

## SHADOW - Main Result

Calculation: Lissinagroagh\_Receptors\_update\_20251218  
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

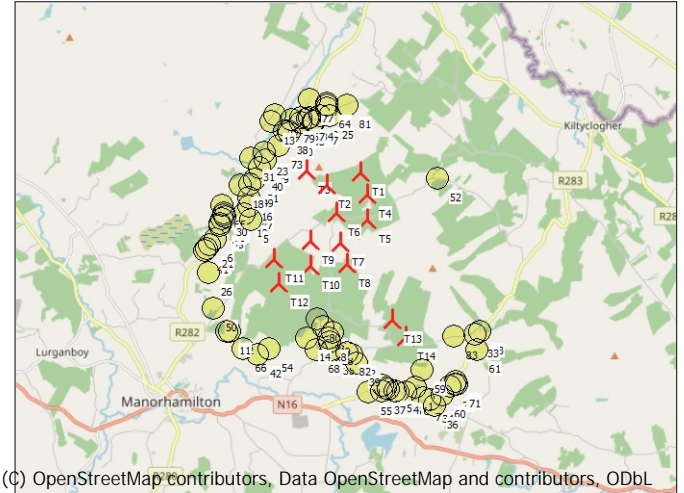
Minimum sun height over horizon for influence 3 °  
Day step for calculation 1 days  
Time step for calculation 1 minutes

Sunshine probability S (Average daily sunshine hours) [CLONES]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
1.45 1.93 2.72 4.31 5.45 4.41 4.74 3.96 3.48 2.54 1.71 1.01

Operational time  
N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
382 329 306 422 566 747 1,209 1,342 1,038 849 791 778 8,759

Line-of-sight calculation has been deactivated. This means that sheltering from obstacles, areas or hills are not taken into account.

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



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

Scale 1:160,000  
New WTG Shadow receptor

### WTGs

	Easting	Northing	Z	Row data/Description	WTG type			Shadow data				
					Valid	Manufact.	Type-generator	Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Calculation distance [m]	RPM
T1	592,596	844,330	280.0	NORDEX N163/6.X 6800 163.0 !O!...Yes	Yes	NORDEX	N163/6.X-6,800	6,800	163.0	103.5	1,789	10.7
T10	591,544	842,345	247.4	NORDEX N163/6.X 6800 163.0 !O!...Yes	Yes	NORDEX	N163/6.X-6,800	6,800	163.0	103.5	1,789	10.7
T11	590,776	842,501	190.3	NORDEX N163/6.X 6800 163.0 !O!...Yes	Yes	NORDEX	N163/6.X-6,800	6,800	163.0	103.5	1,789	10.7
T12	590,885	841,986	171.2	NORDEX N163/6.X 6800 163.0 !O!...Yes	Yes	NORDEX	N163/6.X-6,800	6,800	163.0	103.5	1,789	10.7
T13	593,280	841,205	248.8	NORDEX N163/6.X 6800 163.0 !O!...Yes	Yes	NORDEX	N163/6.X-6,800	6,800	163.0	103.5	1,789	10.7
T14	593,558	840,837	235.3	NORDEX N163/6.X 6800 163.0 !O!...Yes	Yes	NORDEX	N163/6.X-6,800	6,800	163.0	103.5	1,789	10.7
T2	591,893	844,060	331.8	NORDEX N163/6.X 6800 163.0 !O!...Yes	Yes	NORDEX	N163/6.X-6,800	6,800	163.0	103.5	1,789	10.7
T3	591,465	844,376	344.8	NORDEX N163/6.X 6800 163.0 !O!...Yes	Yes	NORDEX	N163/6.X-6,800	6,800	163.0	103.5	1,789	10.7
T4	592,752	843,851	315.7	NORDEX N163/6.X 6800 163.0 !O!...Yes	Yes	NORDEX	N163/6.X-6,800	6,800	163.0	103.5	1,789	10.7
T5	592,751	843,332	343.7	NORDEX N163/6.X 6800 163.0 !O!...Yes	Yes	NORDEX	N163/6.X-6,800	6,800	163.0	103.5	1,789	10.7
T6	592,099	843,476	305.7	NORDEX N163/6.X 6800 163.0 !O!...Yes	Yes	NORDEX	N163/6.X-6,800	6,800	163.0	103.5	1,789	10.7
T7	592,179	842,837	335.0	NORDEX N163/6.X 6800 163.0 !O!...Yes	Yes	NORDEX	N163/6.X-6,800	6,800	163.0	103.5	1,789	10.7
T8	592,310	842,380	322.2	NORDEX N163/6.X 6800 163.0 !O!...Yes	Yes	NORDEX	N163/6.X-6,800	6,800	163.0	103.5	1,789	10.7
T9	591,553	842,883	248.1	NORDEX N163/6.X 6800 163.0 !O!...Yes	Yes	NORDEX	N163/6.X-6,800	6,800	163.0	103.5	1,789	10.7

### Shadow receptor-Input

No.	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]	[m]	[°]		[m]
1	593,757	839,783	134.5	1.0	1.0	1.0	90.0	"Green house mode"	2.0
2	591,754	845,520	183.1	1.0	1.0	1.0	90.0	"Green house mode"	2.0
3	591,099	845,187	180.4	1.0	1.0	1.0	90.0	"Green house mode"	2.0
4	589,643	843,251	157.1	1.0	1.0	1.0	90.0	"Green house mode"	2.0
5	590,291	843,335	213.9	1.0	1.0	1.0	90.0	"Green house mode"	2.0
6	589,521	842,918	141.9	1.0	1.0	1.0	90.0	"Green house mode"	2.0
7	593,936	839,554	126.1	1.0	1.0	1.0	90.0	"Green house mode"	2.0
8	591,933	840,827	161.1	1.0	1.0	1.0	90.0	"Green house mode"	2.0
9	592,014	840,934	170.2	1.0	1.0	1.0	90.0	"Green house mode"	2.0
10	590,158	843,466	194.0	1.0	1.0	1.0	90.0	"Green house mode"	2.0
11	589,771	840,967	118.3	1.0	1.0	1.0	90.0	"Green house mode"	2.0
12	591,482	845,467	173.7	1.0	1.0	1.0	90.0	"Green house mode"	2.0
13	590,701	845,430	172.1	1.0	1.0	1.0	90.0	"Green house mode"	2.0
14	591,471	840,835	144.0	1.0	1.0	1.0	90.0	"Green house mode"	2.0
15	589,332	842,725	140.0	1.0	1.0	1.0	90.0	"Green house mode"	2.0
16	590,237	843,797	198.7	1.0	1.0	1.0	90.0	"Green house mode"	2.0
17	591,618	845,422	183.9	1.0	1.0	1.0	90.0	"Green house mode"	2.0
18	590,068	844,070	194.3	1.0	1.0	1.0	90.0	"Green house mode"	2.0
19	591,602	845,418	183.5	1.0	1.0	1.0	90.0	"Green house mode"	2.0
20	591,116	845,179	182.4	1.0	1.0	1.0	90.0	"Green house mode"	2.0

To be continued on next page...

## SHADOW - Main Result

Calculation: Lissinagroagh\_Receptors\_update\_20251218

...continued from previous page

No.	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]
21	589,403	842,827	141.3	1.0	1.0	1.0	90.0	"Green house mode"	2.0
22	589,837	840,974	116.6	1.0	1.0	1.0	90.0	"Green house mode"	2.0
23	590,584	844,754	176.9	1.0	1.0	1.0	90.0	"Green house mode"	2.0
24	594,600	839,848	139.2	1.0	1.0	1.0	90.0	"Green house mode"	2.0
25	591,957	845,523	204.7	1.0	1.0	1.0	90.0	"Green house mode"	2.0
26	589,387	842,222	127.5	1.0	1.0	1.0	90.0	"Green house mode"	2.0
27	594,487	839,808	133.7	1.0	1.0	1.0	90.0	"Green house mode"	2.0
28	591,954	840,734	154.6	1.0	1.0	1.0	90.0	"Green house mode"	2.0
29	590,590	844,605	182.3	1.0	1.0	1.0	90.0	"Green house mode"	2.0
30	589,712	843,495	167.3	1.0	1.0	1.0	90.0	"Green house mode"	2.0
31	590,274	844,652	180.1	1.0	1.0	1.0	90.0	"Green house mode"	2.0
32	590,802	845,545	168.6	1.0	1.0	1.0	90.0	"Green house mode"	2.0
33	595,036	840,903	180.4	1.0	1.0	1.0	90.0	"Green house mode"	2.0
34	594,066	839,519	123.1	1.0	1.0	1.0	90.0	"Green house mode"	2.0
35	591,980	840,528	135.9	1.0	1.0	1.0	90.0	"Green house mode"	2.0
36	594,183	839,402	117.7	1.0	1.0	1.0	90.0	"Green house mode"	2.0
37	593,052	839,719	123.3	1.0	1.0	1.0	90.0	"Green house mode"	2.0
38	591,007	845,190	175.6	1.0	1.0	1.0	90.0	"Green house mode"	2.0
39	592,532	840,286	139.9	1.0	1.0	1.0	90.0	"Green house mode"	2.0
40	590,457	844,443	182.6	1.0	1.0	1.0	90.0	"Green house mode"	2.0
41	589,287	842,691	139.4	1.0	1.0	1.0	90.0	"Green house mode"	2.0
42	590,410	840,476	97.4	1.0	1.0	1.0	90.0	"Green house mode"	2.0
43	595,155	840,960	173.9	1.0	1.0	1.0	90.0	"Green house mode"	2.0
44	593,346	839,708	128.6	1.0	1.0	1.0	90.0	"Green house mode"	2.0
45	593,190	839,745	129.3	1.0	1.0	1.0	90.0	"Green house mode"	2.0
46	589,715	843,394	161.5	1.0	1.0	1.0	90.0	"Green house mode"	2.0
47	590,234	843,622	202.6	1.0	1.0	1.0	90.0	"Green house mode"	2.0
48	589,628	843,213	155.2	1.0	1.0	1.0	90.0	"Green house mode"	2.0
49	590,261	844,085	199.8	1.0	1.0	1.0	90.0	"Green house mode"	2.0
50	589,482	841,458	125.7	1.0	1.0	1.0	90.0	"Green house mode"	2.0
51	590,361	844,188	198.8	1.0	1.0	1.0	90.0	"Green house mode"	2.0
52	594,223	844,209	250.7	1.0	1.0	1.0	90.0	"Green house mode"	2.0
53	593,132	839,748	128.0	1.0	1.0	1.0	90.0	"Green house mode"	2.0
54	590,662	840,602	111.3	1.0	1.0	1.0	90.0	"Green house mode"	2.0
55	592,768	839,684	112.1	1.0	1.0	1.0	90.0	"Green house mode"	2.0
56	593,407	839,682	126.9	1.0	1.0	1.0	90.0	"Green house mode"	2.0
57	594,622	839,919	139.8	1.0	1.0	1.0	90.0	"Green house mode"	2.0
58	589,712	843,433	164.0	1.0	1.0	1.0	90.0	"Green house mode"	2.0
59	593,912	840,161	182.1	1.0	1.0	1.0	90.0	"Green house mode"	2.0
60	594,338	839,631	124.8	1.0	1.0	1.0	90.0	"Green house mode"	2.0
61	595,068	840,574	145.2	1.0	1.0	1.0	90.0	"Green house mode"	2.0
62	592,430	840,465	151.8	1.0	1.0	1.0	90.0	"Green house mode"	2.0
63	591,357	845,398	172.2	1.0	1.0	1.0	90.0	"Green house mode"	2.0
64	591,896	845,742	175.9	1.0	1.0	1.0	90.0	"Green house mode"	2.0
65	589,674	843,651	178.2	1.0	1.0	1.0	90.0	"Green house mode"	2.0
66	590,116	840,601	102.3	1.0	1.0	1.0	90.0	"Green house mode"	2.0
67	591,356	845,495	167.0	1.0	1.0	1.0	90.0	"Green house mode"	2.0
68	591,666	840,577	130.8	1.0	1.0	1.0	90.0	"Green house mode"	2.0
69	591,810	841,075	179.8	1.0	1.0	1.0	90.0	"Green house mode"	2.0
70	593,549	839,682	125.2	1.0	1.0	1.0	90.0	"Green house mode"	2.0
71	594,658	839,834	140.7	1.0	1.0	1.0	90.0	"Green house mode"	2.0
72	591,990	840,576	141.1	1.0	1.0	1.0	90.0	"Green house mode"	2.0
73	590,889	844,909	197.6	1.0	1.0	1.0	90.0	"Green house mode"	2.0
74	593,059	839,819	126.3	1.0	1.0	1.0	90.0	"Green house mode"	2.0
75	591,886	845,695	178.8	1.0	1.0	1.0	90.0	"Green house mode"	2.0
76	591,901	845,796	172.1	1.0	1.0	1.0	90.0	"Green house mode"	2.0
77	591,539	845,892	145.6	1.0	1.0	1.0	90.0	"Green house mode"	2.0
78	589,683	843,343	160.7	1.0	1.0	1.0	90.0	"Green house mode"	2.0
79	591,142	845,446	162.2	1.0	1.0	1.0	90.0	"Green house mode"	2.0
80	591,673	841,220	194.0	1.0	1.0	1.0	90.0	"Green house mode"	2.0
81	592,326	845,751	204.2	1.0	1.0	1.0	90.0	"Green house mode"	2.0
82	592,301	840,514	149.2	1.0	1.0	1.0	90.0	"Green house mode"	2.0
83	594,592	840,876	211.2	1.0	1.0	1.0	90.0	"Green house mode"	2.0
84	591,541	845,479	175.2	1.0	1.0	1.0	90.0	"Green house mode"	2.0

## SHADOW - Main Result

Calculation: Lissinagroagh\_Receptors\_update\_20251218

### Calculation Results

Shadow receptor

No.	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]
1	0:00	0	0:00	0:00
2	73:11	76	1:10	7:49
3	66:55	97	1:07	8:50
4	25:27	90	0:29	3:14
5	64:48	181	0:37	8:49
6	22:42	71	0:28	3:09
7	0:00	0	0:00	0:00
8	25:35	76	0:28	4:30
9	27:20	76	0:30	4:38
10	45:19	123	0:34	5:15
11	0:00	0	0:00	0:00
12	75:34	98	1:00	8:22
13	19:26	50	0:29	2:29
14	0:00	0	0:00	0:00
15	17:54	62	0:26	2:38
16	49:59	136	0:30	8:15
17	79:59	94	1:00	8:53
18	15:21	44	0:27	2:43
19	80:23	95	1:01	8:55
20	68:59	99	1:08	9:05
21	19:21	64	0:27	2:47
22	0:00	0	0:00	0:00
23	33:46	78	0:38	5:08
24	0:00	0	0:00	0:00
25	59:21	76	1:00	6:16
26	23:37	71	0:27	3:53
27	0:00	0	0:00	0:00
28	28:53	85	0:28	5:19
29	38:01	85	0:39	6:04
30	16:04	52	0:28	1:58
31	22:45	65	0:30	3:29
32	23:30	64	0:29	2:55
33	18:59	63	0:26	3:11
34	0:00	0	0:00	0:00
35	39:00	103	0:28	6:48
36	0:00	0	0:00	0:00
37	0:00	0	0:00	0:00
38	49:30	74	1:04	6:32
39	30:23	63	0:35	5:15
40	34:05	83	0:37	5:45
41	16:55	59	0:25	2:30
42	0:00	0	0:00	0:00
43	9:05	30	0:24	1:25
44	0:00	0	0:00	0:00
45	0:00	0	0:00	0:00
46	16:15	48	0:29	2:02
47	28:45	101	0:26	4:34
48	24:58	88	0:29	3:14
49	43:40	132	0:31	7:13
50	15:01	46	0:26	2:47
51	52:15	164	0:34	8:12
52	26:57	92	0:25	4:05
53	0:00	0	0:00	0:00
54	0:00	0	0:00	0:00
55	0:00	0	0:00	0:00
56	0:00	0	0:00	0:00
57	0:00	0	0:00	0:00
58	16:00	50	0:28	1:59
59	0:00	0	0:00	0:00
60	0:00	0	0:00	0:00
61	11:44	36	0:25	2:03
62	27:22	65	0:33	5:05

To be continued on next page...

## SHADOW - Main Result

Calculation: Lissinagroagh\_Receptors\_update\_20251218

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No.	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]
63	85:18	110	1:03	9:42
64	39:59	58	0:54	4:00
65	15:09	61	0:25	1:45
66	0:00	0	0:00	0:00
67	73:34	102	0:59	8:10
68	13:07	45	0:23	2:29
69	18:43	63	0:25	3:09
70	0:00	0	0:00	0:00
71	0:00	0	0:00	0:00
72	42:11	111	0:28	7:27
73	49:27	82	0:52	7:03
74	0:00	0	0:00	0:00
75	45:24	62	0:55	4:37
76	34:05	54	0:50	3:21
77	16:02	46	0:26	1:35
78	15:16	46	0:28	1:58
79	65:36	91	0:59	7:26
80	9:05	30	0:24	1:31
81	24:41	70	0:25	2:38
82	18:34	48	0:30	3:16
83	36:47	89	0:37	6:16
84	73:37	94	1:00	8:07

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

No.	Name	Worst case [h/year]	Expected [h/year]
T1	NORDEX N163/6.X 6800 163.0 !O! hub: 103.5 m (TOT: 185.0 m) (17)	111:33	13:24
T10	NORDEX N163/6.X 6800 163.0 !O! hub: 103.5 m (TOT: 185.0 m) (24)	12:05	1:31
T11	NORDEX N163/6.X 6800 163.0 !O! hub: 103.5 m (TOT: 185.0 m) (23)	135:53	17:45
T12	NORDEX N163/6.X 6800 163.0 !O! hub: 103.5 m (TOT: 185.0 m) (26)	62:50	9:12
T13	NORDEX N163/6.X 6800 163.0 !O! hub: 103.5 m (TOT: 185.0 m) (27)	121:47	21:40
T14	NORDEX N163/6.X 6800 163.0 !O! hub: 103.5 m (TOT: 185.0 m) (28)	141:42	24:30
T2	NORDEX N163/6.X 6800 163.0 !O! hub: 103.5 m (TOT: 185.0 m) (16)	226:00	30:04
T3	NORDEX N163/6.X 6800 163.0 !O! hub: 103.5 m (TOT: 185.0 m) (15)	541:14	72:38
T4	NORDEX N163/6.X 6800 163.0 !O! hub: 103.5 m (TOT: 185.0 m) (18)	10:09	1:28
T5	NORDEX N163/6.X 6800 163.0 !O! hub: 103.5 m (TOT: 185.0 m) (20)	9:08	1:15
T6	NORDEX N163/6.X 6800 163.0 !O! hub: 103.5 m (TOT: 185.0 m) (19)	0:00	0:00
T7	NORDEX N163/6.X 6800 163.0 !O! hub: 103.5 m (TOT: 185.0 m) (21)	0:00	0:00
T8	NORDEX N163/6.X 6800 163.0 !O! hub: 103.5 m (TOT: 185.0 m) (25)	0:00	0:00
T9	NORDEX N163/6.X 6800 163.0 !O! hub: 103.5 m (TOT: 185.0 m) (22)	67:57	8:48

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 - Main Result

Calculation: Shadow\_Cumulative\_20260206

### 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

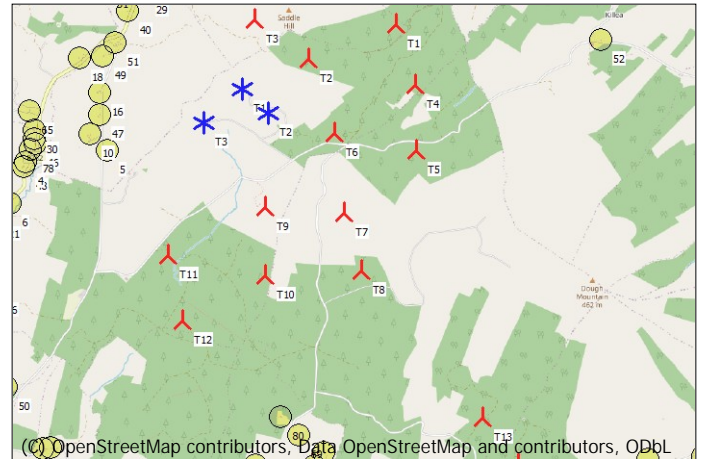
Minimum sun height over horizon for influence 3 °  
Day step for calculation 1 days  
Time step for calculation 1 minutes

Sunshine probability S (Average daily sunshine hours) [CLONES]  
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec  
1.45 1.93 2.72 4.31 5.45 4.41 4.74 3.96 3.48 2.54 1.71 1.01

Operational time  
N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum  
382 329 306 422 566 747 1,209 1,342 1,038 849 791 778 8,759

Line-of-sight calculation has been deactivated. This means that sheltering from obstacles, areas or hills are not taken into account.

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



Scale 1:60,000  
New WTG Existing WTG  
Shadow receptor

### WTGs

	Easting	Northing	Z	Row data/Description	WTG type			Shadow data			
					Valid	Manufact.	Type-generator	Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Calculation distance [m]
T1	592,596	844,330	280.0	NORDEX N163/6.X 6800 163.0 !O! hub: 103.5 m (TO...Yes	NORDEX	N163/6.X-6,800	6,800	163.0	103.5	1,789	10.7
T1	591,369	843,827	343.3	ENERCON E-82 2000 82.0 !O! hub: 78.3 m (TOT: 11... No	ENERCON	E-82-2,000	2,000	82.0	78.3	1,552	19.5
T10	591,544	842,345	247.4	NORDEX N163/6.X 6800 163.0 !O! hub: 103.5 m (TO...Yes	NORDEX	N163/6.X-6,800	6,800	163.0	103.5	1,789	10.7
T11	590,776	842,501	190.3	NORDEX N163/6.X 6800 163.0 !O! hub: 103.5 m (TO...Yes	NORDEX	N163/6.X-6,800	6,800	163.0	103.5	1,789	10.7
T12	590,885	841,986	171.2	NORDEX N163/6.X 6800 163.0 !O! hub: 103.5 m (TO...Yes	NORDEX	N163/6.X-6,800	6,800	163.0	103.5	1,789	10.7
T13	593,280	841,205	248.8	NORDEX N163/6.X 6800 163.0 !O! hub: 103.5 m (TO...Yes	NORDEX	N163/6.X-6,800	6,800	163.0	103.5	1,789	10.7
T14	593,558	840,837	235.3	NORDEX N163/6.X 6800 163.0 !O! hub: 103.5 m (TO...Yes	NORDEX	N163/6.X-6,800	6,800	163.0	103.5	1,789	10.7
T2	591,573	843,631	334.5	ENERCON E-82 2000 82.0 !O! hub: 78.3 m (TOT: 11... No	ENERCON	E-82-2,000	2,000	82.0	78.3	1,552	19.5
T2	591,893	844,060	331.8	NORDEX N163/6.X 6800 163.0 !O! hub: 103.5 m (TO...Yes	NORDEX	N163/6.X-6,800	6,800	163.0	103.5	1,789	10.7
T3	591,062	843,557	309.1	ENERCON E-82 2000 82.0 !O! hub: 78.3 m (TOT: 11... No	ENERCON	E-82-2,000	2,000	82.0	78.3	1,552	19.5
T3	591,465	844,376	344.8	NORDEX N163/6.X 6800 163.0 !O! hub: 103.5 m (TO...Yes	NORDEX	N163/6.X-6,800	6,800	163.0	103.5	1,789	10.7
T4	592,752	843,851	315.7	NORDEX N163/6.X 6800 163.0 !O! hub: 103.5 m (TO...Yes	NORDEX	N163/6.X-6,800	6,800	163.0	103.5	1,789	10.7
T5	592,751	843,332	343.7	NORDEX N163/6.X 6800 163.0 !O! hub: 103.5 m (TO...Yes	NORDEX	N163/6.X-6,800	6,800	163.0	103.5	1,789	10.7
T6	592,099	843,476	305.7	NORDEX N163/6.X 6800 163.0 !O! hub: 103.5 m (TO...Yes	NORDEX	N163/6.X-6,800	6,800	163.0	103.5	1,789	10.7
T7	592,179	842,837	335.0	NORDEX N163/6.X 6800 163.0 !O! hub: 103.5 m (TO...Yes	NORDEX	N163/6.X-6,800	6,800	163.0	103.5	1,789	10.7
T8	592,310	842,380	322.2	NORDEX N163/6.X 6800 163.0 !O! hub: 103.5 m (TO...Yes	NORDEX	N163/6.X-6,800	6,800	163.0	103.5	1,789	10.7
T9	591,553	842,883	248.1	NORDEX N163/6.X 6800 163.0 !O! hub: 103.5 m (TO...Yes	NORDEX	N163/6.X-6,800	6,800	163.0	103.5	1,789	10.7

### Shadow receptor-Input

No.	Easting	Northing	Z	Width	Height	Elevation	Slope of	Direction mode	Eye height
				[m]	[m]	a.g.l.	window		(ZVI) a.g.l.
			[m]	[m]	[m]	[m]	[°]		[m]
1	593,757	839,783	134.5	1.0	1.0	1.0	90.0	"Green house mode"	2.0
2	591,754	845,520	183.1	1.0	1.0	1.0	90.0	"Green house mode"	2.0
3	591,099	845,187	180.4	1.0	1.0	1.0	90.0	"Green house mode"	2.0
4	589,643	843,251	157.1	1.0	1.0	1.0	90.0	"Green house mode"	2.0
5	590,291	843,335	213.9	1.0	1.0	1.0	90.0	"Green house mode"	2.0
6	589,521	842,918	141.9	1.0	1.0	1.0	90.0	"Green house mode"	2.0
7	593,936	839,554	126.1	1.0	1.0	1.0	90.0	"Green house mode"	2.0
8	591,933	840,827	161.1	1.0	1.0	1.0	90.0	"Green house mode"	2.0
9	592,014	840,934	170.2	1.0	1.0	1.0	90.0	"Green house mode"	2.0
10	590,158	843,466	194.0	1.0	1.0	1.0	90.0	"Green house mode"	2.0
11	589,771	840,967	118.3	1.0	1.0	1.0	90.0	"Green house mode"	2.0
12	591,482	845,467	173.7	1.0	1.0	1.0	90.0	"Green house mode"	2.0
13	590,701	845,430	172.1	1.0	1.0	1.0	90.0	"Green house mode"	2.0
14	591,471	840,835	144.0	1.0	1.0	1.0	90.0	"Green house mode"	2.0
15	589,332	842,725	140.0	1.0	1.0	1.0	90.0	"Green house mode"	2.0
16	590,237	843,797	198.7	1.0	1.0	1.0	90.0	"Green house mode"	2.0

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Project:

Lissinagroagh\_Shadow\_Model\_20250919

Licensed user:

Tobin Consulting Engineers  
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Samuele Pezzetta / Samuele.Pezzetta@tobin.ie  
Calculated:  
06/02/2026 14:48/3.6.377



## SHADOW - Main Result

Calculation: Shadow\_Cumulative\_20260206

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No.	Easting	Northing	Z	Width	Height	Elevation	Slope of	Direction mode	Eye height
			[m]	[m]	[m]	a.g.l.	window		(ZVI) a.g.l.
			[m]	[m]	[m]	[m]	[°]		[m]
17	591,618	845,422	183.9	1.0	1.0	1.0	90.0	"Green house mode"	2.0
18	590,068	844,070	194.3	1.0	1.0	1.0	90.0	"Green house mode"	2.0
19	591,602	845,418	183.5	1.0	1.0	1.0	90.0	"Green house mode"	2.0
20	591,116	845,179	182.4	1.0	1.0	1.0	90.0	"Green house mode"	2.0
21	589,403	842,827	141.3	1.0	1.0	1.0	90.0	"Green house mode"	2.0
22	589,837	840,974	116.6	1.0	1.0	1.0	90.0	"Green house mode"	2.0
23	590,584	844,754	176.9	1.0	1.0	1.0	90.0	"Green house mode"	2.0
24	594,600	839,848	139.2	1.0	1.0	1.0	90.0	"Green house mode"	2.0
25	591,957	845,523	204.7	1.0	1.0	1.0	90.0	"Green house mode"	2.0
26	589,387	842,222	127.5	1.0	1.0	1.0	90.0	"Green house mode"	2.0
27	594,487	839,808	133.7	1.0	1.0	1.0	90.0	"Green house mode"	2.0
28	591,954	840,734	154.6	1.0	1.0	1.0	90.0	"Green house mode"	2.0
29	590,590	844,605	182.3	1.0	1.0	1.0	90.0	"Green house mode"	2.0
30	589,712	843,495	167.3	1.0	1.0	1.0	90.0	"Green house mode"	2.0
31	590,274	844,652	180.1	1.0	1.0	1.0	90.0	"Green house mode"	2.0
32	590,802	845,545	168.6	1.0	1.0	1.0	90.0	"Green house mode"	2.0
33	595,036	840,903	180.4	1.0	1.0	1.0	90.0	"Green house mode"	2.0
34	594,066	839,519	123.1	1.0	1.0	1.0	90.0	"Green house mode"	2.0
35	591,980	840,528	135.9	1.0	1.0	1.0	90.0	"Green house mode"	2.0
36	594,183	839,402	117.7	1.0	1.0	1.0	90.0	"Green house mode"	2.0
37	593,052	839,719	123.3	1.0	1.0	1.0	90.0	"Green house mode"	2.0
38	591,007	845,190	175.6	1.0	1.0	1.0	90.0	"Green house mode"	2.0
39	592,532	840,286	139.9	1.0	1.0	1.0	90.0	"Green house mode"	2.0
40	590,457	844,443	182.6	1.0	1.0	1.0	90.0	"Green house mode"	2.0
41	589,287	842,691	139.4	1.0	1.0	1.0	90.0	"Green house mode"	2.0
42	590,410	840,476	97.4	1.0	1.0	1.0	90.0	"Green house mode"	2.0
43	595,155	840,960	173.9	1.0	1.0	1.0	90.0	"Green house mode"	2.0
44	593,346	839,708	128.6	1.0	1.0	1.0	90.0	"Green house mode"	2.0
45	593,190	839,745	129.3	1.0	1.0	1.0	90.0	"Green house mode"	2.0
46	589,715	843,394	161.5	1.0	1.0	1.0	90.0	"Green house mode"	2.0
47	590,234	843,622	202.6	1.0	1.0	1.0	90.0	"Green house mode"	2.0
48	589,628	843,213	155.2	1.0	1.0	1.0	90.0	"Green house mode"	2.0
49	590,261	844,085	199.8	1.0	1.0	1.0	90.0	"Green house mode"	2.0
50	589,482	841,458	125.7	1.0	1.0	1.0	90.0	"Green house mode"	2.0
51	590,361	844,188	198.8	1.0	1.0	1.0	90.0	"Green house mode"	2.0
52	594,223	844,209	250.7	1.0	1.0	1.0	90.0	"Green house mode"	2.0
53	593,132	839,748	128.0	1.0	1.0	1.0	90.0	"Green house mode"	2.0
54	590,662	840,602	111.3	1.0	1.0	1.0	90.0	"Green house mode"	2.0
55	592,768	839,684	112.1	1.0	1.0	1.0	90.0	"Green house mode"	2.0
56	593,407	839,682	126.9	1.0	1.0	1.0	90.0	"Green house mode"	2.0
57	594,622	839,919	139.8	1.0	1.0	1.0	90.0	"Green house mode"	2.0
58	589,712	843,433	164.0	1.0	1.0	1.0	90.0	"Green house mode"	2.0
59	593,912	840,161	182.1	1.0	1.0	1.0	90.0	"Green house mode"	2.0
60	594,338	839,631	124.8	1.0	1.0	1.0	90.0	"Green house mode"	2.0
61	595,068	840,574	145.2	1.0	1.0	1.0	90.0	"Green house mode"	2.0
62	592,430	840,465	151.8	1.0	1.0	1.0	90.0	"Green house mode"	2.0
63	591,357	845,398	172.2	1.0	1.0	1.0	90.0	"Green house mode"	2.0
64	591,896	845,742	175.9	1.0	1.0	1.0	90.0	"Green house mode"	2.0
65	589,674	843,651	178.2	1.0	1.0	1.0	90.0	"Green house mode"	2.0
66	590,116	840,601	102.3	1.0	1.0	1.0	90.0	"Green house mode"	2.0
67	591,356	845,495	167.0	1.0	1.0	1.0	90.0	"Green house mode"	2.0
68	591,666	840,577	130.8	1.0	1.0	1.0	90.0	"Green house mode"	2.0
69	591,810	841,075	179.8	1.0	1.0	1.0	90.0	"Green house mode"	2.0
70	593,549	839,682	125.2	1.0	1.0	1.0	90.0	"Green house mode"	2.0
71	594,658	839,834	140.7	1.0	1.0	1.0	90.0	"Green house mode"	2.0
72	591,990	840,576	141.1	1.0	1.0	1.0	90.0	"Green house mode"	2.0
73	590,889	844,909	197.6	1.0	1.0	1.0	90.0	"Green house mode"	2.0
74	593,059	839,819	126.3	1.0	1.0	1.0	90.0	"Green house mode"	2.0
75	591,886	845,695	178.8	1.0	1.0	1.0	90.0	"Green house mode"	2.0
76	591,901	845,796	172.1	1.0	1.0	1.0	90.0	"Green house mode"	2.0
77	591,539	845,892	145.6	1.0	1.0	1.0	90.0	"Green house mode"	2.0
78	589,683	843,343	160.7	1.0	1.0	1.0	90.0	"Green house mode"	2.0
79	591,142	845,446	162.2	1.0	1.0	1.0	90.0	"Green house mode"	2.0
80	591,673	841,220	194.0	1.0	1.0	1.0	90.0	"Green house mode"	2.0
81	592,326	845,751	204.2	1.0	1.0	1.0	90.0	"Green house mode"	2.0

To be continued on next page...





## SHADOW - Main Result

Calculation: Shadow\_Cumulative\_20260206

...continued from previous page

No.	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]
55	0:00	0	0:00	0:00
56	0:00	0	0:00	0:00
57	0:00	0	0:00	0:00
58	19:41	70	0:28	2:38
59	0:00	0	0:00	0:00
60	0:00	0	0:00	0:00
61	11:44	36	0:25	2:03
62	27:22	65	0:33	5:05
63	85:18	110	1:03	9:42
64	39:59	58	0:54	4:00
65	18:12	77	0:25	2:16
66	0:00	0	0:00	0:00
67	73:34	102	0:59	8:10
68	13:07	45	0:23	2:29
69	18:43	63	0:25	3:09
70	0:00	0	0:00	0:00
71	0:00	0	0:00	0:00
72	42:11	111	0:28	7:27
73	73:20	142	0:52	9:35
74	0:00	0	0:00	0:00
75	45:24	62	0:55	4:37
76	34:05	54	0:50	3:21
77	16:02	46	0:26	1:35
78	18:52	66	0:28	2:36
79	65:36	91	0:59	7:26
80	9:05	30	0:24	1:31
81	24:41	70	0:25	2:38
82	18:34	48	0:30	3:16
83	36:47	89	0:37	6:16
84	73:37	94	1:00	8:07

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

No.	Name	Worst case [h/year]	Expected [h/year]
T1	NORDEX N163/6.X 6800 163.0 IO! hub: 103.5 m (TOT: 185.0 m) (17)	111:33	13:24
T1	ENERCON E-82 2000 82.0 IO! hub: 78.3 m (TOT: 119.3 m) (2)	80:57	11:59
T10	NORDEX N163/6.X 6800 163.0 IO! hub: 103.5 m (TOT: 185.0 m) (24)	12:05	1:31
T11	NORDEX N163/6.X 6800 163.0 IO! hub: 103.5 m (TOT: 185.0 m) (23)	135:53	17:45
T12	NORDEX N163/6.X 6800 163.0 IO! hub: 103.5 m (TOT: 185.0 m) (26)	62:50	9:12
T13	NORDEX N163/6.X 6800 163.0 IO! hub: 103.5 m (TOT: 185.0 m) (27)	121:47	21:40
T14	NORDEX N163/6.X 6800 163.0 IO! hub: 103.5 m (TOT: 185.0 m) (28)	141:42	24:30
T2	ENERCON E-82 2000 82.0 IO! hub: 78.3 m (TOT: 119.3 m) (3)	42:30	5:56
T2	NORDEX N163/6.X 6800 163.0 IO! hub: 103.5 m (TOT: 185.0 m) (16)	226:00	30:04
T3	ENERCON E-82 2000 82.0 IO! hub: 78.3 m (TOT: 119.3 m) (1)	110:56	16:45
T3	NORDEX N163/6.X 6800 163.0 IO! hub: 103.5 m (TOT: 185.0 m) (15)	541:14	72:38
T4	NORDEX N163/6.X 6800 163.0 IO! hub: 103.5 m (TOT: 185.0 m) (18)	10:09	1:28
T5	NORDEX N163/6.X 6800 163.0 IO! hub: 103.5 m (TOT: 185.0 m) (20)	9:08	1:15
T6	NORDEX N163/6.X 6800 163.0 IO! hub: 103.5 m (TOT: 185.0 m) (19)	0:00	0:00
T7	NORDEX N163/6.X 6800 163.0 IO! hub: 103.5 m (TOT: 185.0 m) (21)	0:00	0:00
T8	NORDEX N163/6.X 6800 163.0 IO! hub: 103.5 m (TOT: 185.0 m) (25)	0:00	0:00
T9	NORDEX N163/6.X 6800 163.0 IO! hub: 103.5 m (TOT: 185.0 m) (22)	67:57	8:48

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.