

Project:

20240527_Clare4n_Revised_SF_Assessment

Licensed user:

Macro Works Ltd

Hibernia House, Cherrywood, Loughlinstown

IE-D18 E440 Dublin

0035312303585

Peter Connell / peter.connell@macroworks.ie

Calculated:

07/07/2025 11:43/4.0.424

SHADOW - Main Result

Calculation: Worst Case

Assumptions for shadow calculations

Maximum distance for influence	2,000 m
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) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.70	2.40	3.60	5.40	5.90	5.50	4.40	4.60	3.90	3.00	2.10	1.50

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW
161	214	282	397	231	346	817	639	450	567	872	1,114

W	WNW	NW	NNW	Sum
793	818	765	294	8,760

A ZVI (Zones of Visual Influence) calculation is performed before flicker calculation so non visible WTG do not contribute to calculated flicker values. A WTG will be visible if it is visible from any part of the receiver window. The ZVI calculation is based on the following assumptions:
Height contours used: Height Contours: CONTOURLINE_20240527_Clare4n_R
Receptor grid resolution: 1.0 m

All coordinates are in

Irish ITM-IRENET95 (IE), geocentric, GRS80

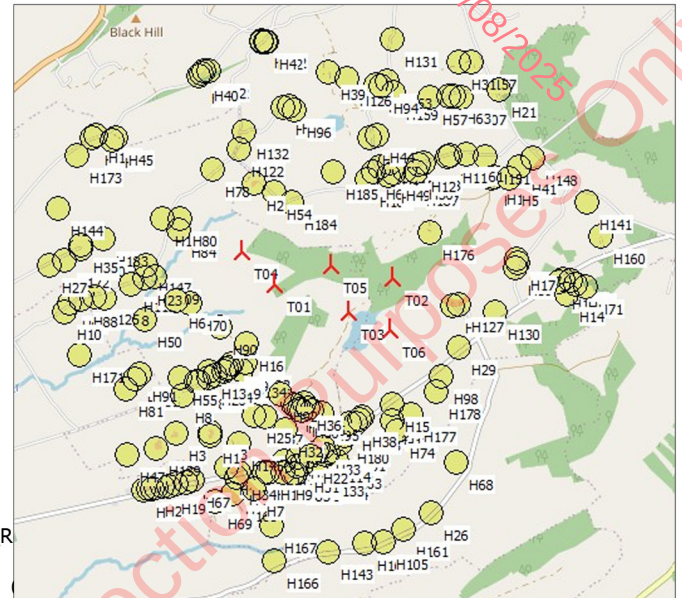
WTGs

	Easting	Northing	Z	Row data/Description	WTG type				Rotor diameter	Hub height	Shadow data	
					Valid	Manufact.	Type-generator	Power, rated			Calculation distance	RPM
			[m]					[kW]	[m]	[m]	[m]	[RPM]
1	510,310	681,176	190.0	T06	Yes	VESTAS	V117-4.2-4,200	4,200	117.0	91.5	2,000	13.6
2	510,339	681,648	183.1	T02	Yes	VESTAS	V117-4.2-4,200	4,200	117.0	91.5	2,000	13.6
3	509,923	681,348	189.1	T03	Yes	VESTAS	V117-4.2-4,200	4,200	117.0	91.5	2,000	13.6
4	509,773	681,776	171.7	T05	Yes	VESTAS	V117-4.2-4,200	4,200	117.0	91.5	2,000	13.6
5	509,248	681,617	160.0	T01	Yes	VESTAS	V117-4.2-4,200	4,200	117.0	91.5	2,000	13.6
6	508,957	681,920	135.4	T04	Yes	VESTAS	V117-4.2-4,200	4,200	117.0	91.5	2,000	13.6

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	508,632	680,244	143.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
B	H2	509,084	682,541	141.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
C	H3	508,326	680,267	150.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
D	H4	509,228	683,830	110.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
E	H5	511,430	682,538	104.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
F	H6	508,351	681,477	105.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
G	H7	509,026	679,746	145.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
H	H8	508,393	680,615	132.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
I	H9	509,301	679,892	160.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
J	H10	507,319	681,392	88.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
K	H11	510,885	682,752	130.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
L	H12	510,603	682,685	160.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
M	H13	508,632	680,825	146.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
N	H14	511,947	681,473	132.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
O	H15	510,316	680,500	178.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
P	H16	508,983	681,075	160.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
Q	H17	511,498	681,770	125.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
R	H18	509,161	679,898	155.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
S	H19	508,247	679,785	130.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
T	H20	508,630	680,768	147.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
U	H21	511,347	683,347	84.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
V	H22	509,557	680,037	170.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
W	H23	508,064	681,690	100.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
X	H24	508,698	680,796	154.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5

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SHADOW - Main Result

Calculation: Worst Case

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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]
Y H25		509,041	680,417	169.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
Z H26		510,655	679,499	141.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AA H27		507,190	681,828	86.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AB H28		508,096	679,765	130.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AC H29		510,938	681,006	154.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AD H30		510,580	682,615	154.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AE H31		510,987	683,607	82.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AF H32		509,325	680,288	161.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AG H33		509,678	680,112	170.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AH H34		508,896	679,897	139.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AI H35		507,475	682,004	104.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AJ H36		509,504	680,520	183.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AK H37		509,153	680,404	171.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AL H38		510,014	680,366	176.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AM H39		509,784	683,537	107.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AN H40		508,618	683,551	127.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AO H41		511,520	682,641	98.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AP H42		508,686	683,575	128.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AQ H43		508,634	680,271	146.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AR H44		510,219	682,951	152.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AS H45		507,816	682,980	118.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AT H46		508,877	679,851	139.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AU H47		507,866	680,083	126.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AV H48		508,781	679,942	131.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AW H49		510,371	682,606	180.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AX H50		508,051	681,312	92.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AY H51		509,478	679,960	167.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AZ H52		509,478	679,960	167.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BA H53		510,325	682,586	180.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BB H54		509,264	682,451	150.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BC H55		508,372	680,777	113.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BD H56		508,372	680,777	113.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BE H57		510,719	683,290	103.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BF H58		510,644	682,692	155.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BG H59		511,473	681,721	127.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BH H60		509,485	680,450	179.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BI H61		511,046	682,767	118.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BJ H62		508,186	679,783	130.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BK H63		510,930	683,299	99.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BL H64		510,863	682,745	132.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BM H65		510,182	682,625	180.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BN H66		509,917	680,334	175.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BO H67		508,464	679,839	131.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BP H68		510,900	679,953	161.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BQ H69		508,667	679,635	124.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BR H70		508,471	681,454	108.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BS H71		512,121	681,532	125.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BT H72		508,413	679,816	130.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BU H73		510,888	683,298	100.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BV H74		510,356	680,257	160.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BW H75		510,151	682,935	154.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BX H76		509,433	679,952	165.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BY H77		507,781	682,954	116.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BZ H78		508,706	682,667	140.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CA H79		508,775	680,828	161.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CB H80		508,394	682,223	140.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CC H81		507,872	680,682	103.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CD H82		509,212	683,830	110.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CE H83		509,391	679,883	161.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CF H84		508,383	682,127	129.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CG H85		509,541	680,471	181.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CH H86		508,797	680,846	163.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CI H87		508,516	680,741	133.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CJ H88		507,470	681,510	100.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5

To be continued on next page...

SHADOW - Main Result

Calculation: 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]
CK H89		508,598	683,525	128.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CL H90		508,745	681,228	140.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CM H91		508,000	680,817	103.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CN H92		509,292	680,609	185.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CO H93		512,018	681,562	130.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CP H94		510,269	683,405	111.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CQ H95		509,674	680,427	180.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CR H96		509,467	683,200	150.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CS H97		507,364	681,478	99.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CT H98		510,770	680,743	168.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CU H99		508,850	680,887	163.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CV H100		509,423	683,234	149.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CW H101		510,467	682,626	172.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CX H102		509,182	683,842	112.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CY H103		508,542	680,735	137.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CZ H104		509,459	680,471	180.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DA H105		510,216	679,245	112.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DB H106		509,446	680,029	168.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DC H107		511,000	683,279	95.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DD H108		508,132	679,771	130.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DE H109		508,150	681,697	100.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DF H110		511,290	682,552	106.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DG H111		509,362	683,220	146.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DH H112		507,936	681,631	100.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DI H113		509,980	680,331	173.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DJ H114		509,696	680,051	168.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DK H115		510,330	682,700	175.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DL H116		511,879	681,582	130.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DM H117		510,247	682,661	174.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DN H118		509,572	680,455	180.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DO H119		509,615	680,069	170.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DP H120		511,977	681,591	131.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DQ H121		508,314	679,808	130.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DR H122		508,946	682,856	140.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DS H123		509,173	683,830	113.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DT H124		509,427	680,496	180.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DU H125		507,593	681,531	98.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DV H126		509,955	683,474	112.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DW H127		510,947	681,400	156.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DX H128		509,724	680,070	168.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DY H129		510,885	681,380	169.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DZ H130		511,286	681,320	137.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EA H131		510,375	683,825	82.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EB H132		508,999	683,013	136.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EC H133		509,631	679,917	163.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
ED H134		508,932	680,836	171.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EE H135		508,819	680,864	164.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EF H136		509,131	679,893	154.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EG H137		511,486	681,803	126.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EH H138		511,271	682,545	108.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EI H139		508,139	680,139	138.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EJ H140		508,139	680,139	138.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EK H141		512,144	682,310	110.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EL H142		511,914	681,606	130.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EM H143		509,704	679,161	100.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EN H144		507,277	682,339	118.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EO H145		508,895	680,171	143.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EP H146		509,418	679,874	161.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EQ H147		508,080	681,801	107.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
ER H148		511,655	682,715	92.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
ES H149		509,403	680,517	181.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
ET H150		507,478	681,972	101.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EU H151		511,216	682,745	105.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EV H152		508,637	683,574	126.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5

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Project:

20240527_Claré4n_Revised_SF_Assessment

Licensed user:

Macro Works Ltd
Hibernia House, Cherrywood, Loughlinstown
IE-D18 E440 Dublin
0035312303585
Peter Connell / peter.connell@macroworks.ie
Calculated:
07/07/2025 11:43/4.0.424

SHADOW - Main Result

Calculation: Worst Case

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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]
EW H153		510,328	683,452	106.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EX H154		510,037	680,382	176.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EY H155		507,953	680,772	103.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EZ H156		508,239	682,230	135.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FA H157		511,101	683,605	80.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FB H158		510,219	683,412	112.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FC H159		510,383	683,344	110.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FD H160		512,261	681,992	105.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FE H161		510,402	679,351	127.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FF H162		510,038	679,233	110.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FG H163		509,802	679,984	160.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FH H164		509,665	679,887	160.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FI H165		509,312	679,994	161.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FJ H166		509,198	679,090	92.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FK H167		509,187	679,412	110.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FL H168		508,833	679,702	133.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FM H169		508,012	679,751	128.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FN H170		508,060	679,761	130.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FO H171		507,450	681,004	90.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FP H172		507,325	681,872	91.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FQ H173		507,461	682,818	117.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FR H174		507,631	683,005	111.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FS H175		507,605	682,985	112.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FT H176		510,696	682,054	150.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FU H177		510,483	680,398	170.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FV H178		510,729	680,609	163.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FW H179		510,315	680,348	168.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FX H180		509,874	680,216	168.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FY H181		509,831	680,151	167.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FZ H182		508,969	680,902	168.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
GA H183		507,690	682,061	109.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
GB H184		509,429	682,352	167.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
GC H185		509,819	682,632	178.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
GD H186		510,126	682,551	178.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
GE H187		510,546	682,559	150.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
GF H188		507,686	681,509	93.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5

Calculation Results

Shadow receptor

Shadow, worst case		Shadow, expected values			
No.	Name	Shadow hours per year [h/year]	Shadow days per year [days/year]	Max shadow hours per day [h/day]	Shadow hours per year [h/year]
A	H1	7:33	43	0:15	1:35
B	H2	47:03	106	0:38	6:12
C	H3	6:21	40	0:13	1:18
D	H4	0:00	0	0:00	0:00
E	H5	27:34	109	0:24	3:55
F	H6	34:45	102	0:42	8:12
G	H7	0:00	0	0:00	0:00
H	H8	12:21	60	0:17	2:47
I	H9	0:00	0	0:00	0:00
J	H10	9:01	46	0:17	2:10
K	H11	13:01	50	0:23	1:53
L	H12	24:55	78	0:24	3:15
M	H13	20:21	66	0:34	4:39
N	H14	9:26	43	0:17	2:07
O	H15	0:00	0	0:00	0:00
P	H16	33:50	85	0:44	7:59
Q	H17	25:26	83	0:37	5:07
R	H18	0:00	0	0:00	0:00
S	H19	0:00	0	0:00	0:00
T	H20	20:42	68	0:32	4:40

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SHADOW - Main Result

Calculation: 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]
U	H21	0:00	0	0:00	0:00
V	H22	0:00	0	0:00	0:00
W	H23	37:00	107	0:34	8:39
X	H24	22:21	72	0:33	5:02
Y	H25	16:47	63	0:20	3:29
Z	H26	0:00	0	0:00	0:00
AA	H27	3:58	22	0:16	0:57
AB	H28	0:00	0	0:00	0:00
AC	H29	73:05	122	0:57	16:11
AD	H30	29:30	98	0:26	4:01
AE	H31	0:00	0	0:00	0:00
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	8:56	44	0:18	1:52
AJ	H36	0:00	0	0:00	0:00
AK	H37	10:27	46	0:19	2:09
AL	H38	0:00	0	0:00	0:00
AM	H39	0:00	0	0:00	0:00
AN	H40	0:00	0	0:00	0:00
AO	H41	22:16	100	0:18	3:08
AP	H42	0:00	0	0:00	0:00
AQ	H43	6:49	39	0:16	1:27
AR	H44	3:04	24	0:13	0:26
AS	H45	7:50	40	0:19	1:05
AT	H46	0:00	0	0:00	0:00
AU	H47	0:00	0	0:00	0:00
AV	H48	0:00	0	0:00	0:00
AW	H49	16:13	78	0:23	2:04
AX	H50	20:35	82	0:26	4:49
AY	H51	0:00	0	0:00	0:00
AZ	H52	0:00	0	0:00	0:00
BA	H53	15:44	76	0:22	2:01
BB	H54	84:43	80	1:31	10:31
BC	H55	8:16	45	0:18	1:54
BD	H56	8:16	45	0:18	1:54
BE	H57	0:00	0	0:00	0:00
BF	H58	25:12	91	0:24	3:23
BG	H59	26:37	84	0:39	5:29
BH	H60	0:00	0	0:00	0:00
BI	H61	23:51	68	0:35	3:03
BJ	H62	0:00	0	0:00	0:00
BK	H63	3:22	22	0:11	0:24
BL	H64	13:32	52	0:23	1:57
BM	H65	12:27	58	0:19	1:36
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	45:25	121	0:43	10:37
BS	H71	7:37	40	0:15	1:41
BT	H72	0:00	0	0:00	0:00
BU	H73	1:16	14	0:07	0:08
BV	H74	0:00	0	0:00	0:00
BW	H75	3:44	28	0:14	0:32
BX	H76	0:00	0	0:00	0:00
BY	H77	7:41	38	0:19	1:04
BZ	H78	24:32	110	0:21	3:25
CA	H79	25:02	78	0:34	5:37
CB	H80	50:12	83	0:54	8:45
CC	H81	5:59	31	0:14	1:14
CD	H82	0:00	0	0:00	0:00
CE	H83	0:00	0	0:00	0:00

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SHADOW - Main Result

Calculation: 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]
CF	H84	55:29	89	0:59	10:35
CG	H85	0:00	0	0:00	0:00
CH	H86	25:19	76	0:35	5:42
CI	H87	13:47	61	0:19	3:10
CJ	H88	10:17	48	0:19	2:29
CK	H89	0:00	0	0:00	0:00
CL	H90	47:13	147	0:26	10:31
CM	H91	14:07	61	0:18	3:02
CN	H92	24:19	75	0:25	5:06
CO	H93	8:28	42	0:17	1:51
CP	H94	0:00	0	0:00	0:00
CQ	H95	0:00	0	0:00	0:00
CR	H96	0:00	0	0:00	0:00
CS	H97	8:39	44	0:17	2:06
CT	H98	13:58	44	0:25	2:46
CU	H99	28:27	80	0:38	6:26
CV	H100	0:00	0	0:00	0:00
CW	H101	23:25	82	0:27	3:00
CX	H102	0:00	0	0:00	0:00
CY	H103	14:34	64	0:20	3:19
CZ	H104	0:00	0	0:00	0:00
DA	H105	0:00	0	0:00	0:00
DB	H106	0:00	0	0:00	0:00
DC	H107	7:37	36	0:15	0:55
DD	H108	0:00	0	0:00	0:00
DE	H109	45:40	121	0:36	10:34
DF	H110	28:07	98	0:30	4:02
DG	H111	0:00	0	0:00	0:00
DH	H112	26:51	78	0:33	6:25
DI	H113	0:00	0	0:00	0:00
DJ	H114	0:00	0	0:00	0:00
DK	H115	9:20	63	0:16	1:14
DL	H116	13:10	63	0:18	2:52
DM	H117	12:02	61	0:18	1:34
DN	H118	0:00	0	0:00	0:00
DO	H119	0:00	0	0:00	0:00
DP	H120	8:56	42	0:17	1:56
DQ	H121	0:00	0	0:00	0:00
DR	H122	21:14	80	0:22	2:40
DS	H123	0:00	0	0:00	0:00
DT	H124	0:00	0	0:00	0:00
DU	H125	12:29	53	0:20	3:01
DV	H126	0:00	0	0:00	0:00
DW	H127	89:37	150	0:44	19:01
DX	H128	0:00	0	0:00	0:00
DY	H129	94:51	145	0:48	19:44
DZ	H130	42:01	118	0:36	9:28
EA	H131	0:00	0	0:00	0:00
EB	H132	7:12	42	0:16	0:58
EC	H133	0:00	0	0:00	0:00
ED	H134	40:07	108	0:36	8:40
EE	H135	26:25	77	0:36	5:57
EF	H136	0:00	0	0:00	0:00
EG	H137	25:49	87	0:36	5:10
EH	H138	28:17	97	0:31	4:04
EI	H139	0:00	0	0:00	0:00
EJ	H140	0:00	0	0:00	0:00
EK	H141	3:33	19	0:15	0:39
EL	H142	9:43	44	0:18	2:06
EM	H143	0:00	0	0:00	0:00
EN	H144	2:51	18	0:14	0:34
EO	H145	2:33	25	0:08	0:32
EP	H146	0:00	0	0:00	0:00

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SHADOW - Main Result

Calculation: Worst Case

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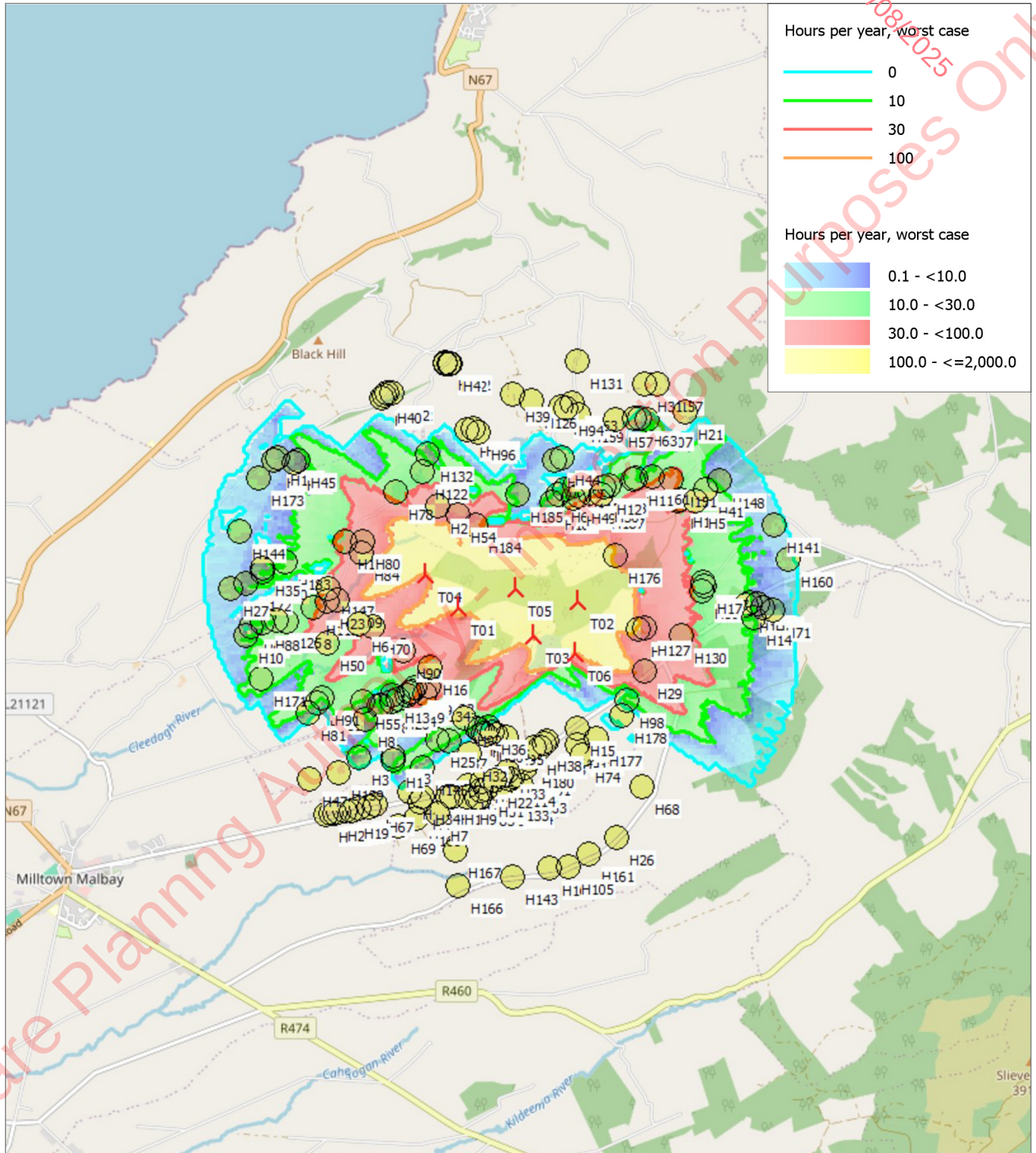
No.	Name	Shadow, worst case		Shadow, expected values	
		Shadow hours per year [h/year]	Shadow days per year [days/year]	Max shadow hours per day [h/day]	Shadow hours per year [h/year]
EQ	H147	35:07	105	0:32	8:04
ER	H148	6:36	30	0:17	0:59
ES	H149	3:44	29	0:11	0:46
ET	H150	9:10	43	0:19	1:58
EU	H151	36:26	86	0:36	4:47
EV	H152	0:00	0	0:00	0:00
EW	H153	0:00	0	0:00	0:00
EX	H154	0:00	0	0:00	0:00
EY	H155	9:03	38	0:18	1:51
EZ	H156	37:08	69	0:48	6:45
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	3:17	18	0:14	0:41
FE	H161	0:00	0	0:00	0:00
FF	H162	0:00	0	0:00	0:00
FG	H163	0:00	0	0:00	0:00
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	18:23	83	0:17	3:57
FP	H172	7:56	40	0:17	1:48
FQ	H173	3:29	21	0:15	0:34
FR	H174	5:01	28	0:17	0:43
FS	H175	4:47	26	0:17	0:41
FT	H176	94:58	163	1:12	14:44
FU	H177	0:00	0	0:00	0:00
FV	H178	0:00	0	0:00	0:00
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	42:31	117	0:40	9:19
GA	H183	12:03	49	0:22	2:29
GB	H184	44:31	99	0:45	6:18
GC	H185	6:40	36	0:19	0:57
GD	H186	16:04	69	0:21	2:07
GE	H187	31:49	105	0:30	4:25
GF	H188	15:13	60	0:22	3:39

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

No.	Name	Worst case [h/year]	Expected [h/year]
1	T06	209:21	41:40
2	T02	283:59	52:32
3	T03	228:12	43:37
4	T05	258:39	43:43
5	T01	165:33	32:44
6	T04	256:05	46:31

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.

SHADOW - Map**Calculation:** Worst Case

0 1 2 3 4 km

Map: EMD OpenStreetMap, Print scale 1:75,000, Map center Irish ITM-IRENET95 (IE), geocentric, GRS80 East: 509,790 North: 681,450

▲ New WTG

● Shadow receptor

Flicker map level: Height Contours: CONTOURLINE_20240527_Clare4n_Revised_SF_Assessment_3.wpo (4)

Time step: 4 minutes, Day step: 14 days, Map resolution: 30 m, Visibility resolution: 15 m, Eye height: 1.5 m

SHADOW - Main Result

Calculation: Real Case

Assumptions for shadow calculations

Maximum distance for influence	2,000 m
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) []

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.70	2.40	3.60	5.40	5.90	5.50	4.40	4.60	3.90	3.00	2.10	1.50

Operational time

N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW
161	214	282	397	231	346	817	639	450	567	872	1,114

W	WNW	NW	NNW	Sum
793	818	765	294	8,760

A ZVI (Zones of Visual Influence) calculation is performed before flicker calculation so non visible WTG do not contribute to calculated flicker values. A WTG will be visible if it is visible from any part of the receiver window. The ZVI calculation is based on the following assumptions:

Height contours used: Height Contours: CONTOURLINE_20240527_Clare4n_R
Receptor grid resolution: 1.0 m

All coordinates are in

Irish ITM-IRENET95 (IE), geocentric, GRS80

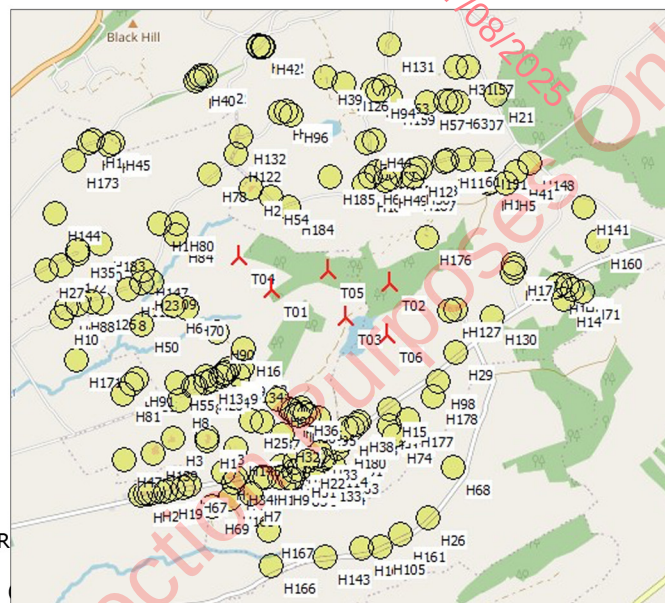
WTGs

	Easting	Northing	Z	Row data/Description	WTG type				Rotor diameter	Hub height	Shadow data		
					Valid	Manufact.	Type-generator	Power, rated			Calculation distance	RPM	
			[m]					[kW]	[m]	[m]	[m]	[RPM]	
1	510,310	681,176	190.0	T06	Yes	VESTAS	V117-4.2-4,200	4,200	117.0	91.5	2,000	13.6	
2	510,339	681,648	183.1	T02	Yes	VESTAS	V117-4.2-4,200	4,200	117.0	91.5	2,000	13.6	
3	509,923	681,348	189.1	T03	Yes	VESTAS	V117-4.2-4,200	4,200	117.0	91.5	2,000	13.6	
4	509,773	681,776	171.7	T05	Yes	VESTAS	V117-4.2-4,200	4,200	117.0	91.5	2,000	13.6	
5	509,248	681,617	160.0	T01	Yes	VESTAS	V117-4.2-4,200	4,200	117.0	91.5	2,000	13.6	
6	508,957	681,920	135.4	T04	Yes	VESTAS	V117-4.2-4,200	4,200	117.0	91.5	2,000	13.6	

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	508,632	680,244	143.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
B	H2	509,084	682,541	141.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
C	H3	508,326	680,267	150.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
D	H4	509,228	683,830	110.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
E	H5	511,430	682,538	104.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
F	H6	508,351	681,477	105.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
G	H7	509,026	679,746	145.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
H	H8	508,393	680,615	132.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
I	H9	509,301	679,892	160.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
J	H10	507,319	681,392	88.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
K	H11	510,885	682,752	130.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
L	H12	510,603	682,685	160.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
M	H13	508,632	680,825	146.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
N	H14	511,947	681,473	132.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
O	H15	510,316	680,500	178.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
P	H16	508,983	681,075	160.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
Q	H17	511,498	681,770	125.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
R	H18	509,161	679,898	155.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
S	H19	508,247	679,785	130.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
T	H20	508,630	680,768	147.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
U	H21	511,347	683,347	84.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
V	H22	509,557	680,037	170.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
W	H23	508,064	681,690	100.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
X	H24	508,698	680,796	154.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5

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SHADOW - Main Result

Calculation: Real 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]
Y H25		509,041	680,417	169.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
Z H26		510,655	679,499	141.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AA H27		507,190	681,828	86.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AB H28		508,096	679,765	130.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AC H29		510,938	681,006	154.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AD H30		510,580	682,615	154.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AE H31		510,987	683,607	82.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AF H32		509,325	680,288	161.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AG H33		509,678	680,112	170.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AH H34		508,896	679,897	139.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AI H35		507,475	682,004	104.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AJ H36		509,504	680,520	183.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AK H37		509,153	680,404	171.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AL H38		510,014	680,366	176.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AM H39		509,784	683,537	107.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AN H40		508,618	683,551	127.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AO H41		511,520	682,641	98.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AP H42		508,686	683,575	128.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AQ H43		508,634	680,271	146.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AR H44		510,219	682,951	152.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AS H45		507,816	682,980	118.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AT H46		508,877	679,851	139.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AU H47		507,866	680,083	126.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AV H48		508,781	679,942	131.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AW H49		510,371	682,606	180.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AX H50		508,051	681,312	92.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AY H51		509,478	679,960	167.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
AZ H52		509,478	679,960	167.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BA H53		510,325	682,586	180.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BB H54		509,264	682,451	150.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BC H55		508,372	680,777	113.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BD H56		508,372	680,777	113.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BE H57		510,719	683,290	103.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BF H58		510,644	682,692	155.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BG H59		511,473	681,721	127.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BH H60		509,485	680,450	179.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BI H61		511,046	682,767	118.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BJ H62		508,186	679,783	130.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BK H63		510,930	683,299	99.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BL H64		510,863	682,745	132.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BM H65		510,182	682,625	180.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BN H66		509,917	680,334	175.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BO H67		508,464	679,839	131.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BP H68		510,900	679,953	161.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BQ H69		508,667	679,635	124.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BR H70		508,471	681,454	108.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BS H71		512,121	681,532	125.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BT H72		508,413	679,816	130.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BU H73		510,888	683,298	100.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BV H74		510,356	680,257	160.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BW H75		510,151	682,935	154.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BX H76		509,433	679,952	165.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BY H77		507,781	682,954	116.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
BZ H78		508,706	682,667	140.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CA H79		508,775	680,828	161.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CB H80		508,394	682,223	140.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CC H81		507,872	680,682	103.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CD H82		509,212	683,830	110.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CE H83		509,391	679,883	161.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CF H84		508,383	682,127	129.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CG H85		509,541	680,471	181.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CH H86		508,797	680,846	163.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CI H87		508,516	680,741	133.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CJ H88		507,470	681,510	100.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5

To be continued on next page...

SHADOW - Main Result

Calculation: Real 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]
CK H89		508,598	683,525	128.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CL H90		508,745	681,228	140.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CM H91		508,000	680,817	103.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CN H92		509,292	680,609	185.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CO H93		512,018	681,562	130.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CP H94		510,269	683,405	111.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CQ H95		509,674	680,427	180.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CR H96		509,467	683,200	150.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CS H97		507,364	681,478	99.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CT H98		510,770	680,743	168.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CU H99		508,850	680,887	163.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CV H100		509,423	683,234	149.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CW H101		510,467	682,626	172.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CX H102		509,182	683,842	112.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CY H103		508,542	680,735	137.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
CZ H104		509,459	680,471	180.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DA H105		510,216	679,245	112.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DB H106		509,446	680,029	168.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DC H107		511,000	683,279	95.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DD H108		508,132	679,771	130.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DE H109		508,150	681,697	100.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DF H110		511,290	682,552	106.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DG H111		509,362	683,220	146.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DH H112		507,936	681,631	100.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DI H113		509,980	680,331	173.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DJ H114		509,696	680,051	168.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DK H115		510,330	682,700	175.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DL H116		511,879	681,582	130.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DM H117		510,247	682,661	174.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DN H118		509,572	680,455	180.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DO H119		509,615	680,069	170.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DP H120		511,977	681,591	131.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DQ H121		508,314	679,808	130.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DR H122		508,946	682,856	140.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DS H123		509,173	683,830	113.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DT H124		509,427	680,496	180.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DU H125		507,593	681,531	98.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DV H126		509,955	683,474	112.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DW H127		510,947	681,400	156.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DX H128		509,724	680,070	168.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DY H129		510,885	681,380	169.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
DZ H130		511,286	681,320	137.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EA H131		510,375	683,825	82.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EB H132		508,999	683,013	136.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EC H133		509,631	679,917	163.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
ED H134		508,932	680,836	171.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EE H135		508,819	680,864	164.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EF H136		509,131	679,893	154.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EG H137		511,486	681,803	126.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EH H138		511,271	682,545	108.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EI H139		508,139	680,139	138.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EJ H140		508,139	680,139	138.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EK H141		512,144	682,310	110.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EL H142		511,914	681,606	130.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EM H143		509,704	679,161	100.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EN H144		507,277	682,339	118.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EO H145		508,895	680,171	143.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EP H146		509,418	679,874	161.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EQ H147		508,080	681,801	107.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
ER H148		511,655	682,715	92.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
ES H149		509,403	680,517	181.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
ET H150		507,478	681,972	101.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EU H151		511,216	682,745	105.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EV H152		508,637	683,574	126.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5

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Project:

20240527_Clare4n_Revised_SF_Assessment

Licensed user:

Macro Works Ltd
Hibernia House, Cherrywood, Loughlinstown
IE-D18 E440 Dublin
0035312303585
Peter Connell / peter.connell@macroworks.ie
Calculated:
07/07/2025 11:50/4.0.424

SHADOW - Main Result

Calculation: Real 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]
EW H153		510,328	683,452	106.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EX H154		510,037	680,382	176.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EY H155		507,953	680,772	103.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
EZ H156		508,239	682,230	135.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FA H157		511,101	683,605	80.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FB H158		510,219	683,412	112.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FC H159		510,383	683,344	110.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FD H160		512,261	681,992	105.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FE H161		510,402	679,351	127.3	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FF H162		510,038	679,233	110.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FG H163		509,802	679,984	160.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FH H164		509,665	679,887	160.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FI H165		509,312	679,994	161.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FJ H166		509,198	679,090	92.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FK H167		509,187	679,412	110.4	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FL H168		508,833	679,702	133.5	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FM H169		508,012	679,751	128.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FN H170		508,060	679,761	130.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FO H171		507,450	681,004	90.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FP H172		507,325	681,872	91.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FQ H173		507,461	682,818	117.1	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FR H174		507,631	683,005	111.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FS H175		507,605	682,985	112.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FT H176		510,696	682,054	150.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FU H177		510,483	680,398	170.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FV H178		510,729	680,609	163.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FW H179		510,315	680,348	168.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FX H180		509,874	680,216	168.7	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FY H181		509,831	680,151	167.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
FZ H182		508,969	680,902	168.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
GA H183		507,690	682,061	109.9	2.0	2.0	0.5	90.0	"Green house mode"	2.5
GB H184		509,429	682,352	167.0	2.0	2.0	0.5	90.0	"Green house mode"	2.5
GC H185		509,819	682,632	178.8	2.0	2.0	0.5	90.0	"Green house mode"	2.5
GD H186		510,126	682,551	178.6	2.0	2.0	0.5	90.0	"Green house mode"	2.5
GE H187		510,546	682,559	150.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5
GF H188		507,686	681,509	93.2	2.0	2.0	0.5	90.0	"Green house mode"	2.5

Calculation Results

Shadow receptor

Shadow, worst case		Shadow, expected values			
No.	Name	Shadow hours per year [h/year]	Shadow days per year [days/year]	Max shadow hours per day [h/day]	Shadow hours per year [h/year]
A	H1	7:33	43	0:15	1:35
B	H2	47:03	106	0:38	6:12
C	H3	6:21	40	0:13	1:18
D	H4	0:00	0	0:00	0:00
E	H5	27:34	109	0:24	3:55
F	H6	34:45	102	0:42	8:12
G	H7	0:00	0	0:00	0:00
H	H8	12:21	60	0:17	2:47
I	H9	0:00	0	0:00	0:00
J	H10	9:01	46	0:17	2:10
K	H11	13:01	50	0:23	1:53
L	H12	24:55	78	0:24	3:15
M	H13	20:21	66	0:34	4:39
N	H14	9:26	43	0:17	2:07
O	H15	0:00	0	0:00	0:00
P	H16	33:50	85	0:44	7:59
Q	H17	25:26	83	0:37	5:07
R	H18	0:00	0	0:00	0:00
S	H19	0:00	0	0:00	0:00
T	H20	20:42	68	0:32	4:40

To be continued on next page...

SHADOW - Main Result

Calculation: Real 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]
U	H21	0:00	0	0:00	0:00
V	H22	0:00	0	0:00	0:00
W	H23	37:00	107	0:34	8:39
X	H24	22:21	72	0:33	5:02
Y	H25	16:47	63	0:20	3:29
Z	H26	0:00	0	0:00	0:00
AA	H27	3:58	22	0:16	0:57
AB	H28	0:00	0	0:00	0:00
AC	H29	73:05	122	0:57	16:11
AD	H30	29:30	98	0:26	4:01
AE	H31	0:00	0	0:00	0:00
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	8:56	44	0:18	1:52
AJ	H36	0:00	0	0:00	0:00
AK	H37	10:27	46	0:19	2:09
AL	H38	0:00	0	0:00	0:00
AM	H39	0:00	0	0:00	0:00
AN	H40	0:00	0	0:00	0:00
AO	H41	22:16	100	0:18	3:08
AP	H42	0:00	0	0:00	0:00
AQ	H43	6:49	39	0:16	1:27
AR	H44	3:04	24	0:13	0:26
AS	H45	7:50	40	0:19	1:05
AT	H46	0:00	0	0:00	0:00
AU	H47	0:00	0	0:00	0:00
AV	H48	0:00	0	0:00	0:00
AW	H49	16:13	78	0:23	2:04
AX	H50	20:35	82	0:26	4:49
AY	H51	0:00	0	0:00	0:00
AZ	H52	0:00	0	0:00	0:00
BA	H53	15:44	76	0:22	2:01
BB	H54	84:43	80	1:31	10:31
BC	H55	8:16	45	0:18	1:54
BD	H56	8:16	45	0:18	1:54
BE	H57	0:00	0	0:00	0:00
BF	H58	25:12	91	0:24	3:23
BG	H59	26:37	84	0:39	5:29
BH	H60	0:00	0	0:00	0:00
BI	H61	23:51	68	0:35	3:03
BJ	H62	0:00	0	0:00	0:00
BK	H63	3:22	22	0:11	0:24
BL	H64	13:32	52	0:23	1:57
BM	H65	12:27	58	0:19	1:36
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	45:25	121	0:43	10:37
BS	H71	7:37	40	0:15	1:41
BT	H72	0:00	0	0:00	0:00
BU	H73	1:16	14	0:07	0:08
BV	H74	0:00	0	0:00	0:00
BW	H75	3:44	28	0:14	0:32
BX	H76	0:00	0	0:00	0:00
BY	H77	7:41	38	0:19	1:04
BZ	H78	24:32	110	0:21	3:25
CA	H79	25:02	78	0:34	5:37
CB	H80	50:12	83	0:54	8:45
CC	H81	5:59	31	0:14	1:14
CD	H82	0:00	0	0:00	0:00
CE	H83	0:00	0	0:00	0:00

To be continued on next page...

SHADOW - Main Result

Calculation: Real 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]
CF	H84	55:29	89	0:59	10:35
CG	H85	0:00	0	0:00	0:00
CH	H86	25:19	76	0:35	5:42
CI	H87	13:47	61	0:19	3:10
CJ	H88	10:17	48	0:19	2:29
CK	H89	0:00	0	0:00	0:00
CL	H90	47:13	147	0:26	10:31
CM	H91	14:07	61	0:18	3:02
CN	H92	24:19	75	0:25	5:06
CO	H93	8:28	42	0:17	1:51
CP	H94	0:00	0	0:00	0:00
CQ	H95	0:00	0	0:00	0:00
CR	H96	0:00	0	0:00	0:00
CS	H97	8:39	44	0:17	2:06
CT	H98	13:58	44	0:25	2:46
CU	H99	28:27	80	0:38	6:26
CV	H100	0:00	0	0:00	0:00
CW	H101	23:25	82	0:27	3:00
CX	H102	0:00	0	0:00	0:00
CY	H103	14:34	64	0:20	3:19
CZ	H104	0:00	0	0:00	0:00
DA	H105	0:00	0	0:00	0:00
DB	H106	0:00	0	0:00	0:00
DC	H107	7:37	36	0:15	0:55
DD	H108	0:00	0	0:00	0:00
DE	H109	45:40	121	0:36	10:34
DF	H110	28:07	98	0:30	4:02
DG	H111	0:00	0	0:00	0:00
DH	H112	26:51	78	0:33	6:25
DI	H113	0:00	0	0:00	0:00
DJ	H114	0:00	0	0:00	0:00
DK	H115	9:20	63	0:16	1:14
DL	H116	13:10	63	0:18	2:52
DM	H117	12:02	61	0:18	1:34
DN	H118	0:00	0	0:00	0:00
DO	H119	0:00	0	0:00	0:00
DP	H120	8:56	42	0:17	1:56
DQ	H121	0:00	0	0:00	0:00
DR	H122	21:14	80	0:22	2:40
DS	H123	0:00	0	0:00	0:00
DT	H124	0:00	0	0:00	0:00
DU	H125	12:29	53	0:20	3:01
DV	H126	0:00	0	0:00	0:00
DW	H127	89:37	150	0:44	19:01
DX	H128	0:00	0	0:00	0:00
DY	H129	94:51	145	0:48	19:44
DZ	H130	42:01	118	0:36	9:28
EA	H131	0:00	0	0:00	0:00
EB	H132	7:12	42	0:16	0:58
EC	H133	0:00	0	0:00	0:00
ED	H134	40:07	108	0:36	8:40
EE	H135	26:25	77	0:36	5:57
EF	H136	0:00	0	0:00	0:00
EG	H137	25:49	87	0:36	5:10
EH	H138	28:17	97	0:31	4:04
EI	H139	0:00	0	0:00	0:00
EJ	H140	0:00	0	0:00	0:00
EK	H141	3:33	19	0:15	0:39
EL	H142	9:43	44	0:18	2:06
EM	H143	0:00	0	0:00	0:00
EN	H144	2:51	18	0:14	0:34
EO	H145	2:33	25	0:08	0:32
EP	H146	0:00	0	0:00	0:00

To be continued on next page...

SHADOW - Main Result

Calculation: Real 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]
EQ	H147	35:07	105	0:32	8:04
ER	H148	6:36	30	0:17	0:59
ES	H149	3:44	29	0:11	0:46
ET	H150	9:10	43	0:19	1:58
EU	H151	36:26	86	0:36	4:47
EV	H152	0:00	0	0:00	0:00
EW	H153	0:00	0	0:00	0:00
EX	H154	0:00	0	0:00	0:00
EY	H155	9:03	38	0:18	1:51
EZ	H156	37:08	69	0:48	6:45
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	3:17	18	0:14	0:41
FE	H161	0:00	0	0:00	0:00
FF	H162	0:00	0	0:00	0:00
FG	H163	0:00	0	0:00	0:00
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	18:23	83	0:17	3:57
FP	H172	7:56	40	0:17	1:48
FQ	H173	3:29	21	0:15	0:34
FR	H174	5:01	28	0:17	0:43
FS	H175	4:47	26	0:17	0:41
FT	H176	94:58	163	1:12	14:44
FU	H177	0:00	0	0:00	0:00
FV	H178	0:00	0	0:00	0:00
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	42:31	117	0:40	9:19
GA	H183	12:03	49	0:22	2:29
GB	H184	44:31	99	0:45	6:18
GC	H185	6:40	36	0:19	0:57
GD	H186	16:04	69	0:21	2:07
GE	H187	31:49	105	0:30	4:25
GF	H188	15:13	60	0:22	3:39

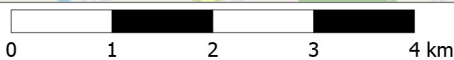
Total amount of flickering on the shadow receptors caused by each WTG

No.	Name	Worst case [h/year]	Expected [h/year]
1	T06	209:21	41:40
2	T02	283:59	52:32
3	T03	228:12	43:37
4	T05	258:39	43:43
5	T01	165:33	32:44
6	T04	256:05	46:31

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.

Calculation: Real Case



Time step: 4 minutes, Day step: 14 days, Map resolution: 30 m, Visibility resolution: 15 m, Eye height: 1.5 m