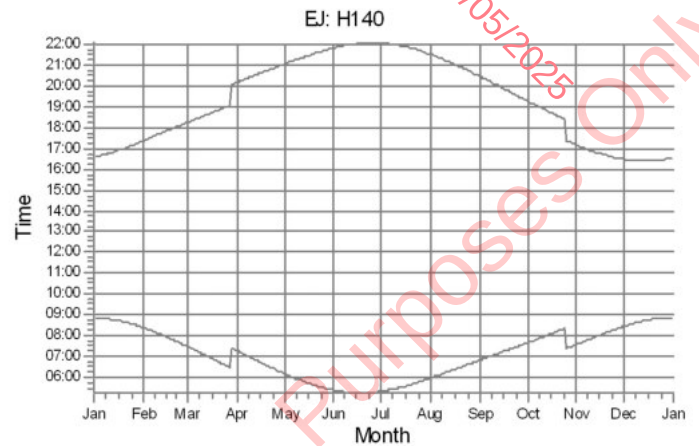
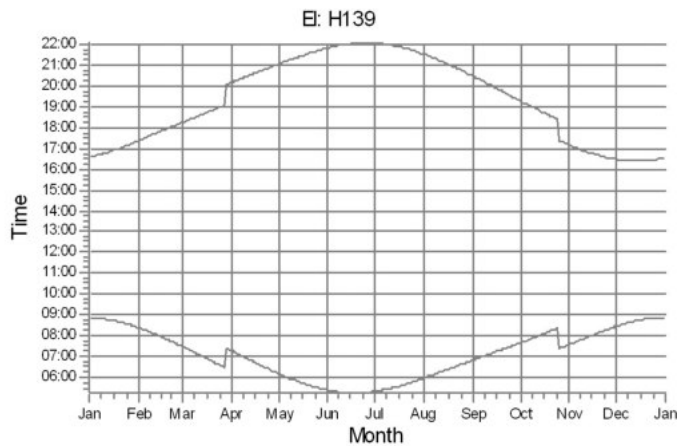
Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar, 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:

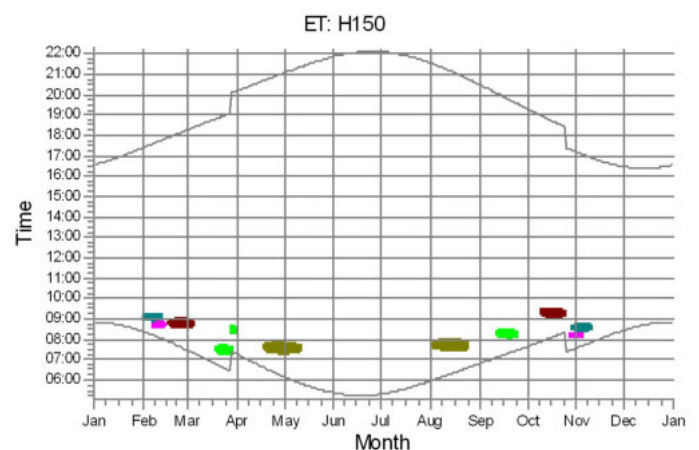
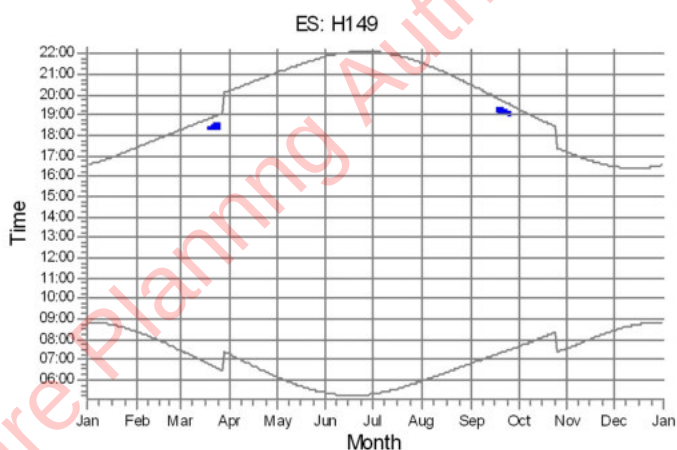
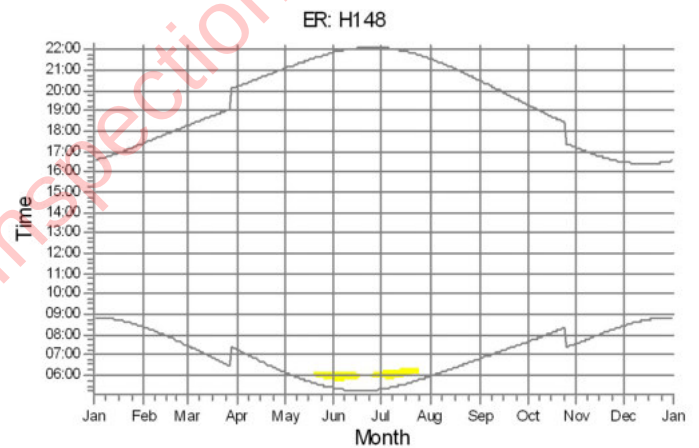
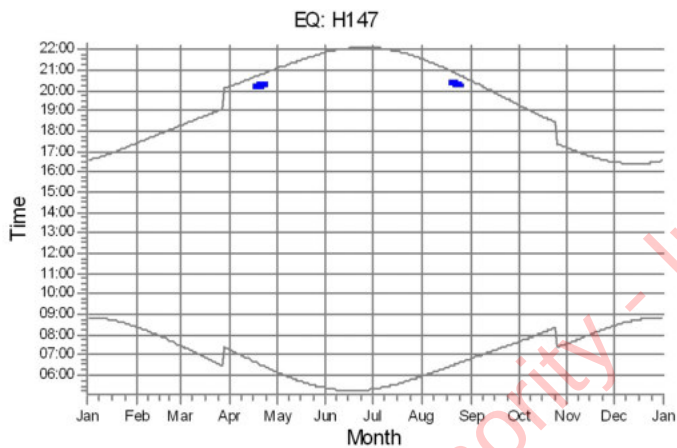
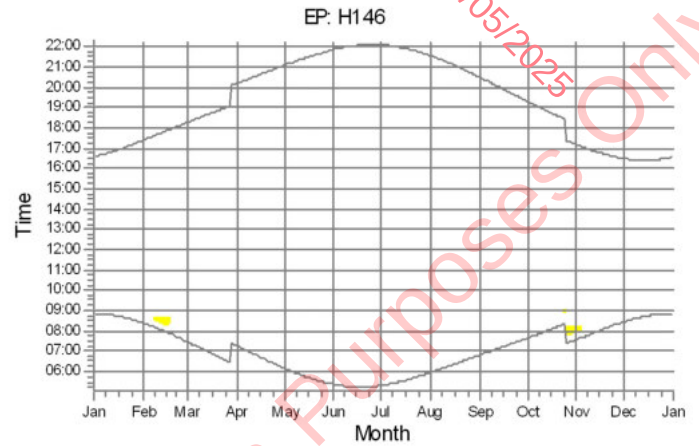
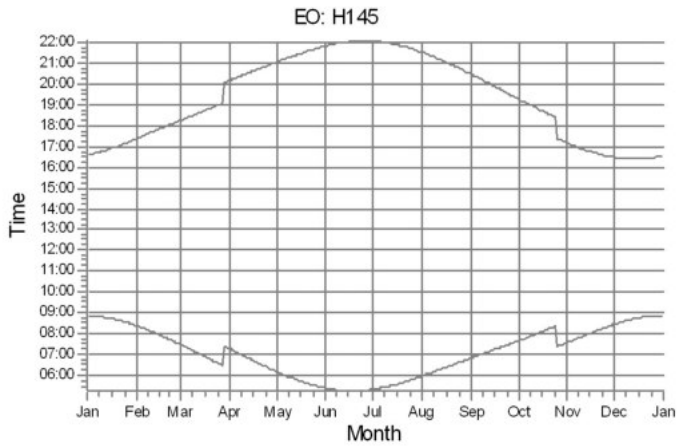
3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

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, graphical

Calculation: 6778 Moanmore Lower Worst Case



WTGs

2: Moanmore Lower T2	6: Moanmore T3
3: Moanmore Lower T3	8: Moanmore T5
5: Moanmore T2	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
and the operational Moanmore WF

Licensed user:

Jennings O'Donovan

Finisklin Business Park

IE-F91 RHH9 Sligo

+353719161416

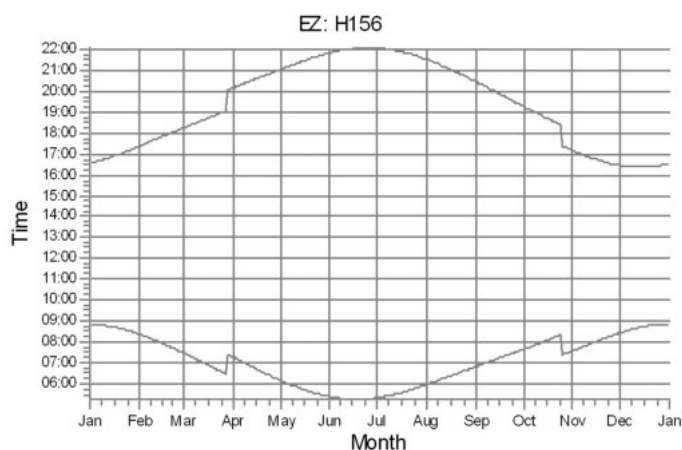
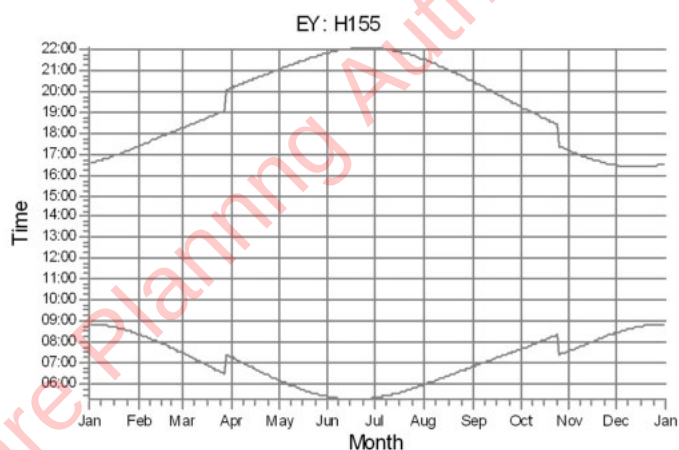
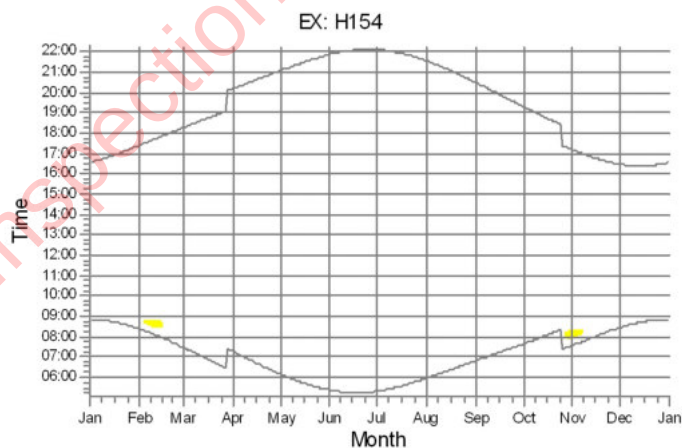
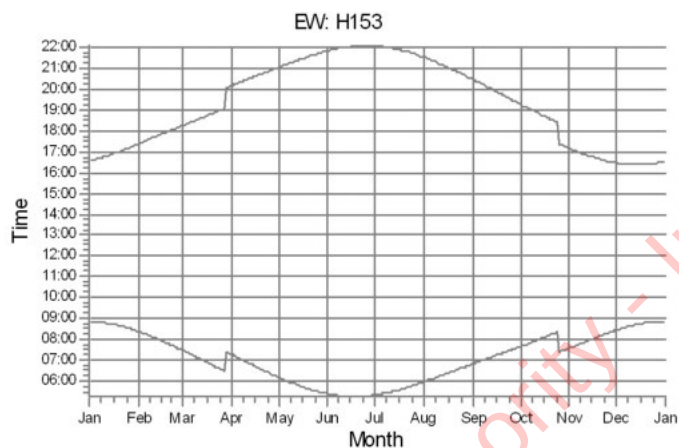
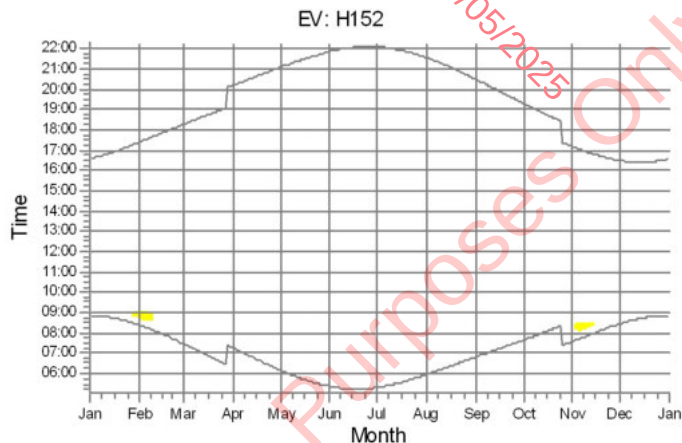
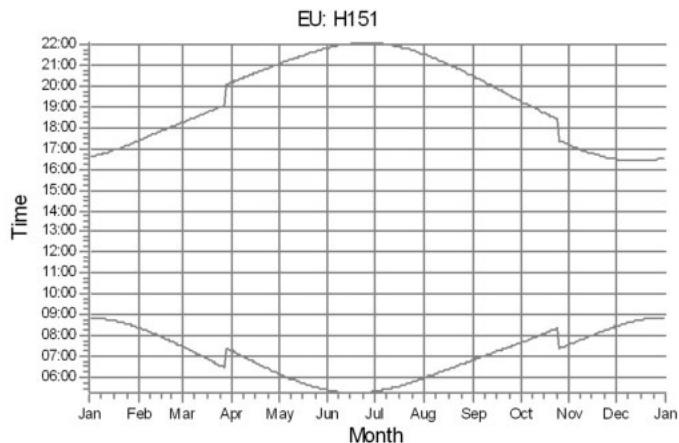
Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar, 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
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

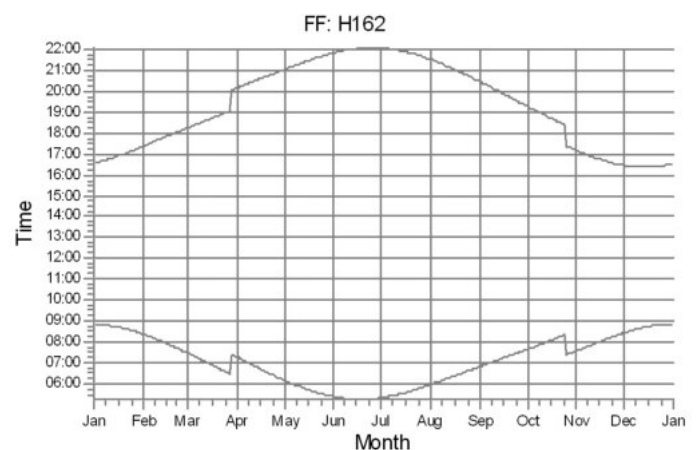
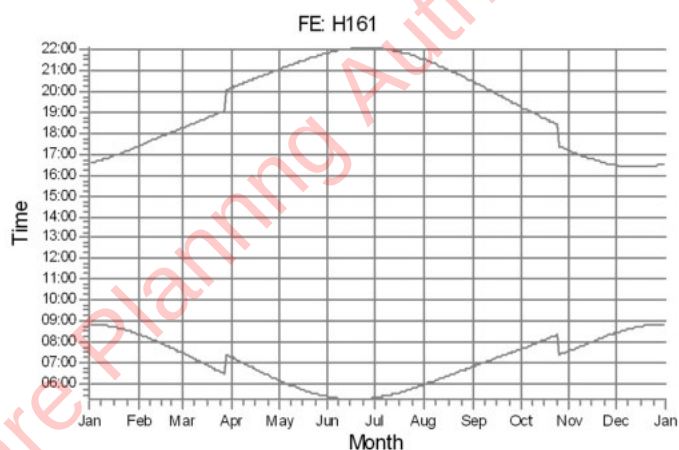
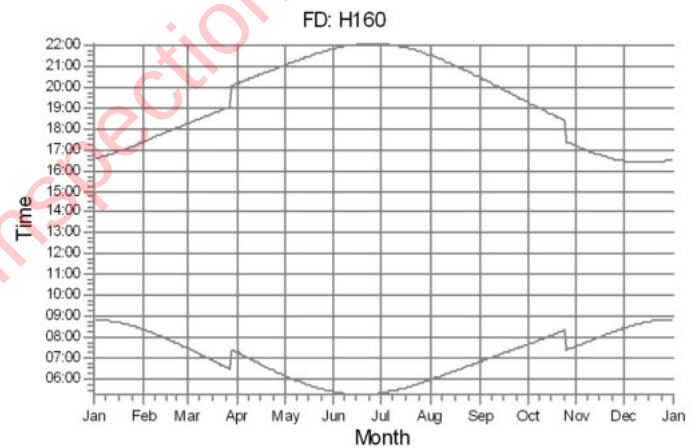
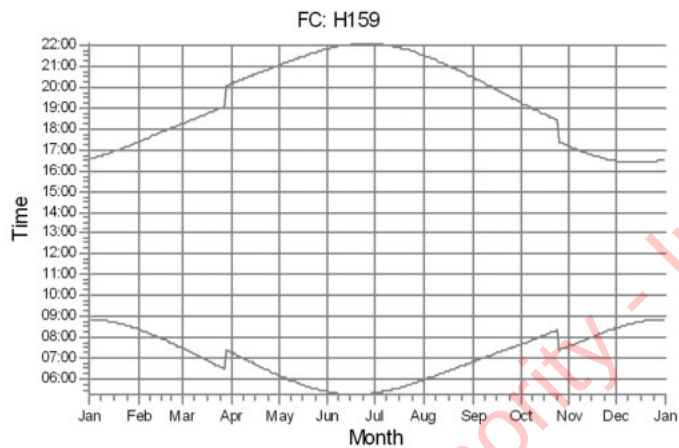
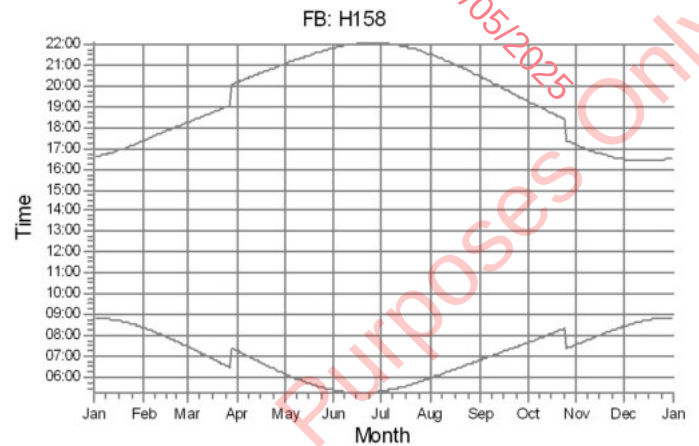
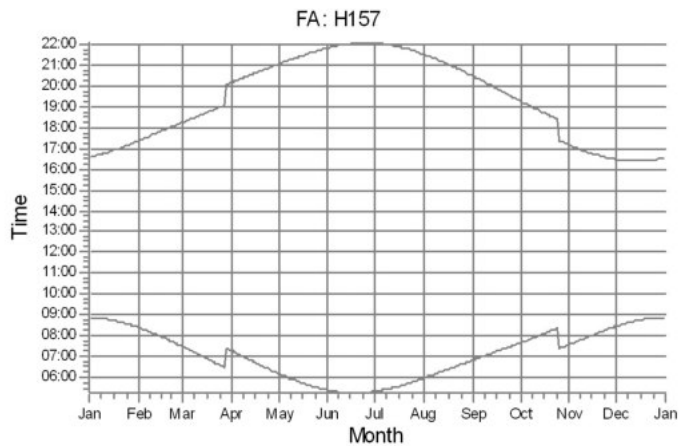
Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar, graphical

Calculation: 6778 Moanmore Lower Worst Case



WTGs

Project:

6778 Moanmore Lower WF

Description:

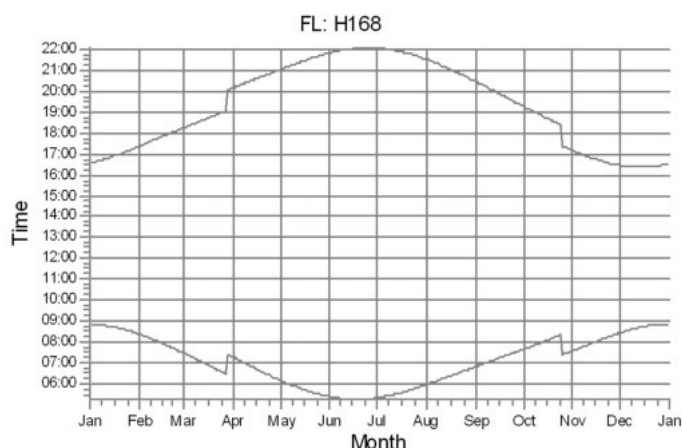
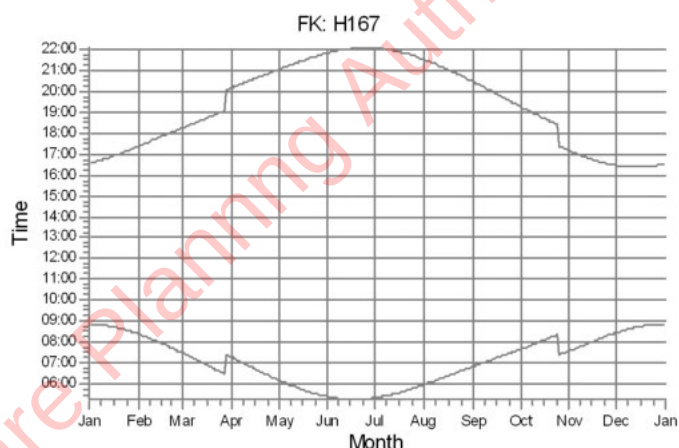
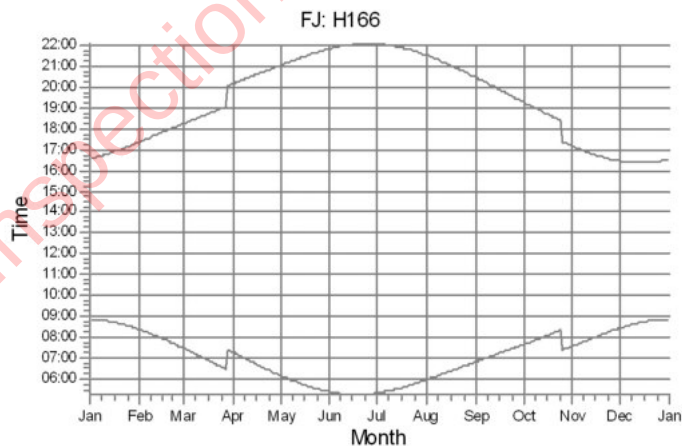
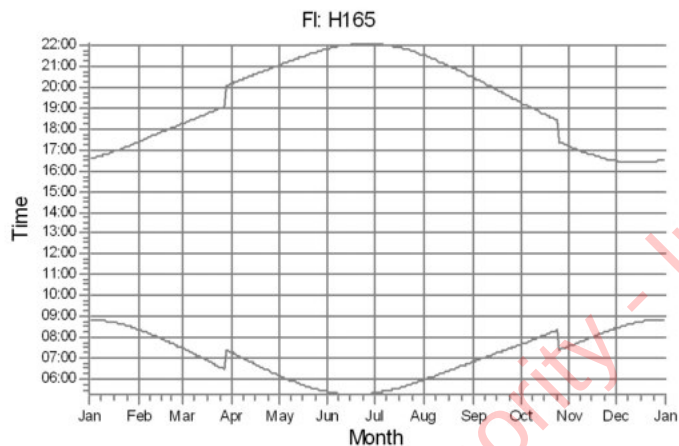
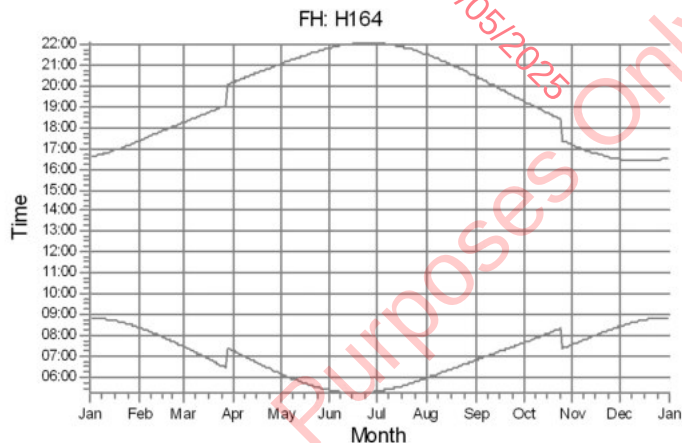
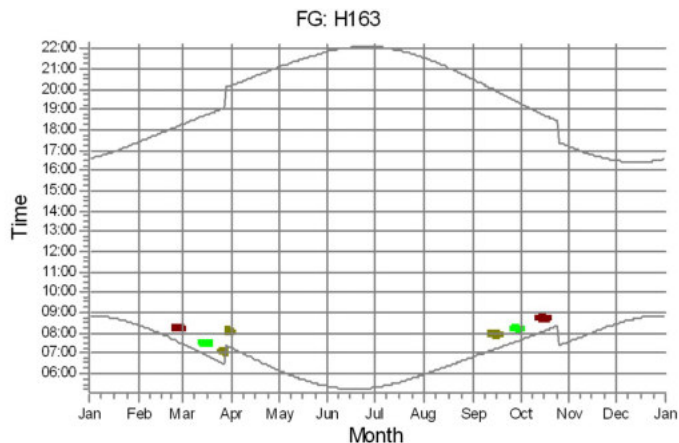
3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

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, graphical

Calculation: 6778 Moanmore Lower Worst Case



WTGs



8: Moanmore T5



9: Moanmore T6



10: Moanmore T7

Project:

6778 Moanmore Lower WF

Description:

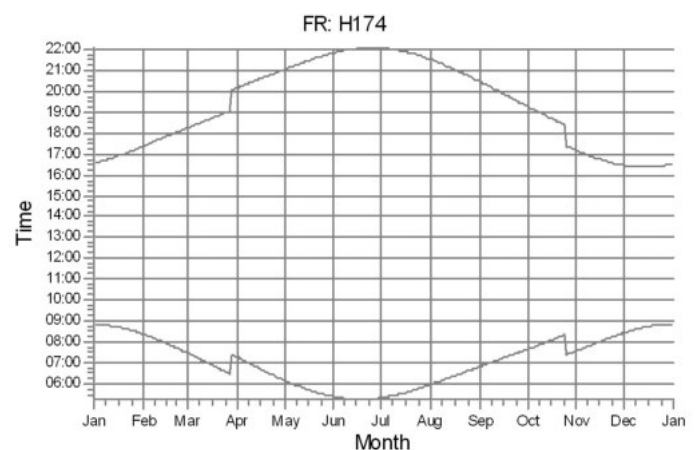
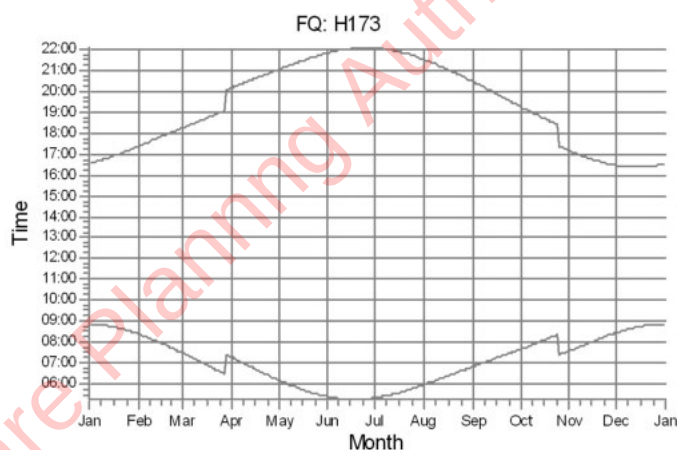
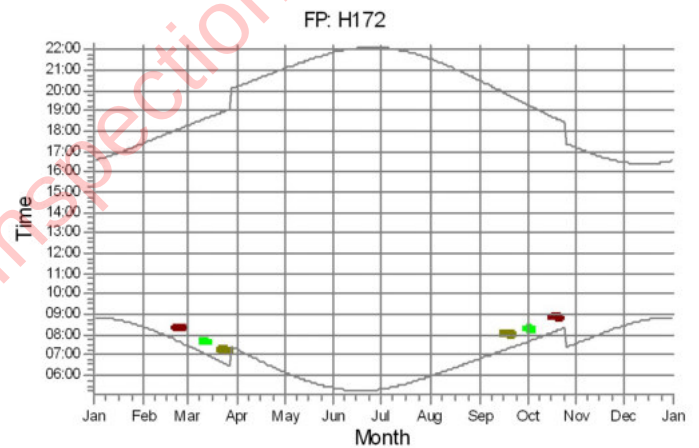
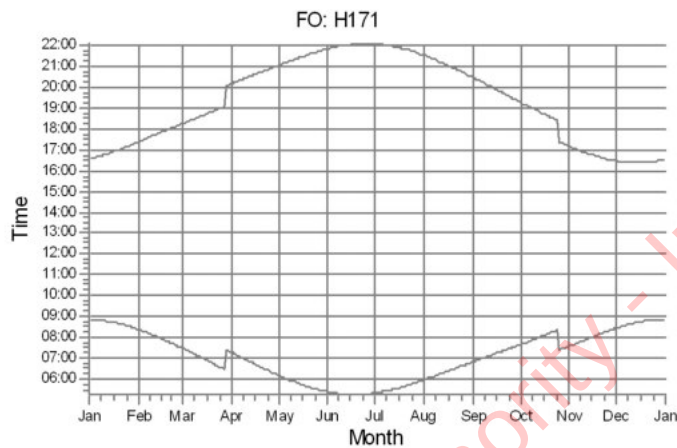
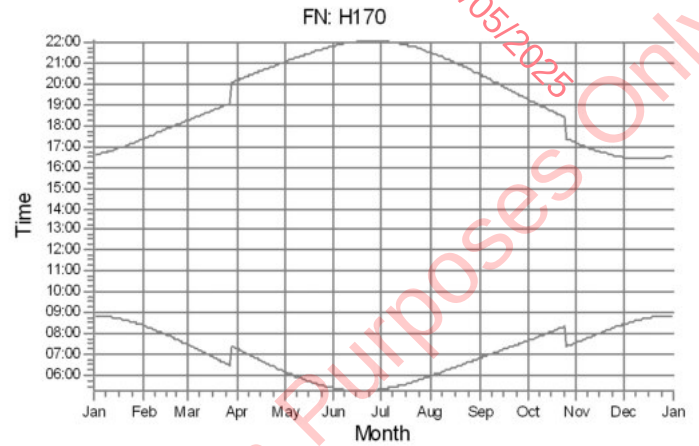
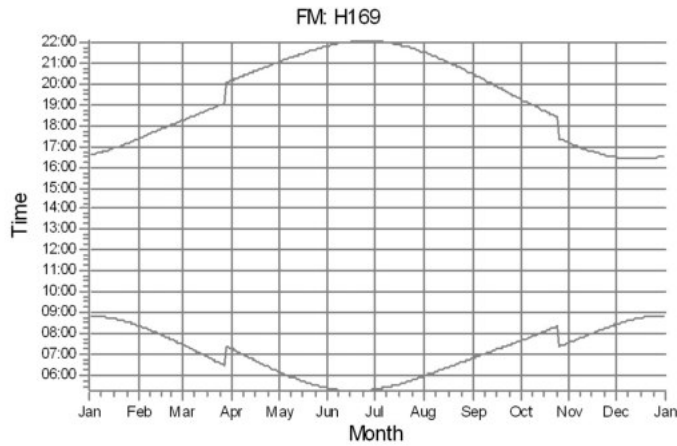
3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

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, graphical

Calculation: 6778 Moanmore Lower Worst Case



WTGs

8: Moanmore T5 9: Moanmore T6 10: Moanmore T7

Project:

6778 Moanmore Lower WF

Description:

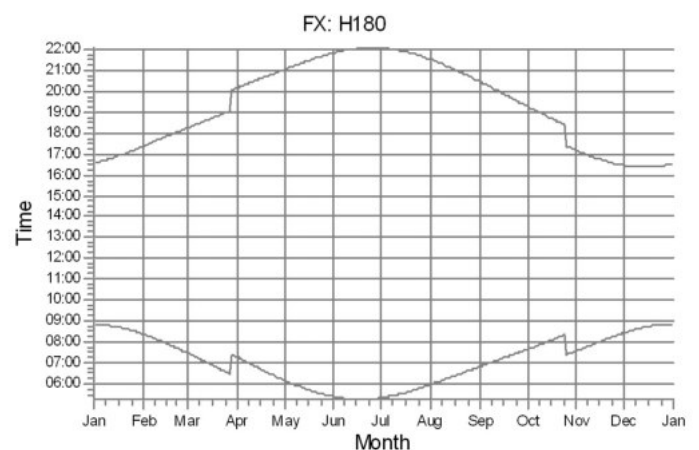
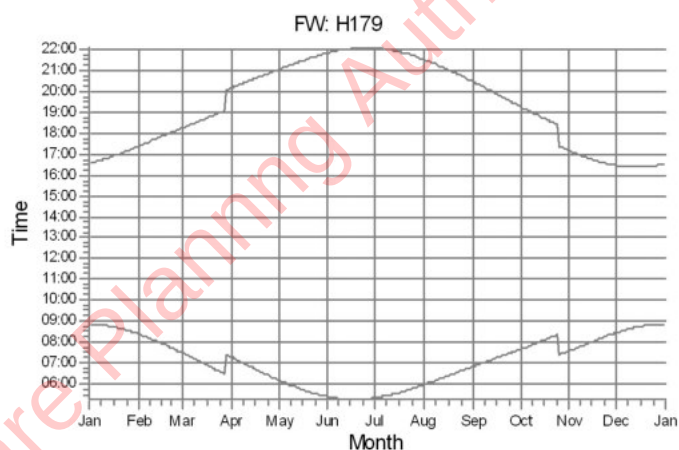
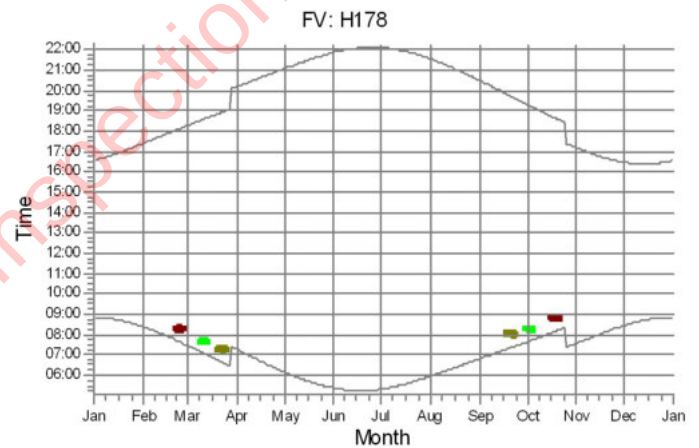
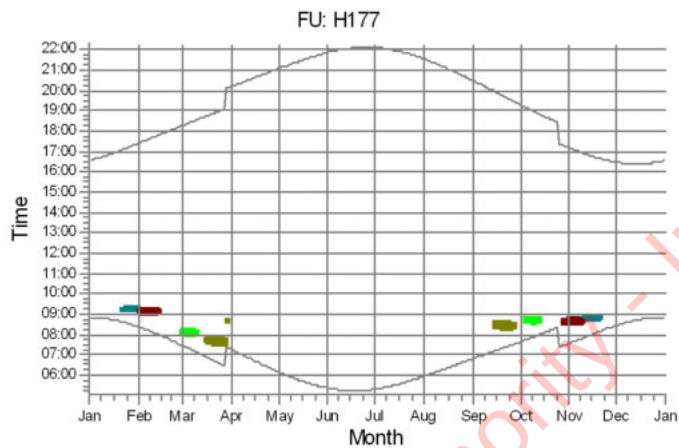
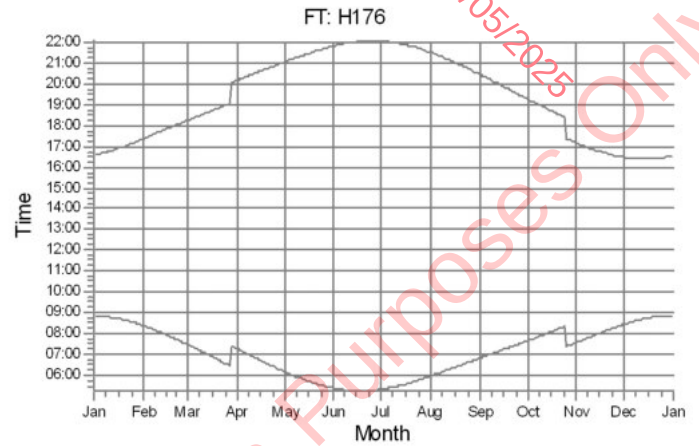
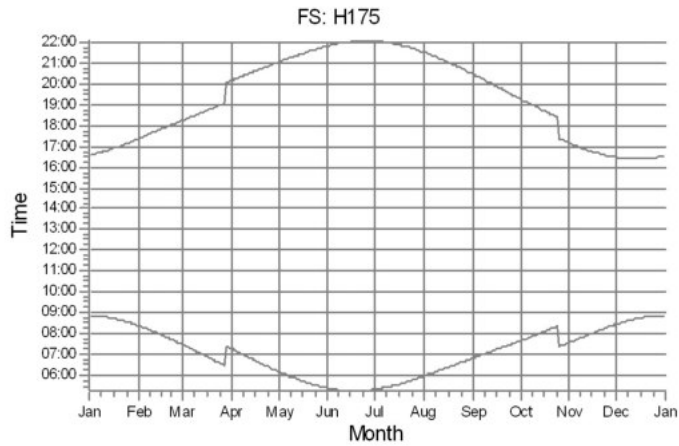
3 no. turbine Wind Farm, Moanmore Lower, Kilrush, Co. Clare
Cumulative Assessment: the proposed Moanmore Lower WF
and the operational Moanmore WF

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, 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:

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

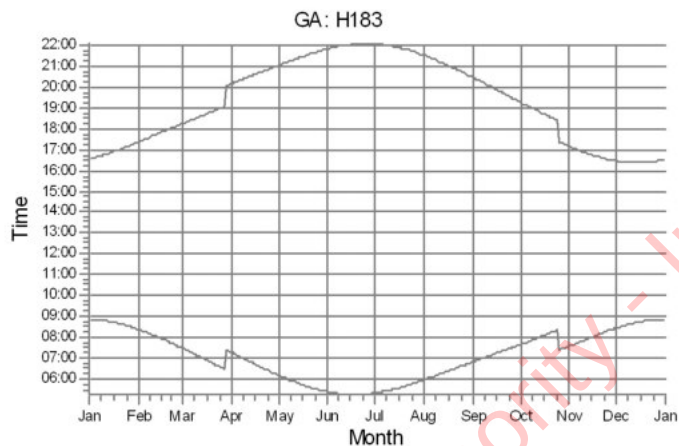
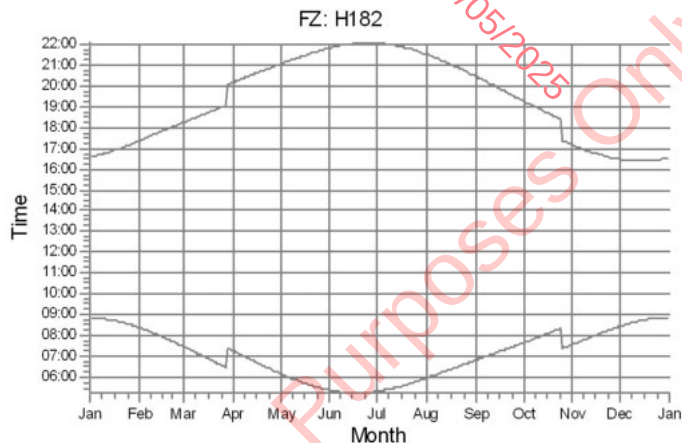
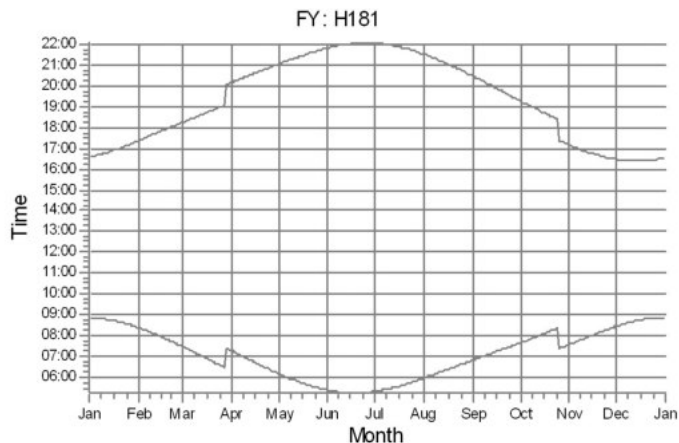
Kathryn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

SHADOW - Calendar, graphical

Calculation: 6778 Moanmore Lower Worst Case



WTGs

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

	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	20:31-21:25/55				
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	05:46-06:09/23				
	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	05:46-06:09/23				
	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	05:46-06:09/23				
	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	05:46-21:29/55				
	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	05:45-21:29/55				
	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	07:17-07:32/10	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				
18	08:41	09:10-10:22/72	10:50-10:59/9	07:51	16:38-17:28/50	16:18-16:35/17	06:48	17:44-18:21/37	06:36	19:49-20:14/25	05:39	19:58-21:01/63	05:14	05:45-21:31/56				
	16:57	15:17-16:24/67		17:55	08:16-08:58/42		18:47		20:42		21:32		22:05	05:45-06:09/24				
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				
20	08:39	09:08-10:22/74		07:47	16:38-17:31/53		06:43	17:43-18:24/41	06:31	19:46-20:17/31	05:36	20:04-21:03/59	05:14	05:46-21:31/55				
	17:01	15:19-16:27/68		17:59	08:13-08:49/36		18:50		20:45		21:35		22:06	05:45-06:09/24				
21	08:37	09:06-10:21/75		07:45	16:44-17:37/52		06:41	17:44-18:25/41	06:29	19:45-20:19/34	05:34	20:02-21:04/62	05:14	05:47-21:32/55				
	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				
22	08:36	09:05-09:26/21	15:20-16:32/72	07:42	16:45-17:38/52		06:39	17:44-18:25/41	06:27	19:44-20:20/36	05:33	20:01-21:04/62	05:14	05:47-21:32/55				
	17:04	09:27-10:22/55		18:03	16:39-17:31/52		18:54		20:49		21:38		22:06	05:46-06:10/24				
23	08:35	09:03-09:26/23	15:20-16:33/73	07:40	16:47-17:40/53		06:36	17:44-18:24/40	06:25	19:44-20:22/38	05:32	20:00-20:06/6	05:15	05:47-21:32/55				
	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	16:48-17:41/54		06:34	17:45-18:23/38	06:23	19:43-20:24/41	05:30	20:05-20:06/7	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	16:48-17:41/55		06:31	17:44-18:21/37	06:21	19:43-20:25/42	05:29	20:05-20:06/7	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	20:06-20:06/10	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	16:40-17:29/49		06:27	17:47-18:19/32	06:17	19:42-20:29/47	05:27	20:05-20:06/11	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	07:29	16:40-17:29/49		06:24	17:47-18:17/30	06:15	19:42-20:30/48	05:26	20:05-20:06/11	05:17	05:47-21:32/55				
	17:15	15:26-16:44/78		18:14	16:46-17:28/48		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	20:05-20:06/11	05:17	05:47-21:32/55				
	17:17	15:27-16:45/78		20:06			20:06		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	18:43-19:07/45/2		07:20	18:43-19:07/45/2	06:10	19:42-20:33/51	05:24	20:05-20:06/11	05:18	05:47-21:31/54				
	17:19	15:29-16:47/78		20:08	18:51-19:13/22		20:08	18:51-19:13/22	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	18:40-07:45/5		07:17	18:40-07:45/5			05:23	20:52-06:08/16						
	17:21	15:30-16:50/80		20:10	18:53-19:10/17		20:10	18:53-19:10/17			21:50	20:21-21:17/56						

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	17:32-17:48/16	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	15:14-15:18/4	07:45	15:30-16:28/58	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	17:22-17:55/33		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	15:08-15:24/16	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	15:05-15:27/22	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	15:29-15:29/26	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	
13	05:30	06:01-06:16/15	06:16	19:50-20:41/51	07:08	07:34-07:36/2	07:59	08:25-08:33/8		07:56	08:26-09:01/35	09:17-09:49/32	08:41	09:15-10:07/52	10:16-11:02/46
	21:58	20:29-21:25/56	21:10		20:01	18:42-19:03/21	18:50	17:13-18:01/48		16:49	14:59-16:17/78		16:23	14:33-15:48/75	
14	05:31	06:02-06:16/14	06:17	19:50-20:39/49	07:09	18:40-19:06/26	08:01	08:27-08:32/5	09:16-09:50/34	07:58	08:28-09:01/33	09:16-09:50/34	08:42	09:16-10:07/51	10:17-11:03/46
	21:57	20:27-21:24/57	21:08		19:58		18:48	17:12-18:01/49		16:48	14:58-16:16/78		16:23	14:33-15:47/74	
15	05:32	06:03-06:16/13	06:19	19:50-20:37/47	07:11	18:38-19:07/29	08:03	08:29-08:31/2		07:59	08:30-09:01/31	09:15-09:51/36	08:43	09:17-10:08/51	10:17-11:03/46
	21:56	20:26-21:23/57	21:06		19:56		18:45	17:12-18:02/50		16:46	14:57-16:14/77		16:23	14:33-15:47/74	
16	05:33	06:04-06:16/12	06:21	19:50-20:36/46	07:13	18:35-19:08/33	08:04	17:11-18:02/51		08:01	08:32-09:01/29	09:14-09:53/39	08:44	09:18-10:08/50	10:18-11:04/46
	21:55	20:25-21:22/57	21:04		19:54		18:43			16:45	14:56-16:12/76		16:24	14:33-15:48/75	
17	05:34	06:05-06:16/11	06:22	19:49-20:33/44	07:14	18:34-19:09/35	08:06	08:52-09:04/12		08:03	08:34-09:01/27	09:14-09:54/40	08:45	09:19-10:09/50	10:18-11:05/47
	21:54	20:23-21:21/58	21:02		19:51		18:41	17:11-18:02/51		16:43	14:56-16:11/75		16:24	14:33-15:48/75	
18	05:36	06:06-06:15/9	06:24	19:50-20:32/42	07:16	18:33-19:10/37	08:08	08:49-09:09/20		08:05	08:36-09:01/25	14:55-16:09/74	08:46	09:19-10:09/50	10:18-11:05/47
	21:53	20:22-21:20/58	21:00		19:49		18:39	17:10-18:02/52		16:42	09:07-09:12/5	09:13-09:55/42	16:24	14:33-15:47/74	
19	05:37	06:08-06:16/8	06:26	19:49-20:29/40	07:18	18:31-19:09/38	08:10	08:47-09:12/25		08:07	08:38-09:01/23	14:55-16:08/73	08:46	09:20-10:09/49	10:18-11:06/48
	21:52	20:22-21:20/58	20:58		19:46		18:37	17:10-18:03/53		16:41	09:04-09:56/52		16:24	14:34-15:48/74	
20	05:38	06:09-06:15/6	06:27	19:50-20:27/37	07:20	18:30-19:10/40	08:12	08:46-09:15/29		08:08	08:40-09:01/21	14:55-16:07/72	08:47	09:21-10:10/49	10:19-11:07/48
	21:50	20:20-21:18/58	20:56		19:44		18:34	17:09-18:02/53		16:39	09:02-09:57/55		16:25	14:34-15:49/75	
21	05:40	06:10-06:15/5	06:29	19:49-20:25/36	07:21	18:30-19:11/41	08:13	08:44-09:17/33		08:10	08:42-09:01/19	14:55-16:05/70	08:48	09:21-10:10/49	10:19-11:06/47
	21:49	20:18-21:17/59	20:53		19:42		18:32	17:09-18:01/52		16:38	09:02-09:57/55		16:25	14:34-15:49/75	
22	05:41	06:12-06:15/3	06:31	19:50-20:23/33	07:23	18:28-19:10/42	08:15	17:09-18:01/52		08:12	08:44-09:58/74		08:48	09:22-10:11/49	10:20-11:07/47
	21:48	20:16-21:15/59	20:51		19:39		18:30	08:43-09:21/38		16:37	14:55-16:04/69		16:26	14:35-15:50/75	
23	05:43	06:13-06:14/1	06:32	19:51-20:21/30	07:25	18:28-19:09/41	08:17	17:09-17:59/50	16:51-17:01/10	08:13	08:45-09:58/73		08:49	09:22-10:11/49	10:20-11:08/48
	21:46	20:15-21:15/60	20:49		19:37		18:28	08:44-09:24/40		16:36	14:54-16:02/68		16:26	14:35-15:50/75	
24	05:44	20:14-21:13/59	06:34	19:51-20:19/28	07:26	18:28-19:07/39	08:19	17:07-17:56/49	16:46-17:05/19	08:15	08:47-09:59/72	10:27-10:35/8	08:49	09:23-10:12/49	10:20-11:08/48
	21:45		20:47		19:34		18:26	08:46-09:29/43		16:35	14:54-16:01/67		16:27	14:35-15:50/75	
25	05:45	20:10-21:13/63	06:36	19:52-20:17/25	07:28	18:27-19:04/37	07:21	15:43-16:54/71		08:17	08:49-10:00/71	10:24-10:40/16	08:49	09:23-10:13/50	10:22-11:09/47
	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	07:52-08:36/42		16:32	14:55-15:58/63		16:29	14:38-15:52/74	
28	05:50	20:04-21:08/64	06:41	19:55-20:11/16	07:33	07:59-08:13/14	07:22	15:43-16:54/71	10:19-10:47/28	08:22	08:50-10:01/67	10:19-10:47/28	08:50	09:23-10:13/50	10:22-11:09/46
	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	09:23-10:13/51	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	1	

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 16:34 15:24-15:58/34	08:22 08:49-08:57/8 17:23 16:14-16:52/38	07:27 07:51-08:15/24 18:16 17:38-17:49/11	07:15 19:13-19:45/32 20:12 19:14-19:47/33	06:09 06:34-06:49/15 21:04 20:31-20:35/4	05:22 05:51-06:05/14 21:52 21:09-21:18/12
2	08:50 09:23-10:40/77 16:35 15:24-15:58/34	08:21 08:47-08:57/10 17:25 16:31-16:54/23	07:25 07:49-08:13/24 18:18 17:38-17:51/13	07:13 19:14-19:47/33 20:13 19:15-19:48/33	06:07 06:32-06:48/16 21:06 20:32-20:37/5	05:21 05:50-06:06/16 21:53 21:07-21:19/12
3	08:50 09:22-10:40/78 16:36 15:25-16:00/35	08:19 08:46-08:57/11 17:27 16:32-16:56/24	07:23 07:47-08:10/23 18:20 17:38-17:54/16	07:10 19:15-19:48/33 20:15 20:18-19:51/33	06:05 06:31-06:47/16 21:08 20:31-20:39/8	05:20 05:50-06:07/17 21:54 21:09-21:21/12
4	08:50 09:22-10:40/78 16:37 15:27-16:02/35	08:17 08:44-08:57/13 17:28 16:32-16:58/26	07:21 07:44-08:07/23 18:21 17:37-17:55/18	07:08 19:18-19:51/33 20:17 20:19-20:31-20:40/9	06:03 06:32-06:45/13 21:09 20:31-20:40/9	05:19 05:49-06:07/18 21:55 21:09-21:21/12
5	08:50 09:21-10:39/78 16:38 15:27-16:02/35	08:16 08:42-08:56/14 17:30 16:32-17:00/28	07:18 07:43-08:01/18 18:23 17:37-17:57/20	07:06 19:22-19:53/31 20:19 19:22-19:54/32	06:01 06:33-06:44/11 21:11 20:31-20:41/10	05:19 05:49-06:08/19 21:56 21:10-21:22/12
6	08:49 09:21-10:39/78 16:40 15:29-16:04/35	08:14 08:40-08:55/15 17:32 16:33-17:02/29	07:16 07:44-08:00/16 18:25 17:37-17:59/22	07:03 19:22-19:54/32 20:20 20:21-20:31-20:43/12	05:59 06:36-06:42/6 21:13 20:31-20:43/12	05:18 05:48-06:08/20 21:57 21:14-21:23/9
7	08:49 09:20-10:38/78 16:41 15:31-16:05/34	08:12 08:38-08:54/16 17:34 16:33-17:04/31	07:14 07:45-07:57/12 18:27 17:37-18:00/23	07:01 19:25-19:56/31 20:22 20:23-20:33-20:46/13	05:57 20:32-20:45/13 21:14 21:15-21:25-21:38/14	05:17 05:47-06:08/21 21:58 21:14-21:24/10
8	08:48 09:21-10:37/76 16:42 15:33-16:07/34	08:10 08:36-08:55/19 17:36 16:34-17:06/32	07:11 07:48-07:55/13 18:29 17:38-18:02/24	06:59 19:28-19:57/29 20:24 19:35-20:04/29	05:55 20:33-20:46/13 21:16 21:17-21:27/10	05:17 05:47-06:09/22 21:59 21:15-21:26/11
9	08:48 09:21-10:35/74 16:44 15:34-16:09/35	08:08 08:34-08:55/21 17:38 16:35-17:08/33	07:09 17:39-18:01/22 18:31 18:32-18:42-18:55/23	06:56 19:28-19:58/30 20:26 20:27-20:37-20:50/15	05:53 20:33-20:47/14 21:18 21:19-21:29-21:42/15	05:16 05:47-06:10/23 22:00 21:16-21:26/10
10	08:47 09:22-10:27/65 16:45 10:29-10:32/3	08:07 08:32-08:55/23 17:40 16:36-17:10/34	07:07 17:39-17:59/20 18:32 17:41-17:58/17	06:54 19:30-20:00/30 20:27 20:28-20:38-20:51/17	05:52 20:35-20:50/15 21:20 21:21-21:31-21:44/17	05:16 05:46-06:10/24 22:00 21:16-21:26/10
11	08:47 09:22-10:27/65 16:46 15:36-16:11/35	08:05 08:30-08:55/25 17:42 16:37-17:13/36	07:04 17:41-17:58/17 18:34 18:35-18:45-18:58/26	06:52 19:33-20:02/29 20:29 20:30-20:40-20:53/19	05:50 20:34-20:51/17 21:21 21:22-21:32-21:45/19	05:15 05:46-06:10/24 22:01 21:17-21:27/10
12	08:46 09:22-10:26/64 16:48 15:38-16:13/35	08:03 08:28-08:54/26 17:44 16:40-17:15/35	07:02 17:43-17:54/11 18:36 18:37-18:47-18:59/30	06:49 19:35-20:04/29 20:31 20:32-20:42-20:55/22	05:48 20:34-20:53/19 21:23 21:24-21:34-21:47/16	05:15 05:46-06:11/25 22:02 21:18-21:28/10
13	08:45 09:24-10:26/62 16:49 15:39-16:14/35	08:01 08:26-08:54/28 17:46 16:43-17:17/34	07:00 17:44-17:55-17:68/33 18:38 18:39-18:49-19:02/34	06:47 19:36-20:05/29 20:33 20:34-20:44-20:57/23	05:47 20:34-20:54/20 21:24 21:25-21:35-21:48/18	05:15 05:46-06:11/25 22:03 21:18-21:28/10
14	08:44 09:24-10:24/60 16:51 15:41-16:16/35	07:59 08:24-08:53/29 17:48 16:52-17:19/27	06:57 17:47-17:58/12 18:40 18:41-18:51-19:04/35	06:45 19:38-20:07/29 20:35 20:36-20:46-20:59/32	05:45 20:33-20:55/22 21:26 21:27-21:37-21:50/24	05:14 05:45-06:11/26 22:03 21:19-21:29/10
15	08:44 09:24-10:21/57 16:53 15:43-16:18/35	07:57 08:22-08:52/30 17:50 16:55-17:21/26	06:55 17:18-07:22/4 18:41 18:42-18:52-19:05/36	06:43 19:40-20:09/29 20:36 20:37-20:47-21:00/34	05:43 20:34-20:57/23 21:28 21:29-21:39-21:52/26	05:14 05:45-06:11/26 22:04 21:20-21:29/9
16	08:43 09:25-10:18/53 16:54 15:45-16:20/35	07:55 08:20-08:51/31 17:51 16:56-17:23/27	06:53 17:16-07:24/8 18:43 18:44-18:54-19:07/40	06:40 19:41-20:11/30 20:38 20:39-20:49-21:02/36	05:42 20:34-20:58/24 21:29 21:30-21:40-21:53/30	05:14 05:45-06:11/26 22:04 21:21-21:30/9
17	08:42 09:25-10:17/52 16:56 15:47-16:22/35	07:53 08:18-08:50/32 17:53 16:56-17:25/29	06:50 17:14-07:25/11 18:45 18:46-18:56-19:09/41	06:38 19:44-20:13/29 20:40 20:41-20:51-21:04/37	05:40 20:34-20:59/25 21:31 21:32-21:42-21:55/32	05:14 05:45-06:12/27 22:05 21:22-21:30/8
18	08:41 09:26-10:15/49 16:58 15:49-16:24/35	07:51 08:16-08:47/31 17:55 16:57-17:26/29	06:48 17:11-07:25/14 18:47 18:48-18:58-19:11/42	06:36 19:55-20:14/19 20:42 20:43-20:53-21:06/39	05:39 20:35-21:01/26 21:32 21:33-21:43-21:56/34	05:14 05:45-06:12/27 22:05 21:23-21:32/7
19	08:40 09:27-10:11/44 16:59 15:51-16:26/35	07:49 08:14-08:44/30 17:57 16:56-17:25/29	06:46 17:09-07:26/17 18:49 18:19-18:23/4	06:34 19:54-20:15/21 20:43 20:44-20:54-21:07/40	05:37 20:35-21:03/28 21:34 21:35-21:45-21:58/44	05:14 05:45-06:12/27 22:06 21:23-21:31/8
20	08:39 09:28-10:09/41 17:01 15:54-16:04/10	07:47 08:11-08:42/31 17:59 16:57-17:24/27	06:43 17:07-07:27/20 18:50 18:17-18:24/7	06:32 19:54-20:17/23 20:45 20:46-20:56-21:09/45	05:36 20:35-21:03/28 21:35 21:36-21:46-21:59/46	05:14 05:45-06:12/27 22:06 21:23-21:31/8
21	08:37 09:29-10:07/38 17:03 15:58-15:59/1	07:45 08:09-08:38/29 18:01 16:58-17:23/25	06:41 17:04-07:26/22 18:52 18:16-18:26/10	06:29 19:55-20:19/24 20:47 19:56-20:20/24	05:34 20:36-21:05/29 21:37 21:38-21:48-21:61/51	05:14 05:46-06:13/27 22:06 21:25-21:32/7
22	08:36 09:30-10:06/36 17:04 16:05-16:32/27	07:43 08:07-08:33/26 18:03 17:00-17:22/22	06:39 17:02-07:27/25 18:54 18:15-18:28/13	06:27 19:56-20:20/24 20:49 20:50-20:60-21:13/47	05:33 20:36-21:04/9 21:38 20:36-21:07/31	05:14 05:46-06:13/27 22:06 21:25-21:32/7
23	08:35 09:32-10:02/30 17:06 16:05-16:33/28	07:40 08:05-08:32/27 18:05 17:01-17:21/20	06:36 17:07-07:27/20 18:56 18:13-18:30/17	06:25 19:57-20:22/25 20:50 20:51-20:61-21:14/51	05:32 20:36-21:04/9 21:40 20:37-21:08/31	05:15 05:46-06:13/27 22:07 21:24-21:32/8
24	08:34 09:32-09:55/23 17:08 16:06-16:35/29	07:38 08:03-08:30/27 18:07 17:03-17:18/15	06:34 17:07-07:27/20 18:57 18:13-18:32/19	06:23 19:58-20:22/25 20:52 20:53-20:63-21:16/55	05:30 20:37-21:08/31 21:41 20:38-21:09/31	05:15 05:47-06:14/27 22:07 21:24-21:32/8
25	08:32 09:34-09:55/21 17:10 16:06-16:37/31	07:36 08:00-08:27/27 18:08 17:07-17:14/7	06:31 17:07-07:25/28 18:59 18:12-18:33/21	06:21 19:59-20:24/25 20:54 20:55-20:65-21:18/59	05:29 20:38-21:05/7 21:43 20:38-21:10/32	05:15 05:47-06:14/27 22:07 21:24-21:32/8
26	08:31 16:07-16:40/33 17:12 16:06-16:39/52/16	07:34 07:58-08:20/22 18:10 17:42-17:43/1	06:29 17:07-07:27/20 18:59 18:12-18:35/23	06:19 20:43-06:49/6 20:56 20:57-20:67-21:20/64	05:28 20:38-21:05/9 21:44 20:39-21:11/33	05:16 05:47-06:14/27 22:07 21:23-21:32/9
27	08:30 16:07-16:41/34 17:13 16:07-16:50/12	07:32 07:56-08:19/23 18:12 17:41-17:46/5	06:27 17:07-07:27/20 18:57 18:12-18:33/21	06:17 20:41-06:49/8 20:57 20:58-20:68-21:21/68	05:27 20:35-06:05/10 21:45 20:39-21:12/9	05:16 05:48-06:14/26 22:07 21:23-21:32/9
28	08:28 16:09-16:44/35 17:15 16:12-16:50/38	07:29 07:54-08:18/24 18:14 17:39-17:47/8	06:24 17:07-07:27/20 19:05 18:11-18:38/27	06:15 20:42-06:49/10 20:59 20:58-20:68-21:21/68	05:26 20:35-06:05/10 21:47 21:03-21:13/10	05:17 05:48-06:14/26 22:07 21:22-21:32/10
29	08:27 08:54-08:55/1 17:17 16:09-16:45/36	07:28 08:54-08:55/1 17:17 16:09-16:45/36	06:24 17:07-07:27/20 20:06 19:11-19:40/29	06:13 20:42-06:49/10 21:01 20:59-20:26/17	05:25 20:46-06:05/11 21:48 21:05-21:15/10	05:17 05:46-06:14/26 22:06 21:23-21:32/9
30	08:25 08:53-08:56/3 17:19 16:11-16:47/36	07:26 08:53-08:56/3 17:19 16:11-16:47/36	06:24 17:07-07:27/20 20:10 20:08-08-18/18	06:11 20:59-20:26/17 21:01 20:59-20:26/17	05:24 20:46-06:05/11 21:48 21:05-21:15/10	05:18 05:49-06:14/26 22:06 21:23-21:32/9
31	08:24 08:51-08:57/6 17:21 16:12-16:50/38	07:24 08:51-08:57/6 17:21 16:12-16:50/38	06:10 19:12-19:43/31 20:10 19:12-19:43/31	20:10 20:10-20:20-20:30/40 21:02 20:32-20:33/1	05:23 20:46-06:05/11 21:49 21:05-21:16/11	05:18 05:49-06:14/26 22:06 21:22-21:31/9
Potential sum hours	256	256	256	256	256	256
Sum of minutes with flicker	256	256	256	256	256	256

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	21:33	06:48 19:32-20:01/29	07:38 18:24-18:32/8	07:34 08:02-08:24/22	17:10 16:05-16:40/35	08:26 09:04-10:09/65			
2	05:19 05:51-06:15/24	05:58 20:45-21:00/15	21:31	06:49 19:29-19:59/30	07:40 18:20-18:34/14	07:36 08:04-08:24/20	17:08 16:04-16:38/34	08:28 09:05-10:11/66			
3	05:20 05:51-06:14/23	05:59 20:44-20:59/15	21:29	06:51 19:26-19:56/30	07:42 18:18-18:36/18	07:37 08:06-08:24/18	17:06 16:03-16:36/33	08:29 09:04-10:18/74			
4	05:21 05:52-06:14/22	06:01 20:43-20:57/14	21:27	06:53 19:25-19:55/30	07:43 18:16-18:38/22	07:39 08:08-08:24/16	17:04 16:03-16:34/31	08:30 09:05-10:21/76			
5	05:21 05:53-06:15/22	06:03 20:42-20:56/14	21:26	06:54 19:22-19:53/31	07:45 18:15-18:39/24	07:41 08:10-08:25/15	17:03 16:02-16:32/30	08:32 09:05-10:23/78			
6	05:22 05:54-06:15/21	06:04 20:42-20:54/12	21:24	06:56 19:19-19:50/31	07:47 08:23-08:33/10	07:43 08:12-08:26/14	17:01 16:02-16:30/28	08:33 09:07-10:25/78			
7	05:23 05:55-06:15/20	06:06 06:44-06:52/8	21:22	06:58 19:17-19:48/31	07:49 08:20-08:34/14	07:45 08:14-08:27/13	16:59 16:02-16:28/26	08:34 09:08-10:26/78			
8	05:24 05:56-06:15/19	06:07 06:42-06:54/12	21:20	06:59 19:12-19:45/33	07:50 08:18-08:36/18	07:47 08:16-08:27/11	15:49-15:58/9	08:36 09:09-10:27/78			
9	05:25 05:57-06:14/17	06:09 06:41-06:55/14	21:18	07:01 19:10-19:43/33	07:52 08:18-08:40/22	07:49 08:18-08:27/9	15:46-16:01/15	08:37 09:11-10:29/78			
10	05:26 05:58-06:14/16	06:11 06:39-06:56/17	21:16	07:03 19:08-19:41/33	07:54 08:20-08:43/23	07:50 08:20-08:27/7	16:56 16:02-16:24/22	08:38 09:12-10:30/78			
11	05:27 05:59-06:14/15	06:12 06:41-06:57/16	21:14	07:04 19:05-19:38/33	07:56 08:22-08:45/23	07:52 08:22-08:27/5	16:54 15:44-16:22/38	08:39 09:13-10:30/77			
12	05:28 06:00-06:14/14	06:14 06:42-06:56/14	20:20-20:31/11	07:06 07:55-08:06/11	07:57 08:24-08:48/24	07:54 08:24-08:27/3	16:52 15:43-16:21/38	08:40 09:14-10:31/77			
13	05:30 06:01-06:13/12	06:16 06:44-06:57/13	20:19-20:33/14	07:08 07:52-08:09/17	07:59 08:25-08:49/24	07:56 08:26-08:27/1	16:51 15:42-16:19/37	08:41 09:15-10:32/77			
14	05:31 06:02-06:14/12	06:17 06:46-06:57/11	21:10	07:09 07:49-08:10/21	08:01 08:27-08:51/24	07:58 15:41-16:16/35	16:49 15:41-16:17/36	08:42 09:16-10:33/77			
15	05:32 06:03-06:14/11	06:19 06:47-06:57/10	21:08	07:11 07:48-08:11/23	08:03 08:29-08:51/22	16:48 18:12-18:19/7	16:46 09:11-09:23/12	08:43 09:17-10:33/76			
16	05:33 06:04-06:14/10	06:21 06:49-06:57/8	21:06	07:13 07:47-08:12/25	08:05 08:31-08:57/26	16:45 09:10-09:25/16	16:45 09:09-09:25/16	08:44 09:18-10:34/76			
17	05:34 06:05-06:14/9	06:22 06:50-06:56/6	21:04	07:14 07:45-08:12/27	08:06 08:33-09:00/27	16:43 09:07-09:28/21	16:43 09:07-09:28/21	08:45 09:19-10:35/76			
18	05:35 06:06-06:15/9	06:24 06:52-06:55/3	21:02	07:16 07:44-08:12/28	08:08 08:35-09:02/27	16:42 15:40-16:11/31	16:42 15:40-16:11/31	08:46 09:19-10:35/76			
19	05:36 06:07-06:15/7	06:26 06:54-06:57/1	21:00	07:18 07:43-08:12/29	08:10 08:37-09:04/27	16:41 15:40-16:09/29	16:41 15:40-16:09/29	08:47 09:21-10:37/76			
20	05:37 06:08-06:15/7	06:28 06:56-06:59/2	20:58	07:19 07:44-08:13/29	08:12 08:39-09:05/26	16:40 15:40-16:09/29	16:40 15:40-16:09/29	08:48 09:21-10:37/76			
21	05:38 06:09-06:14/5	06:30 06:58-07:01/2	20:56	07:20 07:45-08:14/27	08:14 08:40-09:10/30	16:39 15:40-16:07/27	16:39 15:40-16:07/27	08:49 09:22-10:37/76			
22	05:39 06:10-06:14/4	06:32 06:59-07:02/2	20:54	07:21 07:46-08:15/27	08:16 08:41-09:11/31	16:38 15:40-16:05/25	16:38 15:40-16:05/25	08:50 09:23-10:37/76			
23	05:40 06:11-06:14/3	06:34 06:59-07:02/2	20:53	07:22 07:47-08:16/27	08:18 08:42-09:13/31	16:37 15:40-16:05/25	16:37 15:40-16:05/25	08:51 09:24-10:37/76			
24	05:41 06:12-06:14/2	06:36 06:59-07:02/2	20:51	07:23 07:48-08:17/27	08:20 08:43-09:14/30	16:36 15:40-16:05/25	16:36 15:40-16:05/25	08:52 09:25-10:37/76			
25	05:42 06:13-06:14/1	06:38 06:59-07:02/2	20:49	07:24 07:49-08:18/27	08:22 08:44-09:15/30	16:35 15:40-16:05/25	16:35 15:40-16:05/25	08:53 09:26-10:37/76			
26	05:43 06:14-06:14/1	06:40 06:59-07:02/2	20:47	07:25 07:50-08:19/27	08:24 08:45-09:16/30	16:34 15:40-16:05/25	16:34 15:40-16:05/25	08:54 09:27-10:37/76			
27	05:44 06:15-06:14/1	06:42 06:59-07:02/2	20:45	07:26 07:51-08:20/27	08:26 08:46-09:17/30	16:33 15:40-16:05/25	16:33 15:40-16:05/25	08:55 09:28-10:37/76			
28	05:45 06:16-06:14/1	06:44 06:59-07:02/2	20:43	07:27 07:52-08:21/27	08:28 08:47-09:18/30	16:32 15:40-16:05/25	16:32 15:40-16:05/25	08:56 09:29-10:37/76			
29	05:46 06:17-06:14/1	06:46 06:59-07:02/2	20:41	07:28 07:53-08:22/27	08:30 08:48-09:19/30	16:31 15:40-16:05/25	16:31 15:40-16:05/25	08:57 09:30-10:37/76			
30	05:47 06:18-06:14/1	06:48 06:59-07:02/2	20:39	07:29 07:54-08:23/27	08:32 08:49-09:20/30	16:30 15:40-16:05/25	16:30 15:40-16:05/25	08:58 09:31-10:37/76			
31	05:48 06:19-06:14/1	06:50 06:59-07:02/2	20:37	07:30 07:55-08:24/27	08:34 08:50-09:21/30	16:29 15:40-16:05/25	16:29 15:40-16:05/25	08:59 09:32-10:37/76			
Potential sun hours	506	456	381	950	1293	1803	1803	3390			
Sum of minutes with flicker	993	725	950	1293	1803	1803	1803	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**Assumptions for shadow calculations**

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

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.30	2.04	2.89	4.92	5.79	4.99	4.32	4.35	3.60	2.54	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	08:22 09:02-09:15/13	07:27 17:06-17:49/43	07:15 18:41-19:45/64	06:08 20:29-20:35/6 19:46-20:19/33	05:22 20:30-21:18/48					
2	08:50 15:56-15:58/2 09:23-10:00/37	08:21 09:04-09:13/9	07:25 17:06-17:51/45	07:13 18:44-19:47/63	06:07 20:29-20:37/8 19:48-20:18/30	05:21 20:30-21:19/49					
3	08:50 15:57-16:00/3 09:22-09:59/37	08:19 16:20-16:55/35	07:23 17:06-17:54/48	07:10 18:44-19:48/64	06:05 20:28-20:39/11 19:49-20:17/28	05:20 20:31-21:21/50					
4	08:50 15:57-16:02/5 09:22-10:00/38	08:17 16:21-16:58/37	07:20 17:04-17:55/51	07:08 18:46-19:51/65	06:03 20:27-20:40/13 19:50-20:15/25	05:19 20:30-21:21/51					
5	08:50 15:57-16:02/5 15:01-15:51/50	08:16 16:21-17:00/39	07:18 17:04-17:57/53	07:06 18:49-19:53/64	06:01 20:27-20:41/14 19:52-20:13/21	05:19 20:30-21:22/52					
6	08:49 15:58-16:04/6 15:03-15:52/49	08:14 16:21-17:00/39	07:16 17:04-17:59/55	07:03 18:51-19:54/63	05:59 20:26-20:43/17 19:53-20:11/18	05:18 20:31-21:23/52					
7	08:49 15:58-16:05/7 15:03-15:51/48	08:12 16:21-17:00/39	07:14 17:04-18:00/56	07:01 18:52-19:56/64	05:57 20:23-20:42/16 06:41-06:52/11	05:17 20:30-21:24/54					
8	08:48 15:58-16:06/8 15:03-15:51/48	08:10 08:36-08:38/2	07:11 07:35-07:36/1	06:59 18:54-19:57/63	05:55 20:21-06:25/4 06:45-06:47/2	05:17 20:31-21:25/54					
9	08:48 15:59-16:09/10 15:05-15:52/47	08:08 08:34-08:38/4	07:09 07:33-07:37/4	06:56 18:54-19:58/64	05:53 20:19-06:24/5	05:16 20:31-21:26/55					
10	08:47 15:59-16:10/11 15:05-15:52/47	08:07 08:32-08:39/7	07:07 07:30-07:37/7	06:54 18:56-20:00/64	05:52 20:26-20:50/24	05:16 20:31-21:26/55					
11	08:47 15:59-16:11/12 15:06-15:51/45	08:05 08:30-08:39/9	07:04 07:28-07:37/9	06:52 18:58-20:02/64	05:50 20:26-20:51/25	05:15 20:31-21:27/56					
12	08:46 15:59-16:13/14 15:06-15:51/45	08:03 08:28-08:39/11	07:02 07:26-07:38/12	06:49 19:01-20:04/63	05:48 20:26-20:53/27	05:15 20:32-21:28/56					
13	08:45 16:00-16:14/14 15:07-15:51/44	08:01 08:26-08:39/13	07:00 17:05-18:12/67	06:47 19:23-20:05/42	05:46 20:27-20:54/27	05:15 20:31-21:28/57					
14	08:44 16:00-16:16/16 15:08-15:50/42	07:59 08:24-08:38/14	06:57 17:06-18:14/68	06:45 19:23-20:07/44	05:45 20:26-20:55/29	05:14 20:31-21:29/58					
15	08:44 16:01-16:18/17 15:09-15:49/40	07:57 08:22-08:37/15	06:55 17:06-18:15/69	06:43 19:23-20:09/46	05:43 20:27-20:57/30	05:14 20:32-21:29/57					
16	08:43 16:01-16:20/19 15:10-15:49/39	07:55 08:20-08:36/16	06:53 17:08-18:17/69	06:40 07:04-07:05/1	05:42 20:28-20:58/30	05:14 20:32-21:30/58					
17	08:42 16:02-16:22/20 15:12-15:47/35	07:53 08:18-08:35/17	06:50 17:09-18:20/71	06:38 19:24-20:13/49	05:40 20:28-20:59/31	05:14 20:32-21:30/58					
18	08:41 16:03-16:24/21 15:13-15:45/32	07:51 08:16-08:32/16 17:24-17:28/4	06:48 17:10-18:21/71	06:36 19:25-20:14/49	05:39 20:29-21:01/32	05:14 20:32-21:31/59					
19	08:40 16:04-16:25/21 15:15-15:41/26	07:49 08:14-08:30/16	06:46 17:12-18:23/71	06:34 19:24-20:15/51	05:37 20:31-21:03/32	05:14 20:33-21:31/58					
20	08:39 16:04-16:24/20 16:26-16:27/1	07:47 08:11-08:24/13	06:43 17:14-18:24/70	06:31 19:25-20:17/52	05:36 20:31-21:03/32	05:14 20:33-21:31/58					
21	08:37 16:05-16:24/19 16:25-16:29/4	07:45 08:09-08:23/14	06:41 17:17-18:26/69	06:29 19:26-20:19/53	05:34 20:32-21:05/33	05:14 20:34-21:32/58					
22	08:36 16:07-16:24/17 16:25-16:32/7	07:42 08:10-08:22/12	06:39 17:23-18:28/65	06:27 19:27-20:20/53	05:33 20:33-21:07/34	05:14 20:34-21:32/58					
23	08:35 16:08-16:22/14 16:23-16:33/10	07:40 08:13-08:19/6	06:36 17:23-18:30/67	06:25 19:29-20:22/53	05:32 20:32-21:08/36	05:15 20:34-21:32/58					
24	08:34 16:10-16:21/11 16:23-16:36/13	07:38 17:10-17:39/29	06:34 17:25-18:32/67	06:23 19:30-20:24/54	05:30 20:32-21:09/37	05:15 20:33-21:32/59					
25	08:32 16:13-16:18/5 16:22-16:37/15	07:36 17:10-17:41/31	06:31 17:26-18:33/67	06:21 19:32-20:24/52	05:29 20:31-21:10/39	05:15 20:34-21:32/58					
26	08:31 08:59-09:31/32	07:34 17:09-17:43/34	06:29 17:28-18:35/67	06:19 19:43-20:07/24	05:28 20:31-21:11/40	05:16 20:34-21:32/58					
27	08:30 16:22-16:40/18	07:32 17:08-17:46/38	06:27 17:31-18:37/66	06:17 19:45-20:23/48	05:27 20:31-21:12/41	05:16 20:35-21:32/57					
28	08:28 08:58-09:26/28	07:29 17:06-17:47/41	06:24 17:33-18:38/65	06:15 19:46-20:23/47	05:26 20:30-21:13/43	05:17 20:35-21:32/57					
29	08:27 08:58-09:23/25		06:22 18:35-19:40/65	06:12 19:47-20:27/47	05:25 20:31-21:15/44	05:17 20:35-21:32/57					
30	08:25 09:00-09:22/22		06:20 18:37-19:42/65	06:10 19:48-20:23/46	05:24 20:31-21:16/45	05:18 20:35-21:31/56					
31	08:24 09:01-09:17/16		06:17 18:38-19:43/65	06:08 19:49-20:23/45	05:23 20:31-21:17/46	05:18 20:35-21:31/56					
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	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
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	07:42 08:07-08:15/8	07:38 08:04-08:08/4	08:28 15:42-15:53/11 14:48-15:35/47
5	05:20 20:36-21:30/54	05:59 20:36-21:00/24	06:51 18:52-19:56/64	07:42 08:07-08:15/8	07:38 08:04-08:08/4	08:28 15:42-15:53/11 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	07:43 08:09-08:14/5	07:36 15:51-16:30/39	08:29 15:42-15:52/10 14:48-15:35/47
7	05:21 20:36-21:30/54	06:01 06:30-06:35/5	06:53 18:51-19:55/64	07:43 08:09-08:14/5	07:39 15:51-16:30/39	08:30 15:44-15:50/6 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	07:45 08:11-08:13/2	07:40 15:51-16:30/39	08:30 15:44-15:50/6 14:48-15:36/48
9	05:21 20:37-21:30/53	06:03 06:32-06:35/3 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	07:47 17:41-18:38/57	07:43 15:51-16:30/39	08:32 15:43-15:50/7 14:48-15:37/49
11	05:22 20:37-21:30/53	06:04 06:33-06:34/1 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 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
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 06:48-07:05/17	20:15 19:04 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
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 06:46-07:06/20	20:13 19:01 18:39-19:43/64	07:52 17:39-18:31/52	07:48 15:51-16:24/33	08:37 15:44-15:49/5 09:09-09:47/38
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 15:51-16:24/33	08:37 15:44-15:49/5 09:09-09:47/38
18	22:02 05:57-06:16/19	21:18 06:46-07:07/21	20:10 19:04 18:39-19:43/64	07:54 17:40-18:29/49	07:50 15:51-16:22/31	08:38 15:45-15:48/2 09:12-09:49/37
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 15:51-16:22/31	08:38 15:45-15:48/2 09:12-09:49/37
20	22:01 05:58-06:17/19	21:16 06:44-07:08/24	20:08 18:33-19:38/65	07:56 17:40-18:27/47	07:52 15:52-16:21/29	08:39 15:47-15:48/1 09:13-09:49/36
21	05:27 20:38-21:26/48	06:12 20:38-20:45/7 19:56-20:27/31	20:05 18:33-19:38/65	07:56 17:40-18:27/47	07:52 15:52-16:21/29	08:39 15:47-15:48/1 09:13-09:49/36
22	22:00 05:59-06:17/18	21:14 06:44-07:10/26	20:05 18:33-19:38/65	07:56 17:40-18:27/47	07:52 15:52-16:21/29	08:39 15:47-15:48/1 09:13-09:49/36
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 15:52-16:19/27	08:40 15:47-15:48/1 09:14-09:50/36
24	22:00 06:00-06:18/18	21:12 06:42-07:11/29	20:03 18:27-19:33/66	07:59 17:39-18:21/42	07:56 15:52-16:19/27	08:41 15:48-15:49/1 09:14-09:50/36
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 15:52-16:19/27	08:41 15:48-15:49/1 09:14-09:50/36
26	22:01 06:01-06:18/17	21:10 06:44-07:12/28	20:01 18:25-19:31/66	08:01 17:40-18:19/39	07:58 15:53-16:17/24	08:42 15:49-15:50/35
27	05:31 20:39-21:24/45	06:17 06:46-07:13/27	07:09 18:25-19:31/66	08:01 17:40-18:19/39	07:58 15:53-16:17/24	08:42 15:49-15:50/35
28	22:02 06:02-06:22/20	21:08 19:53-20:29/36	19:58 18:24-19:29/65	08:03 17:41-18:17/36	07:59 15:54-16:16/22	08:43 15:49-15:50/35
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 15:54-16:16/22	08:43 15:49-15:50/35
30	22:01 06:03-06:24/21	21:06 19:52-20:29/37	19:56 18:24-19:29/65	08:05 17:41-18:15/34	07:59 15:54-16:16/22	08:44 15:49-15:50/35
31	05:33 20:40-21:22/42	06:21 06:49-07:14/25	07:13 18:21-19:26/65	08:04 17:41-18:15/34	07:59 15:54-16:16/22	08:44 15:49-15:50/35
32	22:01 06:04-06:25/21	21:04 19:46-20:30/44	19:53 18:21-19:26/65	08:04 17:41-18:15/34	07:59 15:54-16:16/22	08:44 15:49-15:50/35
33	05:34 20:40-21:21/41	06:22 06:50-07:14/24	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 15:49-15:50/35
34	22:01 06:05-06:26/21	21:02 19:41-20:30/49	19:51 18:15-19:22/67	08:08 17:43-18:10/27	08:03 15:47-15:52/5 15:56-16:11/15	08:45 15:49-15:50/35
35	05:36 20:40-21:20/40	06:24 06:52-07:14/22	07:16 18:15-19:22/67	08:08 17:43-18:10/27	08:03 15:47-15:52/5 15:56-16:11/15	08:45 15:49-15:50/35
36	22:03 06:07-06:28/21	21:00 19:38-20:30/52	19:49 18:12-19:19/67	08:10 17:43-18:10/27	08:03 15:47-15:52/5 15:56-16:11/15	08:45 15:49-15:50/35
37	05:37 20:42-21:20/38	06:26 19:36-20:29/53	07:18 18:12-19:19/67	08:10 17:43-18:10/27	08:03 15:47-15:52/5 15:56-16:11/15	08:45 15:49-15:50/35
38	22:02 06:08-06:28/20	20:58 06:53-07:13/20	19:46 18:10-19:17/67	08:12 17:43-18:07/24	08:03 15:47-15:52/5 15:56-16:11/15	08:45 15:49-15:50/35
39	05:38 20:42-21:18/36	06:27 19:34-20:27/53	07:20 18:10-19:17/67	08:12 17:43-18:07/24	08:03 15:47-15:52/5 15:56-16:11/15	08:45 15:49-15:50/35
40	22:03 06:09-06:29/20	20:56 06:55-07:14/19	19:44 18:09-19:14/65	08:13 17:45-18:05/20	08:03 15:47-15:52/5 15:56-16:11/15	08:45 15:49-15:50/35
41	05:40 20:42-21:17/35	06:29 19:32-20:25/53	07:21 18:09-19:14/65	08:13 17:45-18:05/20	08:03 15:47-15:52/5 15:56-16:11/15	08:45 15:49-15:50/35
42	22:04 06:10-06:29/19	20:53 06:57-07:14/17	19:42 18:03-19:11/68	08:15 17:45-18:03/17	08:03 15:47-15:52/5 15:56-16:11/15	08:45 15:49-15:50/35
43	05:41 20:42-21:15/33	06:31 19:31-20:23/52	07:23 18:03-19:11/68	08:15 17:45-18:03/17	08:03 15:47-15:52/5 15:56-16:11/15	08:45 15:49-15:50/35
44	22:04 06:12-06:30/18	20:51 06:58-07:13/15	19:39 18:03-19:11/68	08:15 17:45-18:03/17	08:03 15:47-15:52/5 15:56-16:11/15	08:45 15:49-15:50/35
45	05:43 20:42-21:15/33	06:32 19:30-20:21/51	07:25 17:59-19:09/70	08:17 17:51-17:59/8	08:03 15:47-15:52/5 15:56-16:11/15	08:45 15:49-15:50/35
46	22:04 06:13-06:30/17	20:49 07:00-07:12/12	19:37 17:56-19:07/71	08:19 17:51-17:59/8	08:03 15:47-15:52/5 15:56-16:11/15	08:45 15:49-15:50/35
47	05:44 20:41-21:13/32	06:34 19:28-20:19/51	07:26 17:56-19:07/71	08:19 17:51-17:59/8	08:03 15:47-15:52/5 15:56-16:11/15	08:45 15:49-15:50/35
48	22:05 06:14-06:30/16	20:47 07:01-07:11/10	19:34 17:53-19:04/71	08:21 17:54-17:56/2	08:03 15:47-15:52/5 15:56-16:11/15	08:45 15:49-15:50/35
49	05:45 20:41-21:13/32	06:36 19:28-20:17/49	07:28 17:53-19:04/71	08:21 17:54-17:56/2	08:03 15:47-15:52/5 15:56-16:11/15	08:45 15:49-15:50/35
50	22:05 06:16-06:31/15	20:45 07:03-07:10/7	19:32 17:51-19:02/71	08:23 17:54-17:56/2	08:03 15:47-15:52/5 15:56-16:11/15	08:45 15:49-15:50/35
51	05:47 20:40-21:11/31	06:38 19:26-20:14/48	07:30 17:51-19:02/71	08:23 17:54-17:56/2	08:03 15:47-15:52/5 15:56-16:11/15	08:45 15:49-15:50/35
52	22:06 06:17-06:31/14	20:42 07:05-07:09/4	19:30 17:50-19:00/70	08:24 17:54-17:56/2	08:03 15:47-15:52/5 15:56-16:11/15	08:45 15:49-15:50/35
53	05:48 20:38-21:09/31	06:39 07:06-07:07/1	07:31 17:50-19:00/70	08:24 17:54-17:56/2	08:03 15:47-15:52/5 15:56-16:11/15	08:45 15:49-15:50/35
54	22:06 06:18-06:32/14	20:40 19:26-20:12/46	19:27 17:50-18:58/16	08:26 17:54-17:56/2	08:03 15:47-15:52/5 15:56-16:11/15	08:45 15:49-15:50/35
55	05:50 20:38-21:08/30	06:41 19:25-20:11/46	07:33 17:48-18:58/16	08:26 17:54-17:56/2	08:03 15:47-15:52/5 15:56-16:11/15	08:45 15:49-15:50/35
56	22:07 06:20-06:33/13	20:38 19:24-20:08/44	19:25 17:46-18:55/16	08:28 17:54-17:56/2	08:03 15:47-15:52/5 15:56-16:11/15	08:45 15:49-15:50/35
57	05:52 20:38-21:06/28	06:43 19:24-20:08/44	07:35 17:46-18:55/16	08:28 17:54-17:56/2	08:03 15:47-15:52/5 15:56-16:11/15	08:45 15:49-15:50/35
58	22:08 06:21-06:34/13	20:36 19:24-20:06/42	19:22 17:45-18:52/16	08:30 17:54-17:56/2	08:03 15:47-15:52/5 15:56-16:11/15	08:45 15:49-15:50/35
59	05:53 20:38-21:05/27	06:44 19:24-20:06/42	07:37 17:45-18:52/16	08:30 17:54-17:56/2	08:03 15:47-15:52/5 15:56-16:11/15	08:45 15:49-15:50/35
60	22:08 06:23-06:35/12	20:33 19:05-19:23/18	19:20 17:42-08:16/14	08:32 17:54-17:56/2	08:03 15:47-15:52/5 15:56-16:11/15	08:45 15:49-15:50/35
61	05:55 20:37-21:04/27	06:46 19:00-20:03/63	19:17 17:32 15:53-16:28/35	08:32 17:54-17:56/2	08:03 15:47-15:52/5 15:56-16:11/15	08:45 15:49-15:50/35
62	22:09 06:24-06:35/11	20:31 19:00-20:03/63	19:17 17:32 15:53-16:28/35	08:32 17:54-17:56/2	08:03 15:47-15:52/5 15:56-16:11/15	08:45 15:49-15:50/35
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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	06:14	06:55-07:09/14		05:26	06:14-06:30/16	05:16	
	17:15	18:14	19:04	20:59			21:47		22:06	
29	08:27		07:22	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	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	276	367	418			489		503	
Sum of minutes with flicker	0	0	413	889			243		94	

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		05:56		06:48	07:55-08:24/29	07:38	07:34	08:26
	22:06		21:33		20:29	07:21-07:38/17	19:18	17:10	16:28
2	05:19		05:58		06:49	07:55-08:25/30	07:40	07:35	08:28
	22:05		21:31		20:26	07:22-07:37/15	19:15	17:08	16:27
3	05:20	06:27-06:30/3	05:59		06:51	07:55-08:23/28 07:23-07:29/6	07:42	07:37	08:29
	22:05		21:29		20:24	07:38-07:43/5	19:13	17:06	16:27
4	05:20	06:26-06:32/6	06:01		06:53	07:55-08:23/28	07:43	07:39	08:30
	22:05		21:27		20:22	07:36-07:46/10	19:11	17:04	16:26
5	05:21	06:26-06:34/8	06:02		06:54	07:55-08:22/27	07:45	07:41	08:32
	22:04		21:25		20:19	07:35-07:47/12	19:08	17:02	16:26
6	05:22	06:26-06:35/9	06:04		06:56	07:55-08:21/26	07:47	07:43	08:33
	22:03		21:24		20:17	07:33-07:46/13	19:06	17:01	16:25
7	05:23	06:25-06:36/11	06:06		06:58	07:56-08:20/24	07:49	07:45	08:34
	22:03		21:22		20:15	07:33-07:47/14	19:04	16:59	16:25
8	05:24	06:24-06:35/11	06:07		06:59	07:57-08:18/21	07:50	07:47	08:36
	22:02		21:20		20:12	07:32-07:46/14	19:01	16:57	16:24
9	05:25	06:24-06:36/12	06:09		07:01	07:58-08:16/18	07:52	07:48	08:37
	22:01		21:18		20:10	07:33-07:45/12	18:59	16:55	16:24
10	05:26	06:23-06:37/14	06:11		07:03	08:01-08:14/13	07:54	07:50	08:38
	22:01		21:16		20:08	07:34-07:44/10	18:57	16:54	16:24
11	05:27	06:23-06:37/14	06:12		07:04	08:04-08:09/5 07:34-07:42/8	07:56	07:52	08:39
	22:00		21:14		20:05	08:11-08:20/9	18:54	16:52	16:24
12	05:28	06:23-06:38/15	06:14	07:06-07:13/7	07:06	08:09-08:22/13	07:57	07:54	08:40
	21:59		21:12		20:03		18:52	16:51	16:23
13	05:29	06:24-06:39/15	06:16	07:04-07:15/11	07:08	08:07-08:23/16	07:59	07:56	08:41
	21:58		21:10		20:01		18:50	16:49	16:23
14	05:31	06:23-06:40/17	06:17	07:03-07:16/13	07:09	08:05-08:24/19	08:01	07:58	08:42
	21:57		21:08		19:58		18:48	16:47	16:23
15	05:32	06:23-06:40/17	06:19	07:02-07:16/14	07:11	08:05-08:25/20	08:03	07:59	08:43
	21:56		21:06		19:56	07:55-08:02/7	18:45	16:46	16:23
16	05:33	06:23-06:40/17	06:21	07:02-07:17/15	07:13	07:52-08:24/32	08:04	08:01	08:44
	21:55		21:04		19:53		18:43	16:45	16:23
17	05:34	06:23-06:40/17	06:22	07:01-07:16/15	07:14	07:51-08:24/33	08:06	08:03	08:45
	21:54		21:02		19:51		18:41	16:43	16:24
18	05:36	06:23-06:40/17	06:24	07:02-07:16/14	07:16	07:51-08:24/33	08:08	08:05	08:46
	21:53		21:00		19:49		18:39	16:42	16:24
19	05:37	06:23-06:41/18	06:26	07:01-07:15/14	07:18	07:50-08:23/33	08:10	08:06	08:46
	21:52		20:58		19:46		18:37	16:40	16:24
20	05:38	06:23-06:40/17	06:27	07:02-07:14/12	07:19	07:50-08:22/32	08:12	08:08	08:47
	21:50		20:56		19:44		18:34	16:39	16:25
21	05:40	06:23-06:40/17	06:29	07:31-07:39/8	07:21	07:51-08:21/30	08:13	08:10	08:47
	21:49		20:53	07:03-07:12/9	19:41		18:32	16:38	16:25
22	05:41	06:23-06:40/17	06:31	07:29-07:41/12	07:23	07:51-08:19/28	08:15	08:12	08:48
	21:48		20:51	07:05-07:10/5	19:39		18:30	16:37	16:25
23	05:42	06:25-06:40/15	06:32	08:08-08:17/9	07:24	07:54-08:17/23	08:17	08:13	08:49
	21:46		20:49	07:28-07:42/14	19:37		18:28	16:36	16:26
24	05:44	06:25-06:39/14	06:34	08:04-08:19/15	07:26	07:55-08:15/20	08:19	08:15	08:49
	21:45		20:47	07:26-07:42/16	19:34		18:26	16:34	16:27
25	05:45	06:25-06:38/13	06:36	08:02-08:21/19	07:28	07:56-08:15/19	07:21	08:17	08:49
	21:44		20:45	07:26-07:43/17	19:32		17:24	16:33	16:27
26	05:47	06:27-06:38/11	06:37	08:00-08:22/22	07:30	07:58-08:15/17	07:23	08:18	08:50
	21:42		20:42	07:23-07:43/20	19:30		17:22	16:32	16:28
27	05:48	06:28-06:36/8	06:39	07:59-08:23/24	07:31	08:00-08:15/15	07:24	08:20	08:50
	21:41		20:40	07:22-07:43/21	19:27		17:20	16:31	16:29
28	05:50	06:31-06:34/3	06:41	07:59-08:24/25	07:33	08:03-08:15/12	07:26	08:22	08:50
	21:39		20:38	07:22-07:43/21	19:25		17:18	16:30	16:29
29	05:51		06:42	07:57-08:24/27	07:35	08:03-08:13/10	07:28	08:23	08:50
	21:37		20:36	07:20-07:42/22	19:22		17:16	16:30	16:30
30	05:53		06:44	07:57-08:25/28	07:36	08:04-08:11/7	07:30	08:25	08:50
	21:36		20:33	07:21-07:41/20	19:20		17:14	16:29	16:31
31	05:54		06:46	07:55-08:24/29			07:32		08:50
	21:34		20:31	07:20-07:39/19			17:12		16:32
Potential sun hours	506		456		381		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)	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: 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	05:22 21:51
2	08:50 16:35	08:21 17:25	07:25 18:18	07:12 20:13	06:06 21:06	05:21 21:53
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
4	08:50 16:37	08:17 17:28	07:20 18:21	07:08 20:17	06:02 21:09	05:19 21:55
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
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
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
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
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
10	08:47 16:45	08:06 17:40	07:07 18:32	06:54 20:27	05:51 21:19	05:16 22:00
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
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
13	08:45 16:49	08:01 17:46	07:00 18:38	06:47 20:33	05:46 21:24	05:14 22:03
14	08:44 16:51	07:59 17:47	06:57 18:40	06:45 20:34	05:45 21:26	05:14 22:03
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
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
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
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
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
20	08:39 17:01	07:47 17:59	06:43 18:50	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	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	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	06:25 20:50	05:31 21:40	05:14 22:06
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
25	08:32 17:10	07:36 18:08	06:31 18:59	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	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	06:16 20:57	05:27 21:45	05:16 22:07
28	08:28 17:15	07:29 18:14	06:24 19:04	06:14 20:59	05:25 21:47	05:16 22:06
29	08:27 17:17		06:22 20:06	06:12 21:01	05:24 21:48	05:17 22:06
30	08:25 17:19		06:20 20:08	06:10 21:02	05:23 21:49	05:18 22:06
31	08:24 17:21		06:17 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	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	08:22	07:27	07:15	07:38-07:50/12	06:08	06:50-07:12/22	05:22	06:05-06:13/8
	16:33	17:23	18:16	20:11		21:04	06:33-06:43/10	21:51	
2	08:50	08:20	07:25	07:12	07:36-07:50/14	06:06	06:56-07:11/15	05:21	06:06-06:12/6
	16:35	17:24	18:18	20:13		21:06	06:34-06:45/11	21:53	
3	08:50	08:19	07:23	07:10	07:33-07:47/14	06:04	06:58-07:11/13	05:20	06:08-06:12/4
	16:36	17:26	18:19	20:15		21:08	06:33-06:44/11	21:54	
4	08:50	08:17	07:20	07:08	07:31-07:45/14	06:02	06:59-07:09/10	05:19	
	16:37	17:28	18:21	20:17		21:09	06:33-06:44/11	21:55	
5	08:49	08:15	07:18	07:05	07:29-07:44/15	06:01	07:01-07:07/6	05:18	
	16:38	17:30	18:23	20:19		21:11	06:33-06:43/10	21:56	
6	08:49	08:14	07:16	07:03	07:26-07:40/14	05:59	06:34-06:42/8	05:18	
	16:39	17:32	18:25	20:20		21:13		21:57	
7	08:49	08:12	07:14	07:01	07:26-07:39/13	05:57	06:36-06:41/5	05:17	
	16:41	17:34	18:27	20:22		21:14		21:58	
8	08:48	08:10	07:11	06:58	07:26-07:36/10	05:55		05:16	
	16:42	17:36	18:29	20:24		21:16		21:59	
9	08:48	08:08	07:09	06:56	07:24-07:34/10	05:53		05:16	
	16:43	17:38	18:31	20:26		21:18		22:00	
10	08:47	08:06	07:07	06:54	07:22-07:33/11	05:51		05:16	
	16:45	17:40	18:32	20:27		21:19		22:00	
11	08:47	08:05	07:04	06:52	07:21-07:34/13	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	07:20-07:34/14	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	07:19-07:34/15	05:46		05:14	
	16:49	17:46	18:38	20:33	07:10-07:15/5	21:24		22:03	
14	08:44	07:59	06:57	06:45	07:19-07:33/14	05:45		05:14	
	16:51	17:47	18:40	20:34	07:08-07:16/8	21:26		22:03	
15	08:43	07:57	06:55	06:42	07:19-07:33/14	05:43		05:14	
	16:52	17:49	18:41	20:36	07:06-07:16/10	21:28		22:04	
16	08:43	07:55	06:53	06:40	07:20-07:32/12	05:41		05:14	
	16:54	17:51	18:43	20:38	07:06-07:17/11	21:29		22:04	
17	08:42	07:53	06:50	06:38	07:21-07:31/10	05:40		05:14	
	16:56	17:53	18:45	20:40	07:06-07:16/10	21:31		22:05	
18	08:41	07:51	06:48	06:36	07:23-07:29/6	05:38	06:07-06:09/2	05:14	
	16:57	17:55	18:47	20:41	07:07-07:15/8	21:32		22:05	
19	08:40	07:49	06:46	06:34	07:07-07:13/6	05:37	06:04-06:11/7	05:14	
	16:59	17:57	18:49	20:43		21:34		22:06	
20	08:38	07:47	06:43	06:31	06:55-07:01/6	05:36	06:03-06:12/9	05:14	
	17:01	17:59	18:50	20:45		21:35		22:06	
21	08:37	07:44	06:41	06:29	06:53-07:02/9	05:34	06:03-06:13/10	05:14	
	17:02	18:01	18:52	20:47		21:37		22:06	
22	08:36	07:42	06:38	06:27	06:52-07:09/17	05:33	06:03-06:14/11	05:14	
	17:04	18:03	18:54	20:48		21:38		22:06	
23	08:35	07:40	06:36	06:25	06:51-07:11/20	05:31	06:03-06:14/11	05:14	
	17:06	18:05	18:56	20:50		21:40		22:06	
24	08:34	07:38	06:34	06:23	06:50-07:13/23	05:30	06:02-06:14/12	05:15	
	17:08	18:06	18:57	20:52		21:41		22:07	
25	08:32	07:36	06:31	06:21	06:49-07:13/24	05:29	06:02-06:14/12	05:15	
	17:10	18:08	18:59	20:54		21:43		22:07	
26	08:31	07:34	06:29	06:19	06:49-07:14/25	05:28	06:02-06:14/12	05:15	
	17:11	18:10	19:01	20:55		21:44		22:07	
27	08:30	07:32	06:27	06:16	06:48-07:14/26	05:27	06:02-06:14/12	05:16	
	17:13	18:12	19:03	20:57		21:45		22:07	
28	08:28	07:29	06:24	06:14	06:48-07:14/26	05:25	06:02-06:14/12	05:16	
	17:15	18:14	19:04	20:59		21:47		22:06	
29	08:27		07:22	06:12	06:49-07:13/24	05:24	06:03-06:14/11	05:17	
	17:17		20:06	21:01	06:37-06:42/5	21:48		22:06	
30	08:25		07:20	06:10	06:49-07:13/24	05:23	06:04-06:14/10	05:18	
	17:19		20:08	21:02	06:35-06:43/8	21:49		22:06	
31	08:24		07:17			05:22	06:05-06:14/9		
	17:21		20:10			21:50			

Potential sun hours

Sum of minutes with flicker	0	0	23	418	520	272	503	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	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

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	06:14 21:16	06:14-06:19/5	06:11 20:08	07:06-07:20/14	07:54 18:57	07:50 16:54	08:38 16:24			
11	05:27 22:00	06:12 21:14	06:13-06:20/7	06:12 20:05	06:42-06:53/11	07:04 18:54	07:30-07:43/13	07:52 16:52	08:39 16:23		
12	05:28 21:59	06:14 21:12	06:12-06:21/9	06:16 20:03	06:58-07:21/23	07:06 18:52	07:32-07:43/11	07:57 16:51	08:40 16:23		
13	05:29 21:58	06:16 21:10	06:13-06:22/9	06:16 20:01	06:58-07:22/24	07:08 18:50	07:33-07:41/8	07:59 16:49	08:41 16:23		
14	05:31 21:57	06:17 21:08	06:12-06:23/11	06:17 19:58	06:56-07:21/25	07:09 18:48	07:35-07:40/5	08:01 16:47	08:42 16:23		
15	05:32 21:56	06:19 21:06	06:12-06:23/11	06:19 19:56	06:56-07:21/25	07:11 18:45	07:37-07:38/1	08:03 16:46	08:43 16:23		
16	05:33 21:55	06:21 21:04	06:12-06:23/11	06:21 19:53	06:56-07:21/25	07:13 18:43		08:04 16:44	08:44 16:23		
17	05:34 21:54	06:22 21:02	06:12-06:24/12	06:22 19:51	06:55-07:20/25	07:14 18:41		08:06 16:43	08:45 16:24		
18	05:36 21:53	06:24 21:00	06:11-06:24/13	06:24 19:49	06:56-07:20/24	07:16 18:39		08:08 16:42	08:45 16:24		
19	05:37 21:52	06:26 20:58	06:12-06:24/12	06:26 19:46	06:56-07:18/22	07:18 18:37		08:10 16:40	08:46 16:24		
20	05:38 21:50	06:27 20:56	06:12-06:24/12	06:27 19:44	06:57-07:17/20	07:19 18:34		08:12 16:39	08:47 16:24		
21	05:40 21:49	06:29 20:53	06:12-06:24/12	06:29 19:41	07:08-07:14/6	07:21 18:32		08:13 16:38	08:47 16:25		
22	05:41 21:48	06:31 20:51	06:12-06:23/11	06:31 19:39	06:58-07:06/8	07:23 18:30		08:15 16:37	08:48 16:25		
23	05:42 21:46	06:32 20:49	06:14-06:23/9	06:32 19:37	07:00-07:05/5	07:24 18:28		08:17 16:35	08:48 16:26		
24	05:44 21:45	06:34 20:47	06:14-06:22/8	06:34 19:34	07:11-07:17/6	07:26 18:26		08:19 16:34	08:49 16:26		
25	05:45 21:44	06:36 20:45	06:15-06:20/5	06:36 19:32	07:25-07:32/7	07:28 17:24		08:21 16:33	08:49 16:27		
26	05:47 21:42	06:37 20:42		06:37 19:29	07:23-07:33/10	07:30 17:22		08:23 16:32	08:50 16:28		
27	05:48 21:41	06:39 20:40		06:39 19:27	07:22-07:34/12	07:31 17:20		08:24 16:31	08:50 16:29		
28	05:50 21:39	06:41 20:38		06:41 19:25	07:21-07:35/14	07:33 17:18		08:26 16:30	08:50 16:29		
29	05:51 21:37	06:42 20:36		06:42 19:22	07:20-07:34/14	07:35 17:16		08:28 16:30	08:50 16:30		
30	05:53 21:36	06:44 20:33		06:44 19:20	07:20-07:34/14	07:36 17:14		08:25 16:29	08:50 16:31		
31	05:54 21:34	06:46 20:31			07:19-07:33/14	07:32 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								

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	08:22	07:27	08:02-08:13/11	07:15	07:42-07:55/13	06:08	05:22
	16:33	17:23	18:16		20:12		21:04	21:52
2	08:50	08:21	07:25	08:01-08:14/13	07:12	07:41-07:56/15	06:06	05:21
	16:35	17:25	18:18		20:13		21:06	21:53
3	08:50	08:19	07:23	08:00-08:15/15	07:10	07:38-07:55/17	06:04	05:20
	16:36	17:26	18:20		20:15		21:08	21:54
4	08:50	08:17	07:20	07:58-08:15/17	07:08	07:37-07:54/17	06:03	05:19
	16:37	17:28	18:21		20:17		21:09	21:55
5	08:50	08:16	07:18	07:58-08:15/17	07:05	07:34-07:54/20	06:01	05:18
	16:38	17:30	18:23		20:19		21:11	21:56
6	08:49	08:14	07:16	07:59-08:15/16	07:03	07:31-07:52/21	05:59	05:18
	16:39	17:32	18:25		20:20		21:13	21:57
7	08:49	08:12	07:14	07:58-08:13/15	07:01	07:29-07:50/21	05:57	05:17
	16:41	17:34	18:27		20:22		21:14	21:58
8	08:48	08:10	07:11	07:35-07:41/6	06:58	07:29-07:49/20	05:55	05:16
	16:42	17:36	18:29	07:59-08:13/14	20:24		21:16	21:59
9	08:48	08:08	07:09	07:34-07:43/9	06:56	07:27-07:46/19	05:53	05:16
	16:43	17:38	18:31	08:01-08:11/10	20:26		21:18	22:00
10	08:47	08:07	07:07	07:32-07:43/11	06:54	07:27-07:44/17	05:51	05:16
	16:45	17:40	18:32	08:03-08:07/4	20:27		21:19	22:00
11	08:47	08:05	07:04	07:32-07:44/12	06:52	07:28-07:40/12	05:50	05:15
	16:46	17:42	18:34		20:29	07:15-07:22/7	21:21	22:01
12	08:46	08:03	07:02	07:28-07:44/16	06:49	07:29-07:39/10	05:48	05:15
	16:48	17:44	18:36		20:31	07:13-07:24/11	21:23	22:02
13	08:45	08:01	07:00	07:26-07:42/16	06:47	07:30-07:38/8	05:46	05:14
	16:49	17:46	18:38		20:33	07:11-07:24/13	21:24	22:03
14	08:44	07:59	06:57	07:25-07:42/17	06:45	07:09-07:23/14	05:45	05:14
	16:51	17:48	18:40		20:34		21:26	22:03
15	08:44	07:57	06:55	07:24-07:39/15	06:42	07:09-07:23/14	05:43	05:14
	16:52	17:49	18:41		20:36		21:28	22:04
16	08:43	07:55	06:53	07:24-07:36/12	06:40	07:09-07:22/13	05:42	05:14
	16:54	17:51	18:43		20:38		21:29	22:04
17	08:42	07:53	06:50	07:25-07:35/10	06:38	07:10-07:21/11	05:40	05:14
	16:56	17:53	18:45		20:40		21:31	22:05
18	08:41	07:51	06:48	07:26-07:32/6	06:36	07:11-07:17/6	05:38	05:14
	16:57	17:55	18:47		20:41		21:32	22:05
19	08:40	07:49	06:46	07:28-07:32/4	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	07:23-07:35/12	06:31		05:36	05:14
	17:01	17:59	18:50		20:45		21:35	22:06
21	08:37	07:45	06:41	07:22-07:37/15	06:29		05:34	05:14
	17:02	18:01	18:52		20:47		21:37	22:06
22	08:36	07:42	06:38	07:20-07:38/18	06:27		05:33	05:14
	17:04	18:03	18:54		20:48		21:38	22:06
23	08:35	07:40	06:36	07:19-07:38/19	06:25		05:31	05:14
	17:06	18:05	18:56	07:03-07:11/8	20:50		21:40	22:07
24	08:34	07:38	06:34	07:18-07:38/20	06:23		05:30	05:15
	17:08	18:06	18:57	07:02-07:12/10	20:52		21:41	22:07
25	08:32	07:36	06:31	07:18-07:38/20	06:21		05:29	05:15
	17:10	18:08	18:59	07:01-07:13/12	20:54		21:43	22:07
26	08:31	07:34	06:29	07:17-07:37/20	06:19		05:28	05:15
	17:11	18:10	19:01	06:59-07:13/14	20:55		21:44	22:07
27	08:30	07:32	06:27	07:18-07:37/19	06:16		05:27	05:16
	17:13	18:12	19:03	06:59-07:13/14	20:57		21:45	22:07
28	08:28	07:29	06:24	07:17-07:36/19	06:14		05:25	05:16
	17:15	18:14	19:04	06:59-07:12/13	20:59		21:47	22:06
29	08:27		07:22	08:18-08:35/17	06:12		05:24	05:17
	17:17		20:06	08:00-08:11/11	21:01		21:48	22:06
30	08:25		07:20	08:20-08:33/13	06:10		05:23	05:18
	17:19		20:08	08:01-08:10/9	21:02		21:49	22:06
31	08:24		07:17	08:21-08:30/9			05:22	
	17:21		20:10	08:04-08:05/1			21:50	
Potential sun hours		255	276	367	418	489	503	0
Sum of minutes with flicker		0	6	576	299	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:** 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

	July	August	September	October	November	December
1	05:18 22:06	05:56 21:33	06:48 07:27-07:39/12 20:29 07:14-07:21/7	07:38 08:06-08:23/17 19:18	07:34 17:10	08:26 16:28
2	05:19 22:05	05:58 21:31	06:49 07:26-07:43/17 20:26	07:40 08:09-08:23/14 19:15	07:36 17:08	08:28 16:27
3	05:20 22:05	05:59 21:29	06:51 07:25-07:44/19 20:24	07:42 08:10-08:21/11 19:13	07:37 17:06	08:29 16:27
4	05:20 22:05	06:01 21:27	06:53 07:26-07:46/20 20:22	07:43 08:10-08:20/10 19:11	07:39 17:04	08:30 16:26
5	05:21 22:04	06:02 21:26	06:54 07:26-07:47/21 20:20	07:45 08:11-08:19/8 19:08	07:41 17:02	08:32 16:26
6	05:22 22:04	06:04 21:24	06:56 07:27-07:48/21 20:17	07:47 08:36-08:50/14 19:06	07:43 17:01	08:33 16:25
7	05:23 22:03	06:06 21:22	06:58 07:29-07:49/20 20:15	07:49 08:34-08:50/16 19:04	07:45 16:59	08:34 16:25
8	05:24 22:02	06:07 21:20	06:59 07:31-07:49/18 20:12	07:50 08:34-08:50/16 19:01	07:47 16:57	08:36 16:24
9	05:25 22:02	06:09 21:18	07:01 07:32-07:49/17 20:10	07:52 08:33-08:50/17 18:59	07:48 16:55	08:37 16:24
10	05:26 22:01	06:11 21:16	07:03 07:34-07:49/15 20:08	07:54 08:34-08:49/15 18:57	07:50 16:54	08:38 16:24
11	05:27 22:00	06:12 21:14	07:04 07:34-07:48/14 20:05	07:56 08:34-08:49/15 18:54	07:52 16:52	08:39 16:24
12	05:28 21:59	06:14 21:12	07:06 08:14-08:22/8 20:03	07:57 08:34-08:47/13 18:52	07:54 16:51	08:40 16:23
13	05:29 21:58	06:16 21:10	07:08 08:10-08:23/13 07:38-07:45/7 20:01	07:59 08:36-08:45/9 18:50	07:56 16:49	08:41 16:23
14	05:31 21:57	06:17 21:08	07:09 08:09-08:25/16 19:58	08:01 18:48	07:58 16:47	08:42 16:23
15	05:32 21:56	06:19 21:06	07:11 08:08-08:26/18 19:56	08:03 18:45	07:59 16:46	08:43 16:23
16	05:33 21:55	06:21 21:04	07:13 08:06-08:25/19 19:53	08:04 18:43	08:01 16:45	08:44 16:23
17	05:34 21:54	06:22 21:02	07:14 08:06-08:26/20 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 08:06-08:26/20 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 08:05-08:25/20 19:46	08:10 18:37	08:07 16:40	08:46 16:24
20	05:38 21:50	06:27 20:56	07:19 08:05-08:24/19 19:44	08:12 18:34	08:08 16:39	08:47 16:24
21	05:40 21:49	06:29 20:53	07:21 08:06-08:24/18 19:41	08:13 18:32	08:10 16:38	08:48 16:25
22	05:41 21:48	06:31 20:51	07:23 08:06-08:22/16 19:39	08:15 18:30	08:12 16:37	08:48 16:25
23	05:42 21:46	06:32 20:49	07:25 08:07-08:20/13 19:37	08:17 18:28	08:13 16:36	08:49 16:26
24	05:44 21:45	06:34 20:47	07:26 08:10-08:17/7 19:34	08:19 18:26	08:15 16:34	08:49 16:26
25	05:45 21:44	06:36 07:13-07:20/7 20:45	07:28 08:09-08:14/5 19:32	08:21 17:24	08:17 16:33	08:49 16:27
26	05:47 21:42	06:37 07:12-07:23/11 20:42	07:30 08:07-08:16/9 19:30	07:23 17:22	08:18 16:32	08:50 16:28
27	05:48 21:41	06:39 07:11-07:24/13 20:40	07:31 08:06-08:17/11 19:27	07:24 17:20	08:20 16:31	08:50 16:29
28	05:50 21:39	06:41 07:11-07:25/14 20:38	07:33 08:06-08:17/11 19:25	07:26 17:18	08:22 16:30	08:50 16:29
29	05:51 21:38	06:42 07:10-07:24/14 20:36	07:35 08:05-08:21/16 19:22	07:28 17:16	08:23 16:30	08:50 16:30
30	05:53 21:36	06:44 07:30-07:38/8 20:33	07:36 08:05-08:22/17 19:20	07:30 17:14	08:25 16:29	08:50 16:31
31	05:54 21:34	06:46 07:27-07:38/11 20:31	07:37 07:13-07:23/10 19:19	07:32 17:12	08:26 16:28	08:51 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	06:37-06:45/8	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	07:38-07:47/9	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	07:36-07:50/14	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	07:33-07:50/17	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	07:14-07:20/6	06:34	07:21-07:43/22	05:37	05:14	
	16:59	17:57	18:49	07:32-07:52/20	20:43	07:05-07:16/11	21:34	22:06	
20	08:39	07:47	06:43	07:11-07:21/10	06:31	07:22-07:45/23	05:36	05:14	
	17:01	17:59	18:50	07:30-07:51/21	20:45	07:04-07:17/13	21:35	22:06	
21	08:37	07:45	06:41	07:10-07:22/12	06:29	07:24-07:47/23	05:34	05:14	
	17:02	18:01	18:52	07:30-07:52/22	20:47	07:02-07:18/16	21:37	22:06	
22	08:36	07:42	06:39	07:09-07:23/14	06:27	07:25-07:48/23	05:33	05:14	
	17:04	18:03	18:54	07:30-07:52/22	20:49	07:01-07:18/17	21:38	22:06	
23	08:35	07:40	06:36	07:07-07:22/15	06:25	07:24-07:48/24	05:31	05:14	
	17:06	18:05	18:56	07:29-07:51/22	20:50	06:59-07:18/19	21:40	22:07	
24	08:34	07:38	06:34	07:05-07:21/16	06:23	07:23-07:49/26	05:30	05:15	
	17:08	18:06	18:57	07:29-07:51/22	20:52	06:57-07:18/21	21:41	22:07	
25	08:32	07:36	06:31	07:02-07:21/19	06:21	07:22-07:49/27	05:29	05:15	
	17:10	18:08	18:59	07:30-07:51/21	20:54	06:55-07:18/23	21:43	22:07	
26	08:31	07:34	06:29	06:59-07:20/21	06:19	07:21-07:50/29	05:28	05:15	
	17:11	18:10	19:01	07:30-07:49/19	20:56	06:54-07:17/23	21:44	22:07	
27	08:30	07:32	06:27	07:31-07:48/17	06:16	07:21-07:50/29	05:27	05:16	
	17:13	18:12	19:03	06:59-07:19/20	20:57	06:51-07:16/25	21:45	22:07	
28	08:28	07:29	06:24	07:31-07:45/14	06:14	07:20-07:50/30	05:25	05:16	
	17:15	18:14	19:05	06:57-07:17/20	20:59	06:48-07:15/27	21:47	22:07	
29	08:27		07:22	08:34-08:43/9	06:12	07:20-07:49/29	06:41-06:44/3	05:17	
	17:17		20:06	07:57-08:12/15	21:01	06:47-07:14/27	21:48	22:06	
30	08:25		07:20	07:58-08:11/13	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	07:58-08:09/11			05:22		
	17:21		20:10				21:50		
hrs	255	276	367	418		489		503	
ker	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	07:37-07:49/12 20:24	06:50-06:53/3 19:13	07:37 17:06	08:29 16:27
4	05:20 22:05	06:01 21:27	07:36-07:51/15 20:22	06:47-06:56/9 19:11	07:39 17:04	08:30 16:26
5	05:21 22:04	06:02 21:26	07:34-07:52/18 20:20	06:54 19:08	07:41 17:02	08:32 16:26
6	05:22 22:04	06:04 21:24	07:33-07:54/21 20:17	06:56 19:06	07:43 17:01	08:33 16:25
7	05:23 22:03	06:06 21:22	07:33-07:55/22 20:15	06:58 19:04	07:45 16:59	08:34 16:25
8	05:24 22:02	06:07 21:20	07:31-07:56/25 20:12	06:59 19:01	07:47 16:57	08:36 16:24
9	05:25 22:02	06:09 21:18	07:31-07:57/26 20:10	07:01 18:59	07:49 16:55	08:37 16:24
10	05:26 22:01	06:11 21:16	07:30-07:57/27 20:08	07:03 18:57	07:50 16:54	08:38 16:24
11	05:27 22:00	06:12 21:14	07:29-07:57/28 20:05	07:04 18:54	07:52 16:52	08:39 16:24
12	05:28 21:59	06:14 21:12	07:28-07:57/29 20:03	07:06 18:52	07:54 16:51	08:40 16:23
13	05:29 21:58	06:16 21:10	07:29-07:58/29 20:01	07:08 18:50	07:56 16:49	08:41 16:23
14	05:31 21:57	06:17 21:08	07:28-07:57/29 19:58	08:25-08:33/8 07:48-08:02/14	08:01 16:47	08:42 16:23
15	05:32 21:56	06:19 21:06	07:28-07:57/29 19:56	08:22-08:35/13 07:48-08:06/18	08:03 16:46	08:43 16:23
16	05:33 21:55	06:21 21:04	07:28-07:57/29 19:53	08:19-08:36/17 07:47-08:07/20	08:04 16:45	08:44 16:23
17	05:34 21:54	06:22 21:02	07:28-07:56/28 19:51	07:48-08:08/20 08:18-08:37/19	08:06 16:43	08:45 16:24
18	05:36 21:53	06:24 21:00	07:29-07:56/27 19:49	07:49-08:09/20 08:17-08:38/21	08:08 16:42	08:46 16:24
19	05:37 21:52	06:26 20:58	07:28-07:55/27 19:46	07:50-08:08/18 08:16-08:38/22	08:10 16:40	08:46 16:24
20	05:38 21:50	06:27 20:56	07:29-07:54/25 19:44	07:54-08:08/14 08:16-08:38/22	08:12 16:39	08:47 16:24
21	05:40 21:49	06:29 20:53	07:30-07:52/22 19:41	07:54-08:08/14 08:15-08:38/23	08:13 16:38	08:48 16:25
22	05:41 21:48	06:31 20:51	07:28-07:51/23 19:39	07:54-08:07/13 08:15-08:37/22	08:15 16:37	08:48 16:25
23	05:42 21:47	06:32 20:49	07:27-07:50/23 19:37	07:55-08:06/11 08:15-08:36/21	08:17 16:36	08:49 16:26
24	05:44 21:45	06:34 20:47	07:25-07:46/21 19:34	07:57-08:04/7 08:16-08:36/20	08:19 16:34	08:49 16:26
25	05:45 21:44	06:36 20:45	07:24-07:39/15 19:32	08:16-08:33/17 17:24	08:21 16:33	08:49 16:27
26	05:47 21:42	06:37 20:42	07:22-07:39/17 19:30	08:17-08:32/15 17:22	08:23 16:32	08:50 16:28
27	05:48 21:41	06:39 20:40	07:22-07:39/17 19:27	08:19-08:30/11 17:20	08:24 16:31	08:50 16:29
28	05:50 21:39	06:41 20:38	07:22-07:40/18 19:25	08:20 17:18	08:22 16:30	08:50 16:29
29	05:51 21:38	06:42 20:36	07:22-07:38/16 19:22	08:23 17:16	08:23 16:30	08:50 16:30
30	05:53 21:36	06:44 20:33	07:22-07:38/16 19:20	08:25 17:14	08:25 16:29	08:50 16:31
31	05:54 21:34	06:46 20:31	07:22-07:36/14 17:12	08:26 17:12	08:26 16:29	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

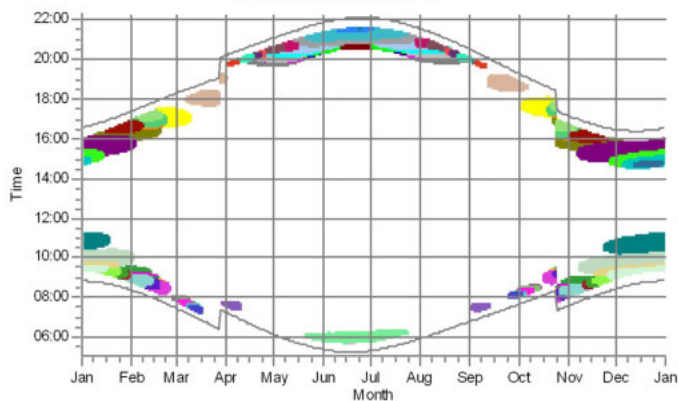
Calculated:

16/12/2024 15:13/4.0.552

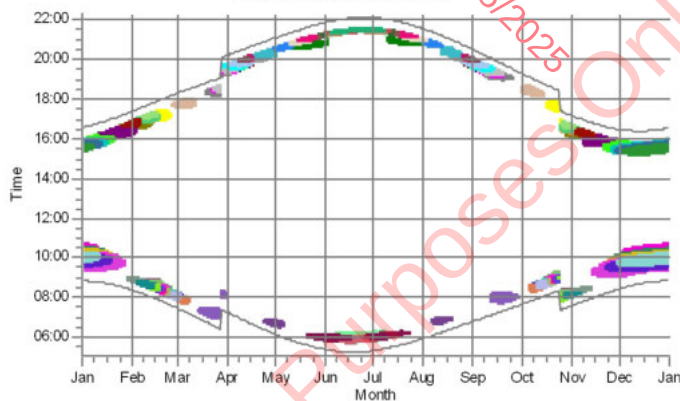
SHADOW - Calendar per WTG, graphical

Calculation: 6778 Moanmore Lower Worst Case

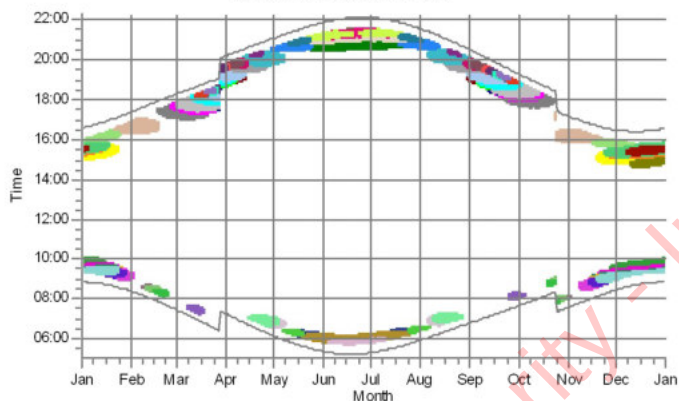
1: Moanmore Lower T1



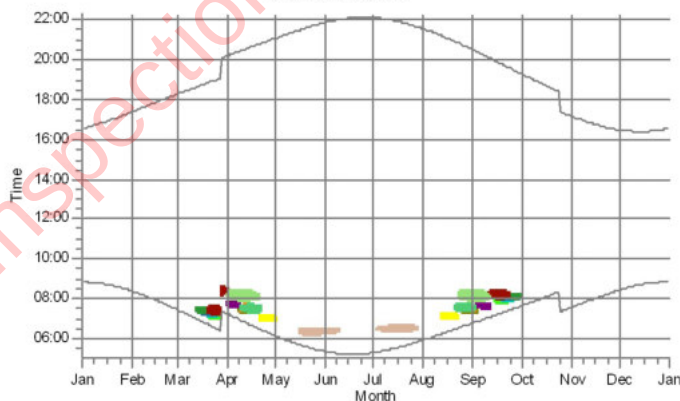
2: Moanmore Lower T2



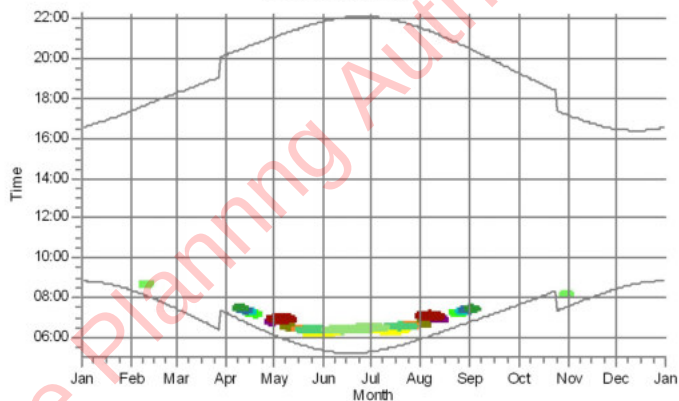
3: Moanmore Lower T3



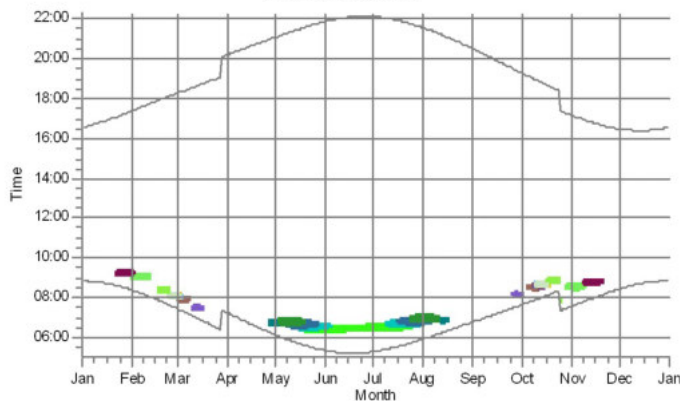
4: Moanmore T1



5: Moanmore T2



6: Moanmore T3



Shadow receptors

A: H1	J: H10	R: H18	Z: H26	AP: H42	BL: H61	B2: H78	CO: H93	CZ: H104	DL: H116	EB: H132	EQ: H147
B: H2	K: H11	S: H19	AA: H27	AS: H45	BR: H70	CA: H79	CQ: H95	DA: H105	DM: H117	EC: H133	ER: H148
D: H4	L: H12	T: H20	AB: H28	AU: H47	BS: H71	CB: H80	CS: H97	DD: H108	DN: H118	EE: H135	ES: H149
E: H5	M: H13	U: H21	AC: H29	AV: H48	BT: H72	CD: H82	CT: H98	DE: H109	DQ: H121	EF: H136	ET: H150
F: H6	N: H14	V: H22	AD: H30	AW: H49	BU: H73	CF: H84	CU: H99	DF: H110	DR: H122	EH: H138	EV: H152
G: H7	O: H15	W: H23	AE: H31	AX: H50	BW: H75	CG: H85	CV: H100	DG: H111	DU: H125	EK: H141	EX: H154
H: H8	P: H16	X: H24	AI: H35	AY: H51	BX: H76	CK: H89	CX: H102	DH: H112	DY: H129	EL: H142	FL: H155
I: H9	Q: H17	Y: H25	AM: H39	BF: H58	BY: H77	CN: H92	CY: H103	DK: H115	DZ: H130	EP: H146	FU: H177

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

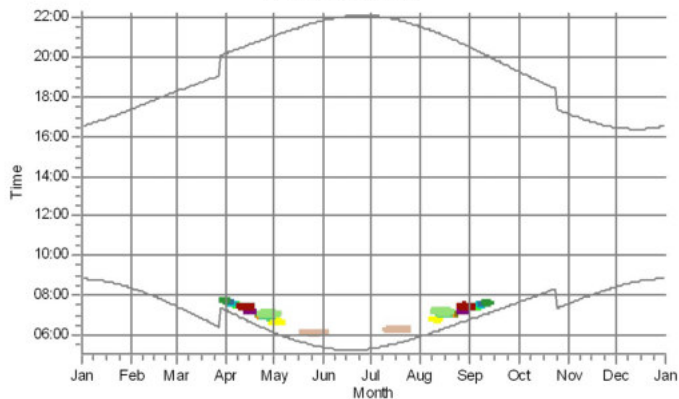
Calculated:

16/12/2024 15:13/4.0.552

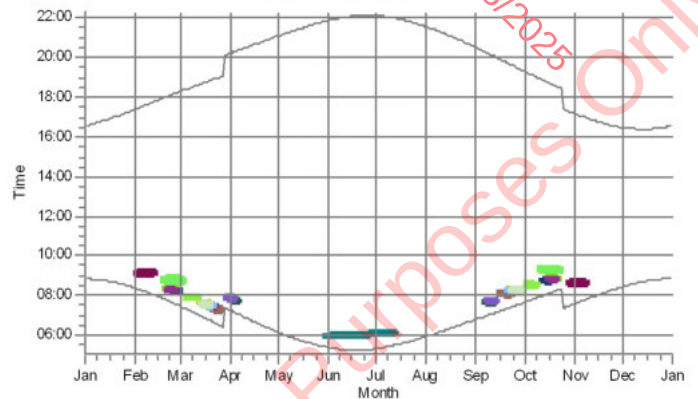
SHADOW - Calendar per WTG, graphical

Calculation: 6778 Moanmore Lower Worst Case

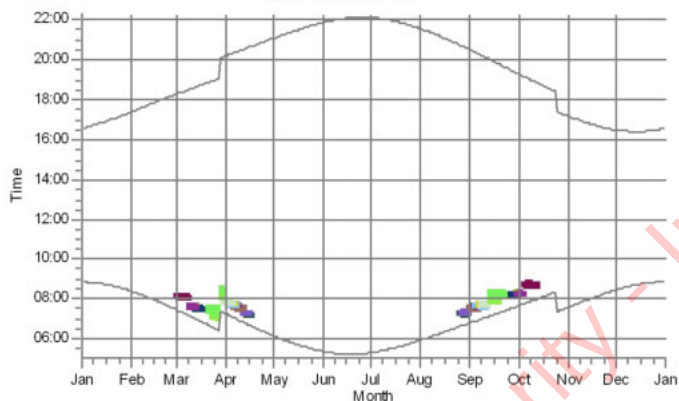
7: Moanmore T4



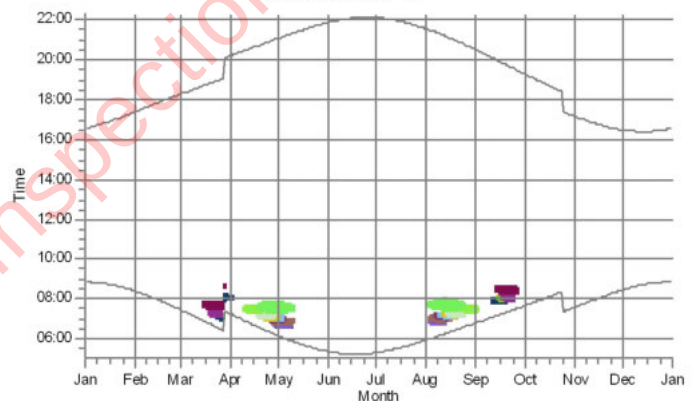
8: Moanmore T5



9: Moanmore T6



10: Moanmore T7



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	

6778 Moanmore Lower WF

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

Jennings O'Donovan

IE-F91 RHH9 Sligo

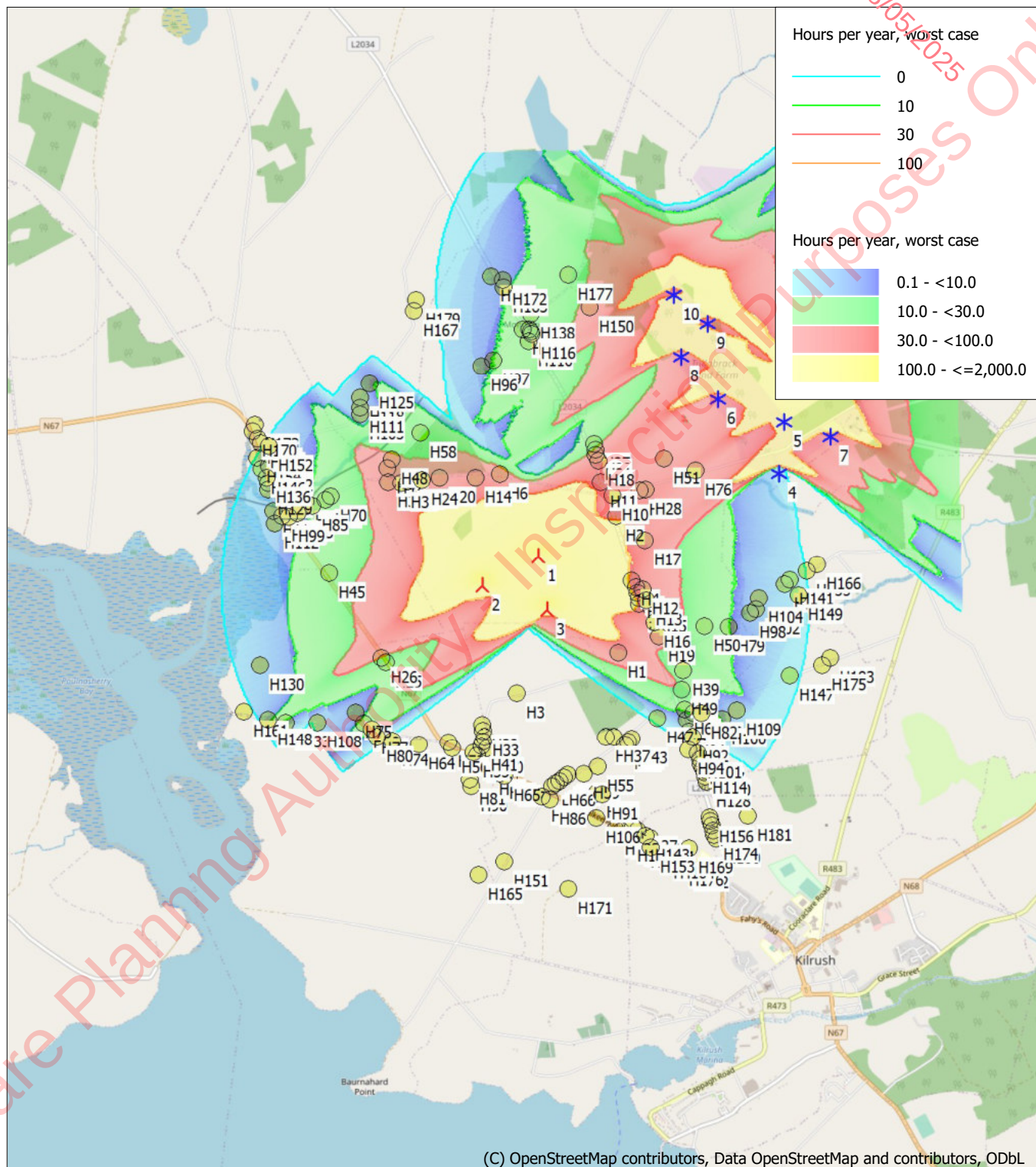
+353719161416

Kathlyn Feeney / kfeeney@jodireland.com

Calculated:

16/12/2024 15:13/4.0.552

Calculation: 6778 Moanmore Lower Worst Case



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

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