



## **APPENDIX 5-5**

### **COMPARATIVE SHADOW FLICKER ASSESSMENT**

## Appendix 5-5

### Comparative Shadow Flicker Assessment Results





## DOCUMENT DETAILS

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# 1. COMPARATIVE SHADOW FLICKER ASSESSMENT

As detailed in Section 5.7.5.1 in Chapter 5 of the EIAR, it is considered that a worst-case scenario for potential shadow flicker effects is a combination of the maximum rotor diameter and the minimum hub height (therefore providing the maximum tip height). The **Lowest Hub (100m) & Longest Blade (75m)** column presents the worst-case scenario results of the shadow flicker assessment for the Maximum Rotor Diameter (150m), which is presented in Table 5-9 in Chapter 5 of the EIAR. For the purposes of comparison, a turbine with alternative dimensions within the proposed size range as detailed in Section 5.7.5.1 has been modelled, and the results are presented in Table 1-1 below. The two modelled turbines are as follows:

- **Lowest Hub (100m) & Longest Blade (75m)** – modelled as the worst-case scenario and presented in Table 5-9 in Chapter 5 in the EIAR. The Maximum Rotor Diameter (150m) determines the shadow flicker study area i.e. ten times rotor diameter (1.5km)
- **Highest Hub (108.5m) & Shortest Blade (66.5m)** – modelled within the 1.5km shadow flicker study area as set by the Maximum Rotor Diameter (150m) for comparison purposes

Where there are exceedances in the Maximum Daily Shadow Flicker modelled and Maximum Annual Shadow Flicker Adjusted for Regional Sunshine modelled, this is highlighted within the table below as follows:

**00:32:24**



Table 1-1 Comparative Shadow Flicker Assessment Results

House ID	ITM Coordinates (Easting)	ITM Coordinates (Northing)	Description	Distance to Nearest Turbine (metres)	Nearest Proposed Turbine No.	Max. Daily Shadow Flicker: Pre-Mitigation (hrs:min:sec)		Max. Annual Shadow Flicker Adjusted for Average Regional Sunshine (hrs:min:sec)	
						Lowest Hub (100m) & Longest Blade (75m)	Highest Hub (108.5m) & Shortest Blade (66.5m)	Lowest Hub (100m) & Longest Blade (75m)	Highest Hub (108.5m) & Shortest Blade (66.5m)
						Maximum Rotor Diameter		Maximum Rotor Diameter	
1	512952	681689	Dwelling	1006	T2	<b>00:51:36</b>	<b>00:47:24</b>	18:59:30	16:57:36
2	510039	680384	Dwelling	1483	T3	00:25:12	00:22:48	3:10:48	2:35:28
3	510358	680253	Dwelling	1160	T3	<b>00:31:48</b>	00:28:48	5:12:42	4:12:38
4	510313	680498	Dwelling	1224	T3	00:30:00	00:27:00	4:30:18	3:35:32
5	510730	680605	Derelict	851	T3	<b>01:06:00</b>	<b>00:58:48</b>	18:55:58	15:15:08
6	510773	680747	Dwelling	878	T3	<b>00:58:12</b>	<b>00:50:24</b>	19:34:50	15:41:38
7	510795	680756	Dwelling	864	T3	<b>00:58:48</b>	<b>00:50:24</b>	20:22:32	16:15:12
8	510939	681008	Dwelling	879	T1	<b>00:42:00</b>	<b>00:36:36</b>	28:07:10	22:03:14
9	513337	681877	Dwelling	1381	T2	00:28:48	00:25:48	10:20:06	7:25:12
10	510940	681407	Dwelling	1052	T1	<b>00:36:36</b>	<b>00:32:24</b>	11:06:02	9:00:36
11	510885	681380	Dwelling	1082	T1	<b>00:35:24</b>	<b>00:31:48</b>	10:30:42	9:05:54
12	511289	681321	Dwelling	732	T1	<b>00:58:12</b>	<b>00:49:12</b>	<b>32:26:52</b>	26:15:52
13	511494	681771	Dwelling	1028	T1	00:29:24	00:25:48	7:35:48	5:35:40
14	511487	681806	Dwelling	1063	T1	00:28:48	00:25:48	8:30:34	5:51:34
15	511948	681472	Dwelling	703	T1	<b>01:34:48</b>	<b>01:25:12</b>	<b>35:35:54</b>	<b>30:55:00</b>
16	511917	681611	Dwelling	834	T1	<b>01:22:12</b>	<b>01:09:36</b>	24:45:46	22:17:22
17	513918	681413	Dwelling	1398	T5	00:27:36	00:24:36	4:33:50	3:35:32



18	511982	681596	Dwelling	832	T1	<b>01:36:00</b>	<b>01:23:24</b>	27:30:04	24:45:46
19	512022	681565	Dwelling	812	T1	<b>01:43:12</b>	<b>01:33:00</b>	<b>31:14:26</b>	27:58:20
20	512123	681534	Dwelling	793	T2	<b>01:54:00</b>	<b>01:44:24</b>	<b>36:50:06</b>	<b>33:51:40</b>
21	510900	679956	Dwelling	699	T3	<b>00:48:36</b>	<b>00:41:24</b>	<b>33:55:12</b>	25:17:34
22	513472	681016	Dwelling	801	T5	<b>00:45:00</b>	<b>00:40:12</b>	13:22:04	11:41:22
23	513401	680946	Dwelling	702	T5	<b>00:51:36</b>	<b>00:46:48</b>	17:13:30	15:18:40
24	512990	682133	Dwelling	1423	T2	00:00:00	00:00:00	0:00:00	0:00:00
25	513545	681794	Dwelling	1460	T5	00:27:36	00:24:36	11:14:52	9:37:42
26	511472	681722	Dwelling	988	T1	00:29:24	00:26:24	8:41:10	6:55:10
27	511879	681583	Dwelling	801	T1	<b>01:15:36</b>	<b>01:02:24</b>	25:26:24	21:54:24
28	514261	680402	Dwelling	1414	T5	00:26:24	00:24:00	3:44:22	3:01:58
29	514186	681141	Dwelling	1477	T5	00:25:12	00:22:48	3:19:38	2:39:00
30	514176	680393	Dwelling	1330	T5	00:28:12	00:25:12	4:16:10	3:24:56
31	513205	678918	Dwelling	1233	T6	00:30:00	00:27:00	9:32:24	7:53:28
32	510982	678013	Dwelling	1306	T7	00:00:00	00:00:00	0:00:00	0:00:00
33	512882	681127	Derelict	529	T2	<b>01:34:12</b>	<b>01:23:24</b>	<b>56:05:30</b>	<b>47:49:04</b>
34	510904	678525	Derelict	899	T7	00:00:00	00:00:00	0:00:00	0:00:00
35	513408	680032	Derelict	734	T5	<b>00:34:48</b>	<b>00:31:12</b>	8:21:44	6:58:42
36	514132	680061	Dwelling	1358	T5	00:28:48	00:25:48	5:42:44	4:39:08
37	514102	679788	Dwelling	1445	T5	00:28:12	00:25:12	9:00:36	7:30:30
38	513819	679736	Dwelling	1240	T5	00:26:24	00:23:24	3:40:50	2:56:40
39	513135	679828	Dwelling	739	T5	<b>00:48:00</b>	<b>00:43:12</b>	25:31:42	21:29:40
40	513201	679768	Dwelling	814	T6	<b>00:45:00</b>	<b>00:40:12</b>	24:24:34	20:34:54
41	513815	679470	Dwelling	1418	T5	00:26:24	00:23:24	4:09:06	3:23:10
42	513634	679434	Dwelling	1309	T6	00:29:24	00:26:24	6:12:46	5:05:38
43	513646	679169	Dwelling	1425	T6	00:28:12	00:25:12	9:20:02	7:48:10
44	512840	678927	Dwelling	1019	T8	00:11:24	00:11:24	0:21:12	0:21:12



45	512966	679146	Derelict	904	T6	<b>00:37:12</b>	<b>00:33:36</b>	9:58:54	9:00:36
46	512770	679138	Derelict	801	T6	<b>00:46:12</b>	<b>00:41:24</b>	22:15:36	18:38:18
47	512622	678759	Dwelling	960	T8	00:00:00	00:00:00	0:00:00	0:00:00
48	512165	678579	Dwelling	913	T8	00:00:00	00:00:00	0:00:00	0:00:00
49	512129	678334	Dwelling	1112	T7	00:00:00	00:00:00	0:00:00	0:00:00
50	512077	678317	Dwelling	1095	T7	00:00:00	00:00:00	0:00:00	0:00:00
51	511595	678103	Dwelling	1130	T7	00:00:00	00:00:00	0:00:00	0:00:00
52	511397	678085	Dwelling	1143	T7	00:00:00	00:00:00	0:00:00	0:00:00
53	511313	678048	Dwelling	1188	T7	00:00:00	00:00:00	0:00:00	0:00:00
54	511020	678047	Dwelling	1261	T7	00:00:00	00:00:00	0:00:00	0:00:00
55	510783	678042	Dwelling	1367	T7	00:00:00	00:00:00	0:00:00	0:00:00
56	510927	678542	Dwelling	871	T7	00:00:00	00:00:00	0:00:00	0:00:00
57	510957	678583	Dwelling	820	T7	00:00:00	00:00:00	0:00:00	0:00:00
58	510961	678680	Dwelling	744	T7	00:00:00	00:00:00	0:00:00	0:00:00
59	510573	678901	Dwelling	950	T7	<b>00:39:36</b>	<b>00:35:24</b>	15:09:50	12:30:50
60	510478	678248	Dwelling	1390	T7	00:00:00	00:00:00	0:00:00	0:00:00
61	510657	679500	Dwelling	854	T7	<b>00:40:48</b>	<b>00:36:00</b>	11:36:04	9:32:24
62	510401	679349	Dwelling	1072	T7	<b>00:33:36</b>	00:30:00	5:32:08	4:26:46
63	510217	679245	Dwelling	1249	T7	00:29:24	00:26:24	4:23:14	3:30:14
64	512922	682079	Dwelling	1348	T2	00:00:00	00:00:00	0:00:00	0:00:00
65	510125	679053	Dwelling	1352	T7	00:27:36	00:24:36	4:10:52	3:23:10
66	513084	681951	Dwelling	1299	T2	00:30:00	00:27:36	6:44:34	6:25:08
67	512874	681435	Dwelling	749	T2	<b>00:56:24</b>	<b>00:51:36</b>	24:33:24	22:33:16