

Project:

Elaine Wind Farm adjusted Sep 2014

Description:

Elaine section of the Lal Lal Wind Farm

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12/02/2015 1:30 PM / 1

Licensed user:

**West Wind Energy Pty Ltd**  
Office 5, Level 1, Nexus Centre 12-14 Prince Street  
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Adam Gray / gray@w-wind.com.au

Calculated:

12/02/2015 1:30 PM/2.9.285

## SHADOW - Main Result

### 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

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

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\_ONLINEDATA\_0.w

Obstacles used in calculation

Eye height: 1.5 m

Grid resolution: 10.0 m

Topographic shadow included in calculation



Scale 1:75,000  
New WTG Shadow receptor

### WTGs

UTM GDA94 Zone: 55				WTG type				Shadow data			
East	North	Z	Row data/Description	Valid	Manufact.	Type-generator	Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Calculation distance [m]	RPM [RPM]
1	233,500	5,817,822	399.3 REpower 3.2M114 3200 114.0 !O...	No	REpower	3.2M114-3,200	3,200	114.0	103.0	1,717	12.6
2	233,855	5,818,367	400.0 REpower 3.2M114 3200 114.0 !O...	No	REpower	3.2M114-3,200	3,200	114.0	103.0	1,717	12.6
3	234,084	5,817,161	395.3 REpower 3.2M114 3200 114.0 !O...	No	REpower	3.2M114-3,200	3,200	114.0	103.0	1,717	12.6
4	234,351	5,817,454	400.0 REpower 3.2M114 3200 114.0 !O...	No	REpower	3.2M114-3,200	3,200	114.0	103.0	1,717	12.6
5	234,648	5,817,731	400.0 REpower 3.2M114 3200 114.0 !O...	No	REpower	3.2M114-3,200	3,200	114.0	103.0	1,717	12.6
6	235,025	5,817,868	400.0 REpower 3.2M114 3200 114.0 !O...	No	REpower	3.2M114-3,200	3,200	114.0	103.0	1,717	12.6
7	236,483	5,818,385	406.8 REpower 3.2M114 3200 114.0 !O...	No	REpower	3.2M114-3,200	3,200	114.0	103.0	1,717	12.6
8	236,876	5,818,621	404.1 REpower 3.2M114 3200 114.0 !O...	No	REpower	3.2M114-3,200	3,200	114.0	103.0	1,717	12.6
9	234,095	5,815,947	410.0 REpower 3.2M114 3200 114.0 !O...	No	REpower	3.2M114-3,200	3,200	114.0	103.0	1,717	12.6
10	234,393	5,816,255	401.2 REpower 3.2M114 3200 114.0 !O...	No	REpower	3.2M114-3,200	3,200	114.0	103.0	1,717	12.6
11	234,695	5,816,555	400.0 REpower 3.2M114 3200 114.0 !O...	No	REpower	3.2M114-3,200	3,200	114.0	103.0	1,717	12.6
12	234,986	5,816,872	400.0 REpower 3.2M114 3200 114.0 !O...	No	REpower	3.2M114-3,200	3,200	114.0	103.0	1,717	12.6
13	234,746	5,815,979	400.0 REpower 3.2M114 3200 114.0 !O...	No	REpower	3.2M114-3,200	3,200	114.0	103.0	1,717	12.6
14	235,337	5,816,007	400.0 REpower 3.2M114 3200 114.0 !O...	No	REpower	3.2M114-3,200	3,200	114.0	103.0	1,717	12.6
15	236,903	5,817,482	432.2 REpower 3.2M114 3200 114.0 !O...	No	REpower	3.2M114-3,200	3,200	114.0	103.0	1,717	12.6
16	236,754	5,816,449	418.0 REpower 3.2M114 3200 114.0 !O...	No	REpower	3.2M114-3,200	3,200	114.0	103.0	1,717	12.6
17	237,003	5,816,752	424.2 REpower 3.2M114 3200 114.0 !O...	No	REpower	3.2M114-3,200	3,200	114.0	103.0	1,717	12.6
18	237,212	5,817,071	421.1 REpower 3.2M114 3200 114.0 !O...	No	REpower	3.2M114-3,200	3,200	114.0	103.0	1,717	12.6
19	237,353	5,817,401	421.9 REpower 3.2M114 3200 114.0 !O...	No	REpower	3.2M114-3,200	3,200	114.0	103.0	1,717	12.6
20	237,579	5,817,722	420.0 REpower 3.2M114 3200 114.0 !O...	No	REpower	3.2M114-3,200	3,200	114.0	103.0	1,717	12.6
21	233,785	5,815,068	398.4 REpower 3.2M114 3200 114.0 !O...	No	REpower	3.2M114-3,200	3,200	114.0	103.0	1,717	12.6
22	233,936	5,815,414	410.0 REpower 3.2M114 3200 114.0 !O...	No	REpower	3.2M114-3,200	3,200	114.0	103.0	1,717	12.6

### Shadow receptor-Input

UTM GDA94 Zone: 55				Width		Height		Degrees from		Slope of		Direction mode	
No.	East	North	Z	[m]	[m]	a.g.l. [m]	south cw [°]	window [°]					
A	233,189	5,818,528	397.2	2.0	2.0	0.5	0.0	90.0	"Green house mode"				
B	235,924	5,817,263	415.7	2.0	2.0	0.5	0.0	90.0	"Green house mode"				
C	237,913	5,818,705	400.0	2.0	2.0	0.5	0.0	90.0	"Green house mode"				

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**SHADOW - Main Result****Calculation Results**

Shadow receptor

**Shadow, worst case**

No.	Shadow hours per year [h/year]	Shadow days per year [days/year]	Max shadow hours per day [h/day]
A	39:08	78	0:41
B	82:52	251	0:37
C	15:40	58	0:26

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

No.	Name	Worst case [h/year]	Expected [h/year]
1	REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (50)	0:00	
2	REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (51)	39:08	
3	REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (52)	0:00	
4	REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (53)	2:25	
5	REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (54)	5:20	
6	REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (55)	17:55	
7	REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (56)	4:58	
8	REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (57)	10:42	
9	REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (59)	0:00	
10	REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (60)	0:00	
11	REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (61)	4:10	
12	REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (62)	18:20	
13	REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (63)	0:00	
14	REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (64)	0:00	
15	REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (65)	11:57	
16	REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (66)	0:00	
17	REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (67)	10:57	
18	REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (68)	7:00	
19	REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (69)	4:48	
20	REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (70)	0:00	
21	REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (72)	0:00	
22	REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (73)	0:00	

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12/02/2015 1:30 PM/2.9.285

### SHADOW - Calendar

Shadow receptor: A - Shadow Receptor: 2.0 x 2.0 Azimuth: 0.0° Slope: 90.0° (1)

#### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December	
1	06:06	06:38	07:07 (2) 07:09	07:38	07:05	07:31	07:41	07:25	06:47	06:01	06:18	06:42 (2) 05:57	06:54 (2)
2	06:07	06:40	07:07 (2) 07:10	07:39	07:06	07:31	07:41	07:24	06:45	05:59	06:17	06:41 (2) 05:57	06:55 (2)
3	06:08	06:41	07:07 (2) 07:11	07:40	07:07	07:32	07:41	07:23	06:44	05:58	06:16	06:40 (2) 05:56	06:57 (2)
4	06:09	06:42	07:07 (2) 07:12	07:41	07:08	07:33	07:40	07:22	06:42	06:56	06:15	06:39 (2) 05:56	07:00 (2)
5	06:10	06:43	07:08 (2) 07:13	06:42	07:09	07:33	07:40	07:21	06:41	06:55	06:14	06:38 (2) 05:56	06:56 (2)
6	06:11	06:44	07:08 (2) 07:14	06:43	07:10	07:34	07:40	07:20	06:39	06:53	06:13	06:37 (2) 05:56	06:55 (2)
7	06:12	06:45	07:10 (2) 07:15	06:44	07:11	07:34	07:40	07:19	06:38	06:52	06:12	06:36 (2) 05:56	06:54 (2)
8	06:13	06:46	07:11 (2) 07:16	06:45	07:12	07:35	07:40	07:18	06:36	06:50	06:11	06:35 (2) 05:56	06:53 (2)
9	06:13	06:47	07:12 (2) 07:17	06:46	07:13	07:35	07:39	07:17	06:35	06:49	06:10	06:34 (2) 05:56	06:52 (2)
10	06:14	06:48	07:13 (2) 07:18	06:46	07:13	07:36	07:39	07:16	06:33	06:47	06:09	06:33 (2) 05:56	06:51 (2)
11	06:15	06:49	07:14 (2) 07:19	06:47	07:14	07:36	07:39	07:15	06:32	06:46	06:08	06:32 (2) 05:56	06:50 (2)
12	06:16	06:50	07:15 (2) 07:20	06:48	07:15	07:37	07:38	07:14	06:31	06:45	06:07	06:31 (2) 05:56	06:49 (2)
13	06:17	06:51	07:16 (2) 07:21	06:49	07:16	07:37	07:38	07:13	06:30	06:44	06:06	06:30 (2) 05:56	06:48 (2)
14	06:18	06:52	07:17 (2) 07:22	06:50	07:17	07:38	07:37	07:12	06:28	06:43	06:05	06:29 (2) 05:56	06:47 (2)
15	06:19	06:53	07:18 (2) 07:23	06:51	07:18	07:38	07:37	07:11	06:27	06:42	06:04	06:28 (2) 05:56	06:46 (2)
16	06:20	06:54	07:19 (2) 07:24	06:52	07:19	07:39	07:36	07:10	06:26	06:41	06:03	06:27 (2) 05:56	06:45 (2)
17	06:21	06:55	07:20 (2) 07:25	06:53	07:20	07:40	07:35	07:09	06:25	06:40	06:02	06:26 (2) 05:56	06:44 (2)
18	06:22	06:56	07:21 (2) 07:26	06:54	07:21	07:41	07:34	07:08	06:24	06:39	06:01	06:25 (2) 05:56	06:43 (2)
19	06:23	06:57	07:22 (2) 07:27	06:55	07:22	07:42	07:33	07:07	06:23	06:38	06:00	06:24 (2) 05:56	06:42 (2)
20	06:24	06:58	07:23 (2) 07:28	06:56	07:23	07:43	07:32	07:06	06:22	06:37	05:59	06:23 (2) 05:56	06:41 (2)
21	06:25	06:59	07:24 (2) 07:29	06:57	07:24	07:44	07:31	07:05	06:21	06:36	05:58	06:22 (2) 05:56	06:40 (2)
22	06:26	07:00	07:25 (2) 07:30	06:58	07:25	07:45	07:30	07:04	06:20	06:35	05:57	06:21 (2) 05:56	06:39 (2)
23	06:27	07:01	07:26 (2) 07:31	06:59	07:26	07:46	07:29	07:03	06:19	06:34	05:56	06:20 (2) 05:56	06:38 (2)
24	06:28	07:02	07:27 (2) 07:32	07:00	07:27	07:47	07:28	07:02	06:18	06:33	05:55	06:19 (2) 05:56	06:37 (2)
25	06:29	07:03	07:28 (2) 07:33	07:01	07:28	07:48	07:27	07:01	06:17	06:32	05:54	06:18 (2) 05:56	06:36 (2)
26	06:30	07:04	07:29 (2) 07:34	07:02	07:29	07:49	07:26	07:00	06:16	06:31	05:53	06:17 (2) 05:56	06:35 (2)
27	06:31	07:05	07:30 (2) 07:35	07:03	07:30	07:50	07:25	06:59	06:15	06:30	05:52	06:16 (2) 05:56	06:34 (2)
28	06:32	07:06	07:31 (2) 07:36	07:04	07:31	07:51	07:24	06:58	06:14	06:29	05:51	06:15 (2) 05:56	06:33 (2)
29	06:33	07:07	07:32 (2) 07:37	07:05	07:32	07:52	07:23	06:57	06:13	06:28	05:50	06:14 (2) 05:56	06:32 (2)
30	06:34	07:08	07:33 (2) 07:38	07:06	07:33	07:53	07:22	06:56	06:12	06:27	05:49	06:13 (2) 05:56	06:31 (2)
31	06:35	07:09	07:34 (2) 07:39	07:07	07:34	07:54	07:21	06:55	06:11	06:26	05:48	06:12 (2) 05:56	06:30 (2)
Potential sun hours	447	378	383	334	314	288	305	331	355	405	424	456	48
Total, worst case	711	458								100	1031		

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 (WTG causing flicker first time)	Last time (hh:mm) with flicker (WTG causing flicker last time)
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### SHADOW - Calendar

Shadow receptor: B - Shadow Receptor: 2.0 x 2.0 Azimuth: 0.0° Slope: 90.0° (2)

#### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June
1	06:06	06:27 (17)   06:38	20:04 (12)   07:09	07:38	08:02 (15)   07:05	17:04 (5)   07:31
	20:50	24 20:26 (11)   20:38	11 20:15 (12)   20:06	19:20	37 18:58 (4)   17:39	12 17:16 (5)   17:14
2	06:07	06:28 (17)   06:39	20:05 (12)   07:10	07:39	08:02 (15)   07:06	17:04 (5)   07:31
	20:50	23 20:26 (11)   20:38	9 20:14 (12)   20:04	19:18	34 18:56 (4)   17:38	11 17:15 (5)   17:14
3	06:08	06:28 (17)   06:41	20:07 (12)   07:11	07:40	08:02 (15)   07:07	17:04 (5)   07:32
	20:50	22 20:25 (11)   20:37	7 20:14 (12)   20:03	19:17	33 18:55 (4)   17:36	10 17:14 (5)   17:13
4	06:09	06:29 (17)   06:42	20:09 (12)   07:12	07:41	08:03 (15)   07:08	17:04 (5)   07:32
	20:50	21 20:26 (11)   20:36	4 20:13 (12)   20:02	19:15	29 18:53 (4)   17:35	9 17:13 (5)   17:13
5	06:10	06:30 (17)   06:43	07:13	06:42	08:03 (15)   07:09	17:05 (5)   07:33
	20:50	21 20:26 (11)   20:35	20:00	18:14	27 17:52 (4)   17:34	6 17:11 (5)   17:13
6	06:11	06:31 (17)   06:44	07:14	06:43	07:04 (15)   07:10	17:05 (5)   07:34
	20:50	24 20:26 (11)   20:34	19:59	18:12	22 17:51 (4)   17:33	4 17:09 (5)   17:13
7	06:11	06:32 (17)   06:45	07:15	06:44	07:05 (15)   07:11	17:06 (5)   07:34
	20:50	24 20:26 (11)   20:33	19:57	18:11	18 07:23 (15)   17:32	2 17:08 (5)   17:12
8	06:12	06:33 (17)   06:46	07:16	06:45	07:07 (15)   07:11	07:35
	20:50	25 20:26 (11)   20:32	19:56	18:09	13 07:20 (15)   17:31	17:12
9	06:13	06:34 (17)   06:47	07:17	06:45	07:10 (15)   07:12	07:35
	20:50	24 20:14 (12)   20:31	19:54	18:08	5 07:15 (15)   17:30	17:12
10	06:14	06:34 (17)   06:48	07:18	06:46	07:13	07:36
	20:50	25 20:15 (12)   20:30	19:53	18:06	17:29	17:12
11	06:15	06:36 (17)   06:50	07:19	06:47	07:14	07:36
	20:50	22 20:16 (12)   20:29	19:51	18:05	17:28	17:12
12	06:16	19:58 (12)   06:51	07:20	06:48	07:15	07:37
	20:49	19 20:17 (12)   20:27	19:50	18:04	17:27	17:12
13	06:17	19:57 (12)   06:52	07:21	06:49	07:16	07:37
	20:49	21 20:18 (12)   20:26	8 07:31 (18)   19:48	18:02	17:26	17:12
14	06:18	19:57 (12)   06:53	07:21 (18)   07:22	06:50	07:17	07:38
	20:49	22 20:19 (12)   20:25	12 07:33 (18)   19:47	18:01	17:26	17:12
15	06:19	19:57 (12)   06:54	07:19 (18)   07:23	06:51	07:18	07:38
	20:49	23 20:20 (12)   20:24	16 07:35 (18)   19:45	17:59	17:25	17:12
16	06:20	19:57 (12)   06:55	07:18 (18)   07:24	07:51 (19)   06:52	07:18	07:38
	20:48	24 20:21 (12)   20:23	18 07:36 (18)   19:44	9 08:00 (19)   17:58	17:24	17:12
17	06:21	19:57 (12)   06:56	07:17 (18)   07:24	07:49 (19)   06:53	07:19	07:39
	20:48	25 20:22 (12)   20:22	19 07:36 (18)   19:42	13 08:02 (19)   17:57	17:23	17:12
18	06:23	19:57 (12)   06:57	07:18 (18)   07:25	07:47 (19)   06:54	07:20	07:39
	20:47	25 20:22 (12)   20:20	20 07:38 (18)   19:41	15 08:02 (19)   17:55	17:22	17:12
19	06:24	19:56 (12)   06:58	07:18 (18)   07:26	07:46 (19)   06:54	07:21	07:39
	20:47	27 20:23 (12)   20:19	20 07:38 (18)   19:39	17 08:03 (19)   17:54	17:22	17:12
20	06:25	19:57 (12)   06:59	07:19 (18)   07:27	07:46 (19)   06:55	07:22	07:40
	20:47	26 20:23 (12)   20:18	19 07:38 (18)   19:38	17 08:03 (19)   17:52	17:21	17:12
21	06:26	19:57 (12)   07:00	07:20 (18)   07:28	07:47 (19)   06:56	07:22	07:40
	20:46	25 20:22 (12)   20:17	18 07:38 (18)   19:36	16 08:03 (19)   17:51	17:20	17:12
22	06:27	19:58 (12)   07:02	07:21 (18)   07:29	07:48 (19)   06:57	07:23	07:40
	20:45	24 20:22 (12)   20:15	16 07:37 (18)   19:35	15 08:03 (19)   17:50	17:19	17:13
23	06:28	19:58 (12)   07:03	07:22 (18)   07:30	07:49 (19)   06:58	17:12 (5)   07:24	07:40
	20:45	23 20:21 (12)   20:14	14 07:36 (18)   19:33	13 08:02 (19)   17:49	5 17:17 (5)   17:19	17:13
24	06:29	19:58 (12)   07:04	07:23 (18)   07:31	07:50 (19)   06:59	17:09 (5)   07:25	07:40
	20:44	23 20:21 (12)   20:13	12 07:35 (18)   19:32	23 08:24 (15)   17:47	11 17:20 (5)   17:18	17:13
25	06:30	19:58 (12)   07:05	07:24 (18)   07:32	07:51 (19)   07:00	17:07 (5)   07:26	07:40
	20:44	22 20:20 (12)   20:11	9 07:33 (18)   19:30	26 08:26 (15)   17:46	15 17:22 (5)   17:18	17:13
26	06:31	19:58 (12)   07:06	07:25 (18)   07:33	07:52 (19)   07:01	17:06 (5)   07:26	07:41
	20:43	21 20:19 (12)   20:10	6 07:31 (18)   19:29	26 08:28 (15)   17:45	16 17:22 (5)   17:17	17:14
27	06:33	19:59 (12)   07:07	07:34	07:53 (19)   07:02	17:05 (5)   07:27	16:30 (6)   07:41
	20:42	20 20:19 (12)   20:09	19:27	23 08:28 (15)   17:44	16 17:21 (5)   17:16	2 16:32 (6)   17:14
28	06:34	19:59 (12)   07:08	07:35	08:05 (15)   07:03	17:04 (5)   07:28	16:27 (6)   07:41
	20:42	19 20:18 (12)   20:07	19:26	29 19:01 (4)   17:42	15 17:19 (5)   17:16	9 16:36 (6)   17:14
29	06:35	20:00 (12)	07:35	08:04 (15)   07:03	17:04 (5)   07:28	16:25 (6)   07:41
	20:41	17 20:17 (12)	19:24	36 19:03 (4)   17:41	14 17:18 (5)   17:15	12 16:37 (6)   17:15
30	06:36	20:01 (12)	07:36	08:03 (15)   07:04	17:04 (5)   07:29	16:24 (6)   07:41
	20:40	15 20:16 (12)	19:23	37 19:01 (4)   17:40	13 17:17 (5)   17:15	14 16:38 (6)   17:15
31	06:37	20:02 (12)	07:37	08:02 (15)	07:30	16:24 (6)
	20:39	14 20:16 (12)	19:21	37 18:59 (4)	17:15	15 16:39 (6)
Potential sun hours	447	378	383	334	314	288
Total, worst case	690	238	352	323	106	721

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:

**Elaine Wind Farm adjusted Sep 2014**

Description:

Elaine section of the Lal Lal Wind Farm

Printed/Page

12/02/2015 1:30 PM / 5

Licensed user:

**West Wind Energy Pty Ltd**  
Office 5, Level 1, Nexus Centre 12-14 Prince Street  
AU-GISBORNE Victoria 3437  
+61 3 5421 9999

Adam Gray / gray@w-wind.com.au

Calculated:

12/02/2015 1:30 PM/2.9.285

### SHADOW - Calendar

Shadow receptor: B - Shadow Receptor: 2.0 x 2.0 Azimuth: 0.0° Slope: 90.0° (2)

#### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

July	August	September	October	November	December	
1   07:41   17:16	25   16:25 (6)   07:25 16:50 (6)   17:36	06:46   18:02	06:00   18:28	06:18   19:58	05:57 21   19:59 (12)	
2   07:41   17:16	24   16:26 (6)   07:24 16:50 (6)   17:37	06:45   18:03	05:59   18:29	06:17   19:59	05:56 25   19:58 (12)	
3   07:40   17:17	24   16:26 (6)   07:23 16:50 (6)   17:38	06:44   18:04	5   07:08 (15)   05:57 07:13 (15)   18:30	06:16   20:00	05:56 24   19:57 (12)	
4   07:40   17:17	23   16:26 (6)   07:22 16:49 (6)   17:39	06:42   18:05	13   07:04 (15)   06:56 07:17 (15)   19:30	06:15   20:01	05:56 25   20:10 (11)	
5   07:40   17:18	23   16:26 (6)   07:21 16:49 (6)   17:40	06:41   18:06	18   07:01 (15)   06:54 07:19 (15)   19:31	06:14   20:02	05:56 24   20:11 (11)	
6   07:40   17:18	22   16:27 (6)   07:20 16:49 (6)   17:41	3   17:16 (5)   06:39 17:19 (5)   18:07	22   07:00 (15)   06:53 17:47 (4)   19:32	06:13   20:03	05:56 25   20:12 (11)	
7   07:40   17:19	22   16:28 (6)   07:19 16:50 (6)   17:41	5   17:15 (5)   06:38 17:20 (5)   18:07	27   06:58 (15)   06:51 17:47 (4)   19:33	06:12 4   19:39 (12)   20:04	05:56 22   20:13 (11)	
8   07:40   17:19	21   16:29 (6)   07:18 16:50 (6)   17:42	7   17:14 (5)   06:36 17:21 (5)   18:08	29   06:58 (15)   06:50 17:48 (4)   19:34	06:11 7   19:44 (12)   20:05	05:56 20   20:13 (11)	
9   07:39   17:20	20   16:29 (6)   07:17 16:31 (6)   17:43	8   17:14 (5)   06:34 17:22 (5)   18:09	33   06:56 (15)   06:48 17:49 (4)   19:35	06:10 10   19:45 (12)   20:06	05:56 22   20:14 (11)	
10   07:39   17:20	19   16:30 (6)   07:15 16:49 (6)   17:44	10   17:12 (5)   06:33 17:22 (5)   18:10	34   06:55 (15)   06:47 17:49 (4)   19:36	06:09 12   19:35 (12)   20:08	05:56 23   20:15 (11)	
11   07:39   17:21	18   16:31 (6)   07:14 16:49 (6)   17:45	11   17:12 (5)   06:31 17:23 (5)   18:11	35   06:55 (15)   06:45 17:50 (4)   19:37	06:08 14   19:47 (12)   20:09	05:56 24   20:16 (11)	
12   07:38   17:22	17   16:31 (6)   07:13 16:48 (6)   17:46	12   17:12 (5)   06:30 17:24 (5)   18:12	37   06:54 (15)   06:44 17:51 (4)   19:38	06:07 15   19:48 (12)   20:10	05:56 25   20:16 (11)	
13   07:38   17:22	15   16:32 (6)   07:12 16:47 (6)   17:46	14   17:12 (5)   06:28 17:26 (5)   18:12	36   06:55 (15)   06:43 17:52 (4)   19:39	06:06 17   19:49 (12)   20:11	05:56 26   20:17 (11)	
14   07:37   17:23	13   16:33 (6)   07:11 16:46 (6)   17:47	15   17:11 (5)   06:27 17:26 (5)   18:13	36   06:54 (15)   06:41 17:53 (4)   19:40	06:05 19   19:50 (12)   20:12	05:57 27   20:18 (11)	
15   07:37   17:24	10   16:35 (6)   07:10 16:45 (6)   17:48	15   17:12 (5)   06:25 17:27 (5)   18:14	30   06:55 (15)   06:40 17:51 (4)   19:41	3   06:58 (18)   06:05 07:01 (18)   20:13	05:57 20   19:52 (12)   20:42	
16   07:36   17:24	6   16:37 (6)   07:08 16:43 (6)   17:49	16   17:12 (5)   06:24 17:28 (5)   18:15	22   06:55 (15)   06:38 07:17 (15)   19:42	8   07:05 (18)   20:14 07:05 (18)   20:14	21   19:31 (12)   20:42 19:52 (12)   20:42	
17   07:36   17:25	07:07   17:50	16   17:13 (5)   06:22 17:29 (5)   18:16	26   06:40 (19)   06:37 07:16 (15)   19:43	11   06:55 (18)   06:03 07:06 (18)   20:15	22   19:31 (12)   20:43 19:53 (12)   20:43	
18   07:35   17:26	07:06   17:51	14   17:14 (5)   06:21 17:28 (5)   18:17	25   06:39 (19)   06:36 07:14 (15)   19:44	13   06:54 (18)   06:03 07:07 (18)   20:16	23   19:32 (12)   20:44 19:55 (12)   20:44	
19   07:35   17:26	07:04   17:51	11   17:15 (5)   06:19 17:26 (5)   18:17	24   06:37 (19)   06:34 07:11 (15)   19:45	15   06:53 (18)   06:02 07:08 (18)   20:17	23   19:32 (12)   20:45 19:55 (12)   20:44	
20   07:34   17:27	07:03   17:52	4   17:19 (5)   06:17 17:23 (5)   18:18	19   06:36 (19)   06:33 07:08 (15)   19:46	17   06:51 (18)   06:01 07:08 (18)   20:18	24   19:33 (12)   20:45 19:57 (12)   20:45	
21   07:34   17:28	07:02   17:53	06:16   18:19	14   06:34 (19)   06:32 06:48 (19)   19:46	18   06:50 (18)   06:01 07:08 (18)   20:19	25   19:32 (12)   20:45 19:57 (12)   20:46	
22   07:33   17:29	07:00   17:54	06:14   18:20	16   06:33 (19)   06:30 06:49 (19)   19:48	19   06:49 (18)   06:00 07:08 (18)   20:21	26   19:33 (12)   20:46 19:59 (12)   20:46	
23   07:32   17:29	06:59   17:55	06:13   18:21	17   06:31 (19)   06:29 06:48 (19)   19:49	20   06:47 (18)   06:00 07:07 (18)   20:22	26   19:33 (12)   20:46 19:59 (12)   20:47	
24   07:31   17:30	06:58   17:56	06:11   18:22	18   06:29 (19)   06:28 06:47 (19)   19:50	20   06:47 (18)   06:00 07:07 (18)   20:23	26   19:34 (12)   20:47 20:00 (12)   20:47	
25   07:31   17:31	06:56   17:57	06:10   18:23	16   06:30 (19)   06:26 06:46 (19)   19:51	18   06:48 (18)   06:00 07:06 (18)   20:24	25   19:35 (12)   20:47 20:00 (12)   20:47	
26   07:30   17:32	06:55   17:57	06:08   18:23	14   06:30 (19)   06:25 06:44 (19)   19:52	17   06:49 (18)   06:00 07:06 (18)   20:25	24   19:36 (12)   20:47 20:00 (12)   20:48	
27   07:29   17:32	06:54   17:58	06:07   18:24	11   06:32 (19)   06:24 06:43 (19)   19:53	15   06:50 (18)   06:00 07:05 (18)   20:26	23   19:37 (12)   20:48 19:37 (12)   20:48	
28   07:28   17:33	06:52   17:59	06:05   18:25	3   06:35 (19)   06:23 06:38 (19)   19:54	12   06:50 (18)   06:00 07:02 (18)   20:27	22   19:37 (12)   20:48 19:59 (12)   20:49	
29   07:27   17:34	06:51   18:00	06:04   18:26	06:21   19:55	7   06:53 (18)   06:00 07:00 (18)   20:28	21   19:38 (12)   20:49 19:59 (12)   20:49	
30   07:27   17:35	06:49   18:01	06:02   18:27	06:20   19:56	05:57   20:29	20   19:39 (12)   20:49 19:59 (12)   20:49	
31   07:26   17:36	06:48   18:02	06:19   19:57	06:19   19:57	05:57   20:29	25   06:05 20:25 (11)	
Potential sun hours   305	302	331	355	405	424	
Total, worst case	302	161	580	213	469	817

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

Elaine Wind Farm adjusted Sep 2014

Description:

Elaine section of the Lal Lal Wind Farm

Printed/Page

12/02/2015 1:30 PM / 6

Licensed user:

West Wind Energy Pty Ltd  
Office 5, Level 1, Nexus Centre 12-14 Prince Street  
AU-GISBORNE Victoria 3437  
+61 3 5421 9999

Adam Gray / gray@w-wind.com.au

Calculated:

12/02/2015 1:30 PM/2.9.285

## SHADOW - Calendar

Shadow receptor: C - Shadow Receptor: 2.0 x 2.0 Azimuth: 0.0° Slope: 90.0° (3)

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December	
1	06:06 20:49	06:38 20:38	07:09 20:06	19:15 (8) 19:20	07:38 17:39	07:05 17:14	07:30 17:16	07:41 17:16	07:25 17:36	06:46 18:02	06:00 18:28	17:54 (8) 19:58	06:18 20:30
2	06:07 20:50	06:39 20:37	07:10 20:04	19:13 (8) 19:18	07:39 17:38	07:06 17:14	07:31 17:16	07:40 17:16	07:24 17:37	06:45 18:03	05:59 18:29	17:52 (8) 19:59	06:17 20:31
3	06:08 20:50	06:40 20:36	07:11 20:03	19:13 (8) 19:17	07:40 17:36	07:07 17:13	07:32 17:16	07:40 17:16	07:23 17:38	06:43 18:04	05:57 18:29	17:50 (8) 20:00	06:16 20:32
4	06:09 20:50	06:42 20:36	07:12 20:01	19:12 (8) 19:15	07:41 17:35	07:08 17:13	07:32 17:17	07:40 17:17	07:22 17:39	06:42 18:05	05:56 19:30	18:09 (8) 20:01	06:15 20:33
5	06:10 20:50	06:43 20:35	07:13 20:00	19:11 (8) 18:14	07:42 17:34	07:09 17:13	07:33 17:17	07:40 17:17	07:21 17:40	06:40 18:06	05:54 19:31	18:48 (8) 20:02	06:14 20:34
6	06:10 20:50	06:44 20:34	07:14 19:59	19:11 (8) 18:12	07:43 17:33	07:10 17:13	07:34 17:18	07:40 17:18	07:20 17:41	06:39 18:06	05:53 19:32	18:48 (8) 20:03	06:13 20:34
7	06:11 20:50	06:45 20:33	07:15 19:57	19:11 (8) 18:11	07:44 17:32	07:11 17:12	07:35 17:19	07:39 17:19	07:18 17:41	06:38 18:07	05:51 19:33	18:47 (8) 20:04	06:12 20:35
8	06:12 20:50	06:46 20:32	07:16 19:56	19:11 (8) 18:09	07:45 17:31	07:12 17:12	07:36 17:19	07:39 17:19	07:18 17:42	06:36 18:08	05:50 19:34	18:47 (8) 20:05	06:11 20:36
9	06:13 20:50	06:47 20:31	07:17 19:54	19:11 (8) 18:08	07:46 17:30	07:13 17:12	07:37 17:20	07:39 17:20	07:16 17:43	06:34 18:09	05:48 19:35	18:46 (8) 20:06	06:10 20:37
10	06:14 20:50	06:48 20:30	07:18 19:53	19:12 (8) 18:06	07:47 17:29	07:14 17:12	07:38 17:20	07:39 17:20	07:15 17:44	06:33 18:10	05:47 19:36	18:47 (8) 20:07	06:09 20:38
11	06:15 20:49	06:49 20:28	07:19 19:51	19:13 (8) 18:05	07:48 17:28	07:15 17:12	07:39 17:21	07:38 17:21	07:14 17:45	06:31 18:11	05:45 19:37	18:46 (8) 20:09	06:08 20:39
12	06:16 20:49	06:51 20:27	07:20 19:50	19:14 (8) 18:03	07:49 17:27	07:16 17:12	07:37 17:22	07:38 17:22	07:13 17:46	06:30 18:11	05:44 19:38	18:47 (8) 20:10	06:07 20:39
13	06:17 20:49	06:52 20:26	07:21 19:49 (7)	19:17 (8) 18:02	07:50 17:26	07:17 17:12	07:37 17:22	07:38 17:22	07:12 17:46	06:28 18:12	05:43 19:39	18:49 (8) 20:11	06:06 20:40
14	06:18 20:49	06:53 20:25	07:22 19:46 (7)	19:17 (8) 18:01	07:51 17:25	07:18 17:12	07:37 17:23	07:37 17:23	07:11 17:47	06:27 18:13	05:41 19:40	18:49 (8) 20:12	06:05 20:41
15	06:19 20:48	06:54 20:24	07:23 19:44 (7)	19:18 (8) 17:59	07:52 17:25	07:19 17:12	07:38 17:23	07:37 17:23	07:09 17:48	06:25 18:14	05:40 19:41	18:51 (8) 20:13	06:05 20:42
16	06:20 20:48	06:55 20:23	07:24 19:43 (7)	19:19 (8) 17:58	07:53 17:24	07:20 17:12	07:39 17:24	07:35 17:24	07:08 17:49	06:24 18:15	05:38 19:41	18:54 (8) 20:14	06:04 20:42
17	06:21 20:48	06:56 20:21	07:25 19:42 (7)	19:20 (8) 17:56	07:54 17:23	07:21 17:12	07:39 17:25	07:36 17:25	07:07 17:50	06:22 18:16	05:37 19:42	19:16 (7) 20:15	06:03 20:43
18	06:22 20:47	06:57 20:20	07:26 19:41 (7)	19:21 (8) 17:55	07:55 17:22	07:22 17:12	07:39 17:26	07:35 17:26	07:06 17:51	06:21 18:16	05:35 19:43	19:15 (7) 20:16	06:02 20:44
19	06:24 20:47	06:58 20:19	07:27 19:42 (7)	19:22 (8) 17:54	07:56 17:21	07:23 17:12	07:39 17:26	07:35 17:26	07:04 17:51	06:19 18:17	05:34 19:44	19:13 (7) 20:17	06:02 20:44
20	06:25 20:46	06:59 20:18	07:28 19:42 (7)	19:23 (8) 17:52	07:57 17:21	07:24 17:12	07:39 17:27	07:34 17:27	07:03 17:52	06:17 18:18	05:33 19:45	19:12 (7) 20:18	06:01 20:45
21	06:26 20:46	07:00 20:16	07:29 19:42 (7)	19:24 (8) 17:51	07:58 17:20	07:25 17:12	07:39 17:28	07:33 17:28	07:02 17:53	06:16 18:19	05:31 19:46	19:12 (7) 20:19	06:01 20:45
22	06:27 20:45	07:01 20:15	07:30 19:43 (7)	19:25 (8) 17:50	07:59 17:19	07:26 17:13	07:40 17:28	07:33 17:28	07:00 17:54	06:14 18:20	05:30 19:47	19:12 (7) 20:20	06:00 20:46
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24	06:29 20:44	07:04 20:13	07:32 19:44 (7)	19:27 (8) 17:47	08:01 17:18	07:28 17:13	07:40 17:30	07:33 17:30	06:58 17:56	06:11 18:22	05:28 19:49	19:12 (7) 20:23	06:01 20:47
25	06:30 20:44	07:05 20:11	07:33 19:45 (7)	19:28 (8) 17:46	08:02 17:17	07:29 17:13	07:40 17:31	07:33 17:31	06:56 17:56	06:10 18:22	05:26 19:50	19:12 (7) 20:24	06:01 20:47
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27	06:32 20:42	07:07 20:08	07:35 19:18 (8)	19:30 (8) 17:43	08:04 17:16	07:31 17:14	07:40 17:32	07:33 17:32	06:54 17:58	06:07 18:24	05:24 19:52	19:15 (7) 20:26	06:02 20:48
28	06:34 20:41	07:08 20:07	07:36 19:16 (8)	19:31 (8) 17:42	08:05 17:16	07:32 17:14	07:40 17:33	07:33 17:33	06:52 17:59	06:05 18:25	05:23 19:54	19:15 (7) 20:27	06:03 20:48
29	06:35 20:41	07:09 19:57 (7)	07:37 19:24 (7)	19:32 (8) 17:41	08:06 17:15	07:33 17:15	07:40 17:34	07:33 17:34	06:51 18:00	06:03 18:26	05:21 19:55	19:24 (7) 20:28	06:04 20:49
30	06:36 20:40	07:10 19:46 (7)	07:38 19:23 (7)	19:33 (8) 17:40	08:07 17:15	07:34 17:15	07:40 17:35	07:33 17:35	06:49 18:01	06:02 18:27	05:20 19:56	18:06 (8) 20:29	06:04 20:49
31	06:37 20:39	07:11 19:35 (7)	07:39 19:22 (7)	19:34 (8) 17:39	08:08 17:15	07:35 17:15	07:40 17:36	07:33 17:36	06:48 18:01	06:01 18:27	05:19 19:57	18:06 (8) 20:30	06:05 20:49
Potential sun hours	447	378	383	334	314	288	305	331	355	405	464	424	456
Total, worst case		191	276						9				

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:

**Elaine Wind Farm adjusted Sep 2014**

Description:

Elaine section of the Lal Lal Wind Farm

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12/02/2015 1:30 PM / 7

Licensed user:

**West Wind Energy Pty Ltd**  
Office 5, Level 1, Nexus Centre 12-14 Prince Street  
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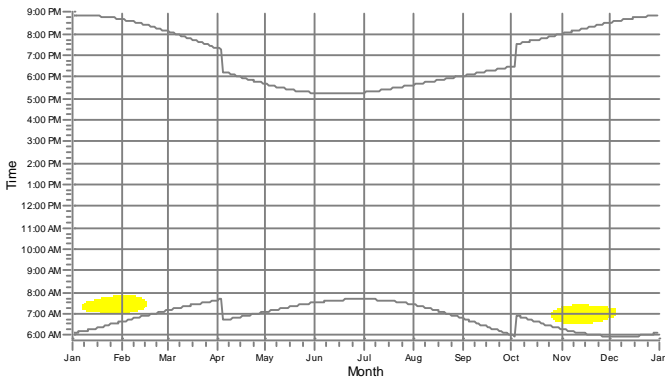
Adam Gray / gray@w-wind.com.au

Calculated:

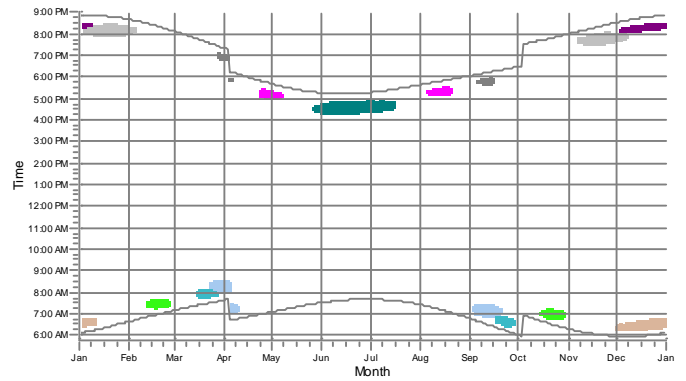
12/02/2015 1:30 PM/2.9.285

## SHADOW - Calendar, graphical

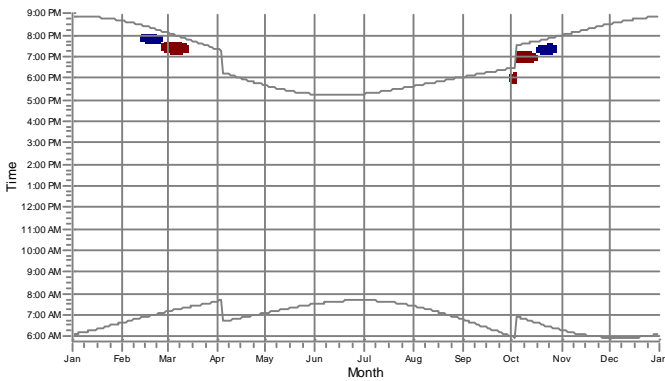
A: Shadow Receptor: 2.0 x 2.0 Azimuth: 0.0° Slope: 90.0° (1)



B: Shadow Receptor: 2.0 x 2.0 Azimuth: 0.0° Slope: 90.0° (2)



C: Shadow Receptor: 2.0 x 2.0 Azimuth: 0.0° Slope: 90.0° (3)



WTGs

- 2: REpower 3.2M114 3200 114.0 IOI hub: 103.0 m (TOT: 160.0 m) (51)
- 4: REpower 3.2M114 3200 114.0 IOI hub: 103.0 m (TOT: 160.0 m) (53)
- 5: REpower 3.2M114 3200 114.0 IOI hub: 103.0 m (TOT: 160.0 m) (54)
- 6: REpower 3.2M114 3200 114.0 IOI hub: 103.0 m (TOT: 160.0 m) (55)
- 7: REpower 3.2M114 3200 114.0 IOI hub: 103.0 m (TOT: 160.0 m) (56)
- 8: REpower 3.2M114 3200 114.0 IOI hub: 103.0 m (TOT: 160.0 m) (57)

- 11: REpower 3.2M114 3200 114.0 IOI hub: 103.0 m (TOT: 160.0 m) (61)
- 12: REpower 3.2M114 3200 114.0 IOI hub: 103.0 m (TOT: 160.0 m) (62)
- 15: REpower 3.2M114 3200 114.0 IOI hub: 103.0 m (TOT: 160.0 m) (65)
- 17: REpower 3.2M114 3200 114.0 IOI hub: 103.0 m (TOT: 160.0 m) (67)
- 18: REpower 3.2M114 3200 114.0 IOI hub: 103.0 m (TOT: 160.0 m) (68)
- 19: REpower 3.2M114 3200 114.0 IOI hub: 103.0 m (TOT: 160.0 m) (69)

Project:

Elaine Wind Farm adjusted Sep 2014

Description:

Elaine section of the Lal Lal Wind Farm

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Licensed user:

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Office 5, Level 1, Nexus Centre 12-14 Prince Street  
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Adam Gray / gray@w-wind.com.au

Calculated:

12/02/2015 1:30 PM/2.9.285

### SHADOW - Calendar per WTG

WTG: 1 - REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (50)

#### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	06:06	06:38	07:09	07:38	07:05	07:31	07:41	07:25	06:47	06:01	06:18	05:57
	20:50	20:38	20:06	19:20	17:39	17:14	17:16	17:37	18:03	18:28	19:58	20:30
2	06:07	06:39	07:10	07:39	07:06	07:31	07:41	07:24	06:45	05:59	06:17	05:56
	20:50	20:38	20:05	19:18	17:38	17:14	17:16	17:37	18:03	18:29	19:59	20:31
3	06:08	06:41	07:11	07:40	07:07	07:32	07:41	07:23	06:44	05:58	06:16	05:56
	20:50	20:37	20:03	19:17	17:37	17:14	17:17	17:38	18:04	18:30	20:00	20:32
4	06:09	06:42	07:12	07:41	07:08	07:33	07:40	07:22	06:42	06:56	06:15	05:56
	20:50	20:36	20:02	19:15	17:36	17:13	17:17	17:39	18:05	19:31	20:01	20:33
5	06:10	06:43	07:13	06:42	07:09	07:33	07:40	07:21	06:41	06:54	06:14	05:56
	20:50	20:35	20:00	18:14	17:34	17:13	17:18	17:40	18:06	19:31	20:02	20:34
6	06:11	06:44	07:14	06:43	07:10	07:34	07:40	07:20	06:39	06:53	06:13	05:56
	20:50	20:34	19:59	18:12	17:33	17:13	17:18	17:41	18:07	19:32	20:03	20:35
7	06:12	06:45	07:15	06:44	07:11	07:34	07:40	07:19	06:38	06:51	06:12	05:56
	20:50	20:33	19:57	18:11	17:32	17:13	17:19	17:42	18:07	19:33	20:04	20:36
8	06:12	06:46	07:16	06:45	07:12	07:35	07:40	07:18	06:36	06:50	06:11	05:56
	20:50	20:32	19:56	18:09	17:31	17:12	17:19	17:42	18:08	19:34	20:05	20:36
9	06:13	06:47	07:17	06:46	07:12	07:35	07:39	07:17	06:35	06:49	06:10	05:56
	20:50	20:31	19:54	18:08	17:30	17:12	17:20	17:43	18:09	19:35	20:07	20:37
10	06:14	06:49	07:18	06:46	07:13	07:36	07:39	07:16	06:33	06:47	06:09	05:56
	20:50	20:30	19:53	18:06	17:29	17:12	17:20	17:44	18:10	19:36	20:08	20:38
11	06:15	06:50	07:19	06:47	07:14	07:36	07:39	07:14	06:32	06:46	06:08	05:56
	20:50	20:29	19:52	18:05	17:28	17:12	17:21	17:45	18:11	19:37	20:09	20:39
12	06:16	06:51	07:20	06:48	07:15	07:37	07:38	07:13	06:30	06:44	06:07	05:56
	20:49	20:28	19:50	18:04	17:27	17:12	17:22	17:46	18:12	19:38	20:10	20:40
13	06:17	06:52	07:21	06:49	07:16	07:37	07:38	07:12	06:28	06:43	06:06	05:56
	20:49	20:26	19:49	18:02	17:27	17:12	17:22	17:47	18:12	19:39	20:11	20:40
14	06:18	06:53	07:22	06:50	07:17	07:38	07:37	07:11	06:27	06:41	06:06	05:57
	20:49	20:25	19:47	18:01	17:26	17:12	17:23	17:47	18:13	19:40	20:12	20:41
15	06:19	06:54	07:23	06:51	07:18	07:38	07:37	07:10	06:25	06:40	06:05	05:57
	20:49	20:24	19:46	17:59	17:25	17:12	17:24	17:48	18:14	19:41	20:13	20:42
16	06:21	06:55	07:24	06:52	07:18	07:38	07:37	07:08	06:24	06:38	06:04	05:57
	20:48	20:23	19:44	17:58	17:24	17:12	17:24	17:49	18:15	19:42	20:14	20:43
17	06:22	06:56	07:25	06:53	07:19	07:39	07:36	07:07	06:22	06:37	06:03	05:58
	20:48	20:22	19:43	17:57	17:23	17:12	17:25	17:50	18:16	19:43	20:15	20:43
18	06:23	06:57	07:25	06:54	07:20	07:39	07:35	07:06	06:21	06:36	06:03	05:58
	20:48	20:20	19:41	17:55	17:22	17:12	17:26	17:51	18:17	19:44	20:16	20:44
19	06:24	06:58	07:26	06:55	07:21	07:39	07:35	07:05	06:19	06:34	06:02	05:58
	20:47	20:19	19:39	17:54	17:22	17:12	17:26	17:52	18:18	19:45	20:17	20:44
20	06:25	07:00	07:27	06:55	07:22	07:40	07:34	07:03	06:18	06:33	06:01	05:59
	20:47	20:18	19:38	17:53	17:21	17:12	17:27	17:52	18:18	19:46	20:19	20:45
21	06:26	07:01	07:28	06:56	07:23	07:40	07:34	07:02	06:16	06:32	06:01	05:59
	20:46	20:17	19:36	17:51	17:20	17:13	17:28	17:53	18:19	19:47	20:20	20:46
22	06:27	07:02	07:29	06:57	07:23	07:40	07:33	07:01	06:14	06:30	06:00	06:00
	20:46	20:15	19:35	17:50	17:20	17:13	17:29	17:54	18:20	19:48	20:21	20:46
23	06:28	07:03	07:30	06:58	07:24	07:40	07:32	06:59	06:13	06:29	06:00	06:00
	20:45	20:14	19:33	17:49	17:19	17:13	17:29	17:55	18:21	19:49	20:22	20:47
24	06:29	07:04	07:31	06:59	07:25	07:40	07:32	06:58	06:11	06:28	05:59	06:01
	20:44	20:13	19:32	17:47	17:18	17:13	17:30	17:56	18:22	19:50	20:23	20:47
25	06:30	07:05	07:32	07:00	07:26	07:41	07:31	06:57	06:10	06:26	05:59	06:01
	20:44	20:11	19:30	17:46	17:18	17:14	17:31	17:57	18:23	19:51	20:24	20:48
26	06:32	07:06	07:33	07:01	07:26	07:41	07:30	06:55	06:08	06:25	05:58	06:02
	20:43	20:10	19:29	17:45	17:17	17:14	17:32	17:57	18:23	19:52	20:25	20:48
27	06:33	07:07	07:34	07:02	07:27	07:41	07:29	06:54	06:07	06:24	05:58	06:03
	20:42	20:09	19:27	17:44	17:17	17:14	17:33	17:58	18:24	19:53	20:26	20:48
28	06:34	07:08	07:35	07:03	07:28	07:41	07:28	06:52	06:05	06:23	05:58	06:03
	20:42	20:07	19:26	17:42	17:16	17:15	17:33	17:59	18:25	19:54	20:27	20:49
29	06:35		07:36	07:04	07:29	07:41	07:28	06:51	06:04	06:22	05:57	06:04
	20:41		19:24	17:41	17:16	17:15	17:34	18:00	18:26	19:55	20:28	20:49
30	06:36		07:37	07:04	07:29	07:41	07:27	06:49	06:02	06:20	05:57	06:05
	20:40		19:23	17:40	17:15	17:15	17:35	18:01	18:27	19:56	20:29	20:49
31	06:37		07:37		07:30		07:26	06:48		06:19		06:05
	20:39		19:21		17:15		17:36	18:02		19:57		20:49
Potential sun hours	447	378	383	334	314	288	305	331	355	405	424	456
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	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:

Elaine Wind Farm adjusted Sep 2014

Description:

Elaine section of the Lal Lal Wind Farm

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Licensed user:

West Wind Energy Pty Ltd  
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+61 3 5421 9999

Adam Gray / gray@w-wind.com.au

Calculated:

12/02/2015 1:30 PM/2.9.285

### SHADOW - Calendar per WTG

WTG: 2 - REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (51)

#### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	06:06 20:50	06:38 20:38	07:07-07:47/40 20:06	07:38 19:20	07:05 17:39	07:31 17:14	07:41 17:16	07:25 17:37	06:47 18:02	06:01 18:28	06:18 19:58	06:42-07:12/30 20:30
2	06:07 20:50	06:39 20:38	07:07-07:46/39 20:05	07:39 19:18	07:06 17:38	07:31 17:14	07:41 17:16	07:24 17:37	06:45 18:03	05:59 18:29	06:17 19:59	06:41-07:13/32 20:31
3	06:08 20:50	06:41 20:37	07:07-07:46/39 20:03	07:11 19:17	07:07 17:37	07:32 17:14	07:41 17:17	07:23 17:38	06:44 18:04	05:58 18:30	06:16 20:00	06:40-07:14/34 20:32
4	06:09 20:50	06:42 20:36	07:07-07:46/39 20:02	07:12 19:15	07:08 17:35	07:33 17:13	07:40 17:17	07:22 17:39	06:42 18:05	06:56 19:31	06:15 20:01	06:39-07:15/36 20:33
5	06:10 20:50	06:43 20:35	07:08-07:46/38 20:00	07:13 18:14	06:42 17:34	07:33 17:13	07:40 17:18	07:21 17:40	06:41 18:06	06:54 19:31	06:14 20:02	06:38-07:16/38 20:34
6	06:11 20:50	06:44 20:34	07:08-07:45/37 19:59	07:14 18:12	06:43 17:33	07:34 17:13	07:40 17:18	07:20 17:41	06:39 18:07	06:53 19:32	06:13 20:03	06:38-07:16/38 20:35
7	06:12 20:50	06:45 20:33	07:10-07:46/36 19:57	07:15 18:11	06:44 17:32	07:34 17:13	07:40 17:19	07:19 17:42	06:38 18:07	06:51 19:33	06:12 20:04	06:38-07:16/38 20:36
8	06:12 20:50	07:17-07:22/5 20:32	07:11-07:45/34 19:56	07:16 18:09	06:45 17:31	07:35 17:12	07:40 17:19	07:18 17:42	06:36 18:08	06:50 19:34	06:11 20:05	06:37-07:17/40 20:36
9	06:13 20:50	07:14-07:25/11 20:31	07:12-07:44/32 19:54	07:17 18:08	06:46 17:30	07:35 17:12	07:39 17:20	07:17 17:43	06:35 18:09	06:49 19:35	06:10 20:07	06:38-07:18/40 20:37
10	06:14 20:50	07:13-07:27/14 20:30	07:13-07:43/30 19:53	06:49 18:06	06:46 17:29	07:36 17:12	07:39 17:20	07:15 17:44	06:33 18:10	06:47 19:36	06:09 20:08	06:38-07:18/40 20:38
11	06:15 20:50	07:12-07:29/17 20:29	07:14-07:42/28 19:51	06:50 18:05	06:47 17:28	07:36 17:12	07:39 17:21	07:14 17:45	06:32 18:11	06:46 19:37	06:08 20:09	06:38-07:18/40 20:39
12	06:16 20:49	07:11-07:31/20 20:28	07:15-07:40/25 19:50	06:51 18:04	06:48 17:27	07:37 17:12	07:38 17:22	07:13 17:46	06:30 18:12	06:44 19:38	06:07 20:10	06:37-07:18/41 20:40
13	06:17 20:49	07:10-07:31/21 20:26	07:17-07:38/21 19:49	06:52 18:02	06:49 17:27	07:37 17:12	07:38 17:22	07:12 17:47	06:28 18:12	06:43 19:39	06:06 20:11	06:37-07:17/40 20:40
14	06:18 20:49	07:09-07:33/24 20:25	07:20-07:35/15 19:47	06:53 18:01	06:50 17:26	07:38 17:12	07:37 17:23	07:11 17:47	06:27 18:13	06:41 19:40	06:06 20:12	06:38-07:18/40 20:41
15	06:19 20:49	07:08-07:34/26 20:24	07:25-07:29/4 19:46	06:54 17:59	06:51 17:25	07:38 17:12	07:37 17:24	07:10 17:48	06:25 18:14	06:40 19:41	06:05 20:13	06:39-07:18/39 20:42
16	06:21 20:48	07:09-07:36/27 20:23	07:24-07:36/27 19:44	06:55 17:58	06:52 17:24	07:38 17:12	07:36 17:24	07:08 17:49	06:24 18:15	06:38 19:42	06:04 20:14	06:39-07:17/38 20:43
17	06:22 20:48	07:08-07:37/29 20:22	07:22-07:37/29 19:42	06:56 17:57	06:53 17:23	07:39 17:12	07:36 17:25	07:07 17:50	06:22 18:16	06:37 19:43	06:03 20:15	06:40-07:18/38 20:43
18	06:23 20:47	07:08-07:39/31 20:20	07:23-07:39/31 19:41	06:57 17:55	06:54 17:22	07:39 17:12	07:35 17:26	07:06 17:51	06:21 18:17	06:36 19:44	06:03 20:16	06:40-07:17/37 20:44
19	06:24 20:47	07:07-07:39/32 20:19	07:26-07:39/32 19:39	06:58 17:54	06:55 17:22	07:39 17:12	07:35 17:26	07:05 17:52	06:19 18:17	06:34 19:45	06:02 20:17	06:40-07:17/37 20:44
20	06:25 20:47	07:07-07:40/33 20:18	07:27-07:40/33 19:38	06:59 17:53	06:56 17:21	07:40 17:12	07:34 17:27	07:03 17:52	06:18 18:18	06:33 19:46	06:01 20:18	06:41-07:17/36 20:45
21	06:26 20:46	07:07-07:41/34 20:17	07:28-07:41/34 19:36	06:59 17:51	06:56 17:20	07:40 17:13	07:34 17:28	07:02 17:53	06:16 18:19	06:32 19:47	06:01 20:20	06:42-07:16/34 20:46
22	06:27 20:46	07:06-07:42/36 20:15	07:29-07:42/36 19:35	06:59 17:50	06:57 17:20	07:40 17:13	07:33 17:29	07:01 17:54	06:14 18:20	06:30 19:48	06:00 20:21	06:43-07:16/33 20:46
23	06:28 20:45	07:06-07:43/37 20:14	07:30-07:43/37 19:33	06:58 17:49	06:58 17:19	07:40 17:13	07:32 17:29	06:59 17:55	06:13 18:21	06:29 19:49	06:00 20:22	06:43-07:15/32 20:47
24	06:29 20:44	07:06-07:43/37 20:13	07:31-07:43/37 19:32	06:59 17:47	06:59 17:18	07:40 17:13	07:32 17:30	06:58 17:56	06:11 18:22	06:28 19:50	05:59 20:23	06:45-07:16/31 20:47
25	06:30 20:44	07:06-07:44/38 20:11	07:32-07:44/38 19:30	06:58 17:46	06:58 17:16	07:40 17:14	07:31 17:31	06:56 17:57	06:10 18:23	06:26 19:51	05:59 20:24	06:45-07:14/29 20:48
26	06:32 20:43	07:06-07:44/38 20:10	07:33-07:44/38 19:29	06:59 17:45	06:57 17:17	07:40 17:14	07:30 17:32	06:55 17:57	06:08 18:23	06:25 19:52	05:58 20:25	06:47-07:14/27 20:48
27	06:33 20:42	07:05-07:45/40 20:09	07:34-07:45/40 19:27	06:59 17:44	06:57 17:17	07:40 17:14	07:29 17:33	06:54 17:58	06:07 18:24	06:24 19:53	05:58 20:26	06:48-07:14/26 20:48
28	06:34 20:42	07:05-07:45/40 20:08	07:35-07:45/40 19:26	06:59 17:42	06:57 17:16	07:40 17:15	07:28 17:33	06:52 17:59	06:05 18:25	06:23 19:54	05:58 20:27	06:49-07:13/24 20:49
29	06:35 20:41	07:06-07:46/40 20:07	07:36-07:46/40 19:24	06:59 17:41	06:57 17:16	07:40 17:15	07:28 17:34	06:51 18:00	06:04 18:26	06:22 19:55	05:57 20:28	06:50-07:13/23 20:49
30	06:36 20:40	07:06-07:47/41 20:06	07:37-07:47/41 19:23	06:59 17:40	06:57 17:15	07:40 17:15	07:27 17:35	06:49 18:01	06:02 18:27	06:20 19:56	05:57 20:29	06:52-07:12/20 20:49
31	06:37 20:39	07:07-07:47/40 20:05	07:38-07:47/40 19:21	06:59 17:39	06:57 17:15	07:40 17:15	07:26 17:36	06:48 18:02	06:01 18:28	06:19 19:57	06:01 20:30	06:43-07:11/28 20:49
Potential sun hours	1447	378	383	334	314	288	305	331	355	405	424	456
Sum of minutes with flicker	711	458	0	0	0	0	0	0	0	100	1031	48

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:

Elaine Wind Farm adjusted Sep 2014

Description:

Elaine section of the Lal Lal Wind Farm

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12/02/2015 1:30 PM / 10

Licensed user:

West Wind Energy Pty Ltd  
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Adam Gray / gray@w-wind.com.au

Calculated:

12/02/2015 1:30 PM/2.9.285

### SHADOW - Calendar per WTG

WTG: 3 - REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (52)

#### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	06:06	06:38	07:09	07:38	07:05	07:31	07:41	07:25	06:47	06:01	06:18	05:57
	20:50	20:38	20:06	19:20	17:39	17:14	17:16	17:37	18:02	18:28	19:58	20:30
2	06:07	06:39	07:10	07:39	07:06	07:31	07:41	07:24	06:45	05:59	06:17	05:56
	20:50	20:38	20:05	19:18	17:38	17:14	17:16	17:37	18:03	18:29	19:59	20:31
3	06:08	06:41	07:11	07:40	07:07	07:32	07:41	07:23	06:44	05:57	06:16	05:56
	20:50	20:37	20:03	19:17	17:37	17:14	17:17	17:38	18:04	18:30	20:00	20:32
4	06:09	06:42	07:12	07:41	07:08	07:33	07:40	07:22	06:42	06:56	06:15	05:56
	20:50	20:36	20:02	19:15	17:35	17:13	17:17	17:39	18:05	19:31	20:01	20:33
5	06:10	06:43	07:13	06:42	07:09	07:33	07:40	07:21	06:41	06:54	06:14	05:56
	20:50	20:35	20:00	18:14	17:34	17:13	17:18	17:40	18:06	19:31	20:02	20:34
6	06:11	06:44	07:14	06:43	07:10	07:34	07:40	07:20	06:39	06:53	06:13	05:56
	20:50	20:34	19:59	18:12	17:33	17:13	17:18	17:41	18:07	19:32	20:03	20:35
7	06:12	06:45	07:15	06:44	07:11	07:34	07:40	07:19	06:38	06:51	06:12	05:56
	20:50	20:33	19:57	18:11	17:32	17:13	17:19	17:42	18:07	19:33	20:04	20:36
8	06:12	06:46	07:16	06:45	07:12	07:35	07:40	07:18	06:36	06:50	06:11	05:56
	20:50	20:32	19:56	18:09	17:31	17:12	17:19	17:42	18:08	19:34	20:05	20:36
9	06:13	06:47	07:17	06:46	07:12	07:35	07:39	07:17	06:35	06:49	06:10	05:56
	20:50	20:31	19:54	18:08	17:30	17:12	17:20	17:43	18:09	19:35	20:07	20:37
10	06:14	06:49	07:18	06:46	07:13	07:36	07:39	07:16	06:33	06:47	06:09	05:56
	20:50	20:30	19:53	18:06	17:29	17:12	17:20	17:44	18:10	19:36	20:08	20:38
11	06:15	06:50	07:19	06:47	07:14	07:36	07:39	07:14	06:32	06:46	06:08	05:56
	20:50	20:29	19:51	18:05	17:28	17:12	17:21	17:45	18:11	19:37	20:09	20:39
12	06:16	06:51	07:20	06:48	07:15	07:37	07:38	07:13	06:30	06:44	06:07	05:56
	20:49	20:28	19:50	18:04	17:27	17:12	17:22	17:46	18:12	19:38	20:10	20:40
13	06:17	06:52	07:21	06:49	07:16	07:37	07:38	07:12	06:28	06:43	06:06	05:56
	20:49	20:26	19:49	18:02	17:27	17:12	17:22	17:47	18:12	19:39	20:11	20:40
14	06:18	06:53	07:22	06:50	07:17	07:38	07:37	07:11	06:27	06:41	06:06	05:57
	20:49	20:25	19:47	18:01	17:26	17:12	17:23	17:47	18:13	19:40	20:12	20:41
15	06:19	06:54	07:23	06:51	07:18	07:38	07:37	07:10	06:25	06:40	06:05	05:57
	20:49	20:24	19:46	17:59	17:25	17:12	17:24	17:48	18:14	19:41	20:13	20:42
16	06:20	06:55	07:24	06:52	07:18	07:38	07:36	07:08	06:24	06:38	06:04	05:57
	20:48	20:23	19:44	17:58	17:24	17:12	17:24	17:49	18:15	19:42	20:14	20:43
17	06:22	06:56	07:25	06:53	07:19	07:39	07:36	07:07	06:22	06:37	06:03	05:57
	20:48	20:22	19:42	17:57	17:23	17:12	17:25	17:50	18:16	19:43	20:15	20:43
18	06:23	06:57	07:25	06:54	07:20	07:39	07:35	07:06	06:21	06:36	06:03	05:58
	20:48	20:20	19:41	17:55	17:22	17:12	17:26	17:51	18:17	19:44	20:16	20:44
19	06:24	06:58	07:26	06:55	07:21	07:39	07:35	07:05	06:19	06:34	06:02	05:58
	20:47	20:19	19:39	17:54	17:22	17:12	17:26	17:52	18:17	19:45	20:17	20:44
20	06:25	06:59	07:27	06:55	07:22	07:40	07:34	07:03	06:18	06:33	06:01	05:59
	20:47	20:18	19:38	17:53	17:21	17:12	17:27	17:52	18:18	19:46	20:19	20:45
21	06:26	07:01	07:28	06:56	07:23	07:40	07:34	07:02	06:16	06:32	06:01	05:59
	20:46	20:17	19:36	17:51	17:20	17:13	17:28	17:53	18:19	19:47	20:20	20:46
22	06:27	07:02	07:29	06:57	07:23	07:40	07:33	07:01	06:14	06:30	06:00	06:00
	20:46	20:15	19:35	17:50	17:19	17:13	17:29	17:54	18:20	19:48	20:21	20:46
23	06:28	07:03	07:30	06:58	07:24	07:40	07:32	06:59	06:13	06:29	06:00	06:00
	20:45	20:14	19:33	17:49	17:19	17:13	17:29	17:55	18:21	19:49	20:22	20:47
24	06:29	07:04	07:31	06:59	07:25	07:40	07:32	06:58	06:11	06:28	05:59	06:01
	20:44	20:13	19:32	17:47	17:18	17:13	17:30	17:56	18:22	19:50	20:23	20:47
25	06:30	07:05	07:32	07:00	07:26	07:41	07:31	06:56	06:10	06:26	05:59	06:01
	20:44	20:11	19:30	17:46	17:18	17:13	17:31	17:57	18:23	19:51	20:24	20:48
26	06:31	07:06	07:33	07:01	07:26	07:41	07:30	06:55	06:08	06:25	05:58	06:02
	20:43	20:10	19:29	17:45	17:17	17:14	17:32	17:57	18:23	19:52	20:25	20:48
27	06:33	07:07	07:34	07:02	07:27	07:41	07:29	06:54	06:07	06:24	05:58	06:02
	20:42	20:09	19:27	17:44	17:17	17:14	17:33	17:58	18:24	19:53	20:26	20:48
28	06:34	07:08	07:35	07:03	07:28	07:41	07:28	06:52	06:05	06:23	05:58	06:03
	20:42	20:07	19:26	17:42	17:16	17:14	17:33	17:59	18:25	19:54	20:27	20:49
29	06:35		07:36	07:04	07:29	07:41	07:28	06:51	06:04	06:22	05:57	06:04
	20:41		19:24	17:41	17:16	17:15	17:34	18:00	18:26	19:55	20:28	20:49
30	06:36		07:36	07:04	07:29	07:41	07:27	06:49	06:02	06:20	05:57	06:05
	20:40		19:23	17:40	17:15	17:15	17:35	18:01	18:27	19:56	20:29	20:49
31	06:37		07:37		07:30		07:26	06:48		06:19		06:05
	20:39		19:21		17:15		17:36	18:02		19:57		20:49
Potential sun hours	447	378	383	334	314	288	305	331	355	405	424	456
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	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:

Elaine Wind Farm adjusted Sep 2014

Description:

Elaine section of the Lal Lal Wind Farm

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12/02/2015 1:30 PM / 11

Licensed user:

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Adam Gray / gray@w-wind.com.au

Calculated:

12/02/2015 1:30 PM/2.9.285

SHADOW - Calendar per WTG

WTG: 4 - REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (53)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

Table with columns for months (January to December) and rows for days (1 to 31). Includes sun rise/set times, shadow start/end times, and potential sun hours.

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

Matrix with columns: 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.

Project:

Elaine Wind Farm adjusted Sep 2014

Description:

Elaine section of the Lal Lal Wind Farm

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Licensed user:

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Adam Gray / gray@w-wind.com.au

Calculated:

12/02/2015 1:30 PM/2.9.285

### SHADOW - Calendar per WTG

WTG: 5 - REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (54)

#### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December	
1	06:06 20:50	06:38 20:38	07:09 20:06	07:38 19:20	07:05 17:39	17:04-17:16/12 17:14	07:31 17:14	07:41 17:16	07:25 17:37	06:46 18:02	06:01 18:28	06:18 19:58	05:57 20:30
2	06:07 20:50	06:39 20:38	07:10 20:04	07:39 19:18	07:06 17:38	17:04-17:15/11 17:14	07:31 17:14	07:41 17:16	07:24 17:37	06:45 18:03	06:59 18:29	06:17 19:59	05:56 20:31
3	06:08 20:50	06:41 20:37	07:11 20:03	07:40 19:17	07:07 17:37	17:04-17:14/10 17:14	07:32 17:14	07:41 17:17	07:23 17:38	06:44 18:04	05:57 18:30	06:16 20:00	05:56 20:32
4	06:09 20:50	06:42 20:36	07:12 20:02	07:41 19:15	07:08 17:35	17:04-17:13/9 17:13	07:33 17:13	07:40 17:17	07:22 17:39	06:42 18:05	06:56 19:30	06:15 20:01	05:56 20:33
5	06:10 20:50	06:43 20:35	07:13 20:00	07:42 18:14	07:09 17:34	17:05-17:11/6 17:13	07:33 17:13	07:40 17:40	07:21 17:40	06:41 18:06	06:54 19:31	06:14 20:02	05:56 20:34
6	06:11 20:50	06:44 20:34	07:14 19:59	07:43 18:12	07:10 17:33	17:05-17:09/4 17:13	07:34 17:13	07:40 17:18	17:16-17:19/3 17:41	06:39 18:07	06:53 19:32	06:13 20:03	05:56 20:35
7	06:11 20:50	06:45 20:33	07:15 19:57	07:44 18:11	07:11 17:32	17:06-17:08/2 17:13	07:34 17:13	07:40 17:19	17:15-17:20/5 17:41	06:38 18:07	06:51 19:33	06:12 20:04	05:56 20:35
8	06:12 20:50	06:46 20:32	07:16 19:56	07:45 18:09	07:12 17:31	07:35 17:12	07:40 17:19	07:18 17:42	17:14-17:21/7 17:42	06:36 18:08	06:50 19:34	06:11 20:05	05:56 20:36
9	06:13 20:50	06:47 20:31	07:17 19:54	07:46 18:08	07:12 17:30	07:36 17:12	07:39 17:20	07:17 17:43	17:14-17:22/8 17:43	06:35 18:09	06:48 19:35	06:10 20:07	05:56 20:37
10	06:14 20:50	06:49 20:30	07:18 19:53	07:46 18:06	07:13 17:29	07:37 17:12	07:39 17:20	07:15 17:44	17:12-17:22/10 17:44	06:33 18:10	06:47 19:36	06:09 20:08	05:56 20:38
11	06:15 20:50	06:50 20:29	07:19 19:51	07:47 18:05	07:14 17:28	07:38 17:12	07:39 17:21	07:14 17:45	17:12-17:23/11 17:45	06:31 18:11	06:46 19:37	06:08 20:09	05:56 20:39
12	06:16 20:49	06:51 20:28	07:20 19:50	07:48 18:04	07:15 17:27	07:37 17:12	07:38 17:22	07:13 17:46	17:12-17:24/12 17:46	06:30 18:12	06:44 19:38	06:07 20:10	05:56 20:40
13	06:17 20:49	06:52 20:26	07:21 19:48	07:49 18:02	07:16 17:26	07:37 17:12	07:38 17:22	07:12 17:47	17:12-17:26/14 17:47	06:28 18:12	06:43 19:39	06:06 20:11	05:56 20:40
14	06:18 20:49	06:53 20:25	07:22 19:47	07:50 18:01	07:17 17:26	07:38 17:12	07:37 17:23	07:11 17:47	17:11-17:26/15 17:47	06:27 18:13	06:41 19:40	06:05 20:12	05:57 20:41
15	06:19 20:49	06:54 20:24	07:23 19:45	07:51 17:59	07:18 17:25	07:38 17:12	07:37 17:24	07:10 17:48	17:12-17:27/15 17:48	06:25 18:14	06:40 19:41	06:05 20:13	05:57 20:42
16	06:20 20:48	06:55 20:23	07:24 19:44	07:52 17:58	07:18 17:24	07:38 17:12	07:36 17:24	07:08 17:49	17:12-17:28/16 17:49	06:24 18:15	06:38 19:42	06:04 20:14	05:57 20:43
17	06:22 20:48	06:56 20:22	07:25 19:42	07:53 17:57	07:19 17:23	07:39 17:12	07:36 17:25	07:07 17:50	17:13-17:29/16 17:50	06:22 18:16	06:37 19:43	06:03 20:15	05:57 20:43
18	06:23 20:47	06:57 20:20	07:25 19:41	07:54 17:55	07:20 17:22	07:39 17:12	07:35 17:26	07:06 17:51	17:14-17:28/14 17:51	06:21 18:17	06:36 19:44	06:03 20:16	05:58 20:44
19	06:24 20:47	06:58 20:19	07:26 19:39	07:54 17:54	07:21 17:22	07:39 17:12	07:35 17:26	07:04 17:52	17:15-17:26/11 17:52	06:19 18:17	06:34 19:45	06:02 20:17	05:58 20:44
20	06:25 20:47	06:59 20:18	07:27 19:38	07:55 17:53	07:22 17:21	07:40 17:12	07:34 17:27	07:03 17:52	17:19-17:23/4 17:52	06:18 18:18	06:33 19:46	06:01 20:18	05:59 20:45
21	06:26 20:46	07:01 20:17	07:28 19:36	07:56 17:51	07:22 17:20	07:40 17:13	07:34 17:28	07:02 17:53	07:02 17:53	06:16 18:19	06:32 19:47	06:01 20:20	05:59 20:46
22	06:27 20:46	07:02 20:15	07:29 19:35	07:57 17:50	07:23 17:19	07:40 17:13	07:33 17:29	07:01 17:54	07:01 17:54	06:14 18:20	06:30 19:48	06:00 20:21	06:00 20:46
23	06:28 20:45	07:03 20:14	07:30 19:33	07:58 17:49	07:24 17:19	07:40 17:13	07:32 17:29	06:59 17:55	06:59 17:55	06:13 18:21	06:29 19:49	06:00 20:22	06:00 20:47
24	06:29 20:44	07:04 20:13	07:31 19:32	07:59 17:47	07:25 17:18	07:40 17:13	07:31 17:30	06:58 17:56	06:58 17:56	06:11 18:22	06:28 19:50	05:59 20:23	06:01 20:47
25	06:30 20:44	07:05 20:11	07:32 19:30	08:00 17:46	07:26 17:18	07:41 17:13	07:31 17:31	06:56 17:57	06:56 17:57	06:10 18:23	06:26 19:51	05:59 20:24	06:01 20:47
26	06:31 20:43	07:06 20:10	07:33 19:29	08:01 17:45	07:26 17:17	07:41 17:14	07:30 17:32	06:55 17:57	06:55 17:57	06:08 18:23	06:25 19:52	05:58 20:25	06:02 20:48
27	06:33 20:42	07:07 20:09	07:34 19:27	08:02 17:44	07:27 17:17	07:41 17:14	07:29 17:32	06:54 17:58	06:54 17:58	06:07 18:24	06:24 19:53	05:58 20:26	06:02 20:48
28	06:34 20:42	07:08 20:07	07:35 19:26	08:03 17:42	07:28 17:16	07:41 17:14	07:28 17:33	06:52 17:59	06:52 17:59	06:05 18:25	06:23 19:54	05:57 20:27	06:03 20:49
29	06:35 20:41	07:09 19:59	07:36 19:24	08:04 17:41	07:29 17:16	07:41 17:15	07:28 17:34	06:51 18:00	06:51 18:00	06:04 18:26	06:22 19:55	05:57 20:28	06:04 20:49
30	06:36 20:40	07:10 19:53	07:37 19:23	08:05 17:40	07:30 17:15	07:41 17:15	07:27 17:35	06:49 18:01	06:49 18:01	06:02 18:27	06:20 19:56	05:57 20:29	06:05 20:49
31	06:37 20:39	07:11 19:51	07:38 19:21	08:06 17:39	07:31 17:15	07:41 17:15	07:26 17:36	06:48 18:02	06:48 18:02	06:01 18:27	06:19 19:57	05:57 20:29	06:05 20:49
Potential sun hours	447	378	383	334	314	288	305	331	355	405	424	456	
Sum of minutes with flicker	0	0	0	105	54	0	0	161	0	0	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:

Elaine Wind Farm adjusted Sep 2014

Description:

Elaine section of the Lal Lal Wind Farm

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12/02/2015 1:30 PM / 13

Licensed user:

**West Wind Energy Pty Ltd**  
Office 5, Level 1, Nexus Centre 12-14 Prince Street  
AU-GISBORNE Victoria 3437  
+61 3 5421 9999

Adam Gray / gray@w-wind.com.au

Calculated:

12/02/2015 1:30 PM/2.9.285

### SHADOW - Calendar per WTG

WTG: 6 - REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (55)

#### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December		
1	06:06 20:50	06:38 20:38	07:09 20:06	07:38 19:20	07:05 17:39	07:31 17:14	16:22-16:40/18	07:41 17:16	16:25-16:50/25	07:25 17:37	06:46 18:02	06:01 18:28	06:18 19:58	05:57 20:30
2	06:07 20:50	06:39 20:38	07:10 20:04	07:39 19:18	07:06 17:38	07:31 17:14	16:22-16:41/19	07:41 17:16	16:26-16:50/24	07:24 17:37	06:45 18:03	06:59 18:29	06:17 19:59	05:56 20:31
3	06:08 20:50	06:41 20:37	07:11 20:03	07:40 19:17	07:07 17:37	07:32 17:14	16:22-16:42/20	07:41 17:17	16:26-16:50/24	07:23 17:38	06:44 18:04	06:57 18:30	06:16 20:00	05:56 20:32
4	06:09 20:50	06:42 20:36	07:12 20:02	07:41 19:15	07:08 17:35	07:32 17:13	16:22-16:43/21	07:40 17:17	16:26-16:49/23	07:22 17:39	06:42 18:05	06:56 19:30	06:15 20:01	05:56 20:33
5	06:10 20:50	06:43 20:35	07:13 20:00	07:42 18:14	07:09 17:34	07:33 17:13	16:21-16:43/22	07:40 17:18	16:26-16:49/23	07:21 17:40	06:41 18:06	06:54 19:31	06:14 20:02	05:56 20:34
6	06:11 20:50	06:44 20:34	07:14 19:59	07:43 18:12	07:10 17:33	07:34 17:13	16:21-16:44/23	07:40 17:18	16:27-16:49/22	07:20 17:41	06:39 18:07	06:53 19:32	06:13 20:03	05:56 20:35
7	06:11 20:50	06:45 20:33	07:15 19:57	07:44 18:11	07:11 17:32	07:34 17:13	16:21-16:43/22	07:40 17:19	16:28-16:50/22	07:19 17:41	06:38 18:07	06:51 19:33	06:12 20:04	05:56 20:35
8	06:12 20:50	06:46 20:32	07:16 19:56	07:45 18:09	07:11 17:31	07:35 17:12	16:21-16:44/23	07:40 17:19	16:29-16:50/21	07:18 17:42	06:36 18:08	06:50 19:34	06:11 20:05	05:56 20:36
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11	06:15 20:50	06:50 20:29	07:19 19:51	07:47 18:05	07:14 17:28	07:36 17:12	16:20-16:45/25	07:39 17:21	16:31-16:49/18	07:14 17:45	06:31 18:11	06:46 19:37	06:08 20:09	05:56 20:39
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17	06:22 20:48	06:56 20:22	07:24 19:42	07:53 17:57	07:19 17:23	07:39 17:12	16:22-16:47/25	07:36 17:25		07:07 17:50	06:22 18:16	06:37 19:43	06:03 20:15	05:57 20:43
18	06:23 20:47	06:57 20:20	07:25 19:41	07:54 17:55	07:20 17:22	07:39 17:12	16:22-16:47/25	07:35 17:26		07:06 17:51	06:21 18:17	06:36 19:44	06:03 20:16	05:58 20:44
19	06:24 20:47	06:58 20:19	07:26 19:39	07:54 17:54	07:21 17:22	07:39 17:12	16:22-16:48/26	07:35 17:26		07:04 17:52	06:19 18:17	06:34 19:45	06:02 20:17	05:58 20:44
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24	06:29 20:44	07:04 20:13	07:31 19:32	07:59 17:47	07:25 17:18	07:40 17:13	16:24-16:49/25	07:31 17:30		06:58 17:56	06:11 18:22	06:28 19:50	05:59 20:23	06:01 20:47
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31	06:37 20:39		07:37 19:21	08:05 17:40	07:30 17:15		16:24-16:39/15	07:26 17:36		06:48 18:02	06:19 19:57	06:19 20:29	06:05 20:49	
Potential sun hours	447	378	383	334	314	288	721	302	331	355	405	424	456	0
Sum of minutes with flicker	0	0	0	0	52	288	721	302	331	355	405	424	456	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:

Elaine Wind Farm adjusted Sep 2014

Description:

Elaine section of the Lal Lal Wind Farm

Printed/Page

12/02/2015 1:30 PM / 14

Licensed user:

West Wind Energy Pty Ltd  
Office 5, Level 1, Nexus Centre 12-14 Prince Street  
AU-GISBORNE Victoria 3437  
+61 3 5421 9999

Adam Gray / gray@w-wind.com.au

Calculated:

12/02/2015 1:30 PM/2.9.285

### SHADOW - Calendar per WTG

WTG: 7 - REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (56)

#### Assumptions for shadow calculations

- The calculated times are "worst case" given by the following assumptions:
- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	06:06 20:50	06:38 20:38	07:09 20:06	07:38 19:20	07:05 17:39	07:31 17:14	07:41 17:16	07:25 17:36	06:46 18:02	06:00 18:28	06:18 19:58	05:57 20:30
2	06:07 20:50	06:39 20:37	07:10 20:04	07:39 19:18	07:06 17:38	07:31 17:14	07:41 17:16	07:24 17:37	06:45 18:03	05:59 18:29	06:17 19:59	05:56 20:31
3	06:08 20:50	06:41 20:37	07:11 20:03	07:40 19:17	07:07 17:36	07:32 17:13	07:40 17:17	07:23 17:38	06:43 18:04	05:57 18:30	06:16 20:00	05:56 20:32
4	06:09 20:50	06:42 20:36	07:12 20:02	07:41 19:15	07:08 17:35	07:32 17:13	07:40 17:17	07:22 17:39	06:42 18:05	06:56 19:30	06:15 20:01	05:56 20:33
5	06:10 20:50	06:43 20:35	07:13 20:00	06:42 18:14	07:09 17:34	07:33 17:13	07:40 17:18	07:21 17:40	06:40 18:06	06:54 19:31	06:14 20:02	05:56 20:34
6	06:11 20:50	06:44 20:34	07:14 19:59	06:43 18:12	07:10 17:33	07:34 17:13	07:40 17:18	07:20 17:41	06:39 18:07	06:53 19:32	06:13 20:03	05:56 20:34
7	06:11 20:50	06:45 20:33	07:15 19:57	06:44 18:11	07:11 17:32	07:34 17:12	07:40 17:19	07:19 17:41	06:37 18:07	06:51 19:33	06:12 20:04	05:56 20:35
8	06:12 20:50	06:46 20:32	07:16 19:56	06:44 18:09	07:11 17:31	07:35 17:12	07:39 17:19	07:18 17:42	06:36 18:08	06:50 19:34	06:11 20:05	05:56 20:36
9	06:13 20:50	06:47 20:31	07:17 19:54	06:45 18:08	07:12 17:30	07:35 17:12	07:39 17:20	07:17 17:43	06:34 18:09	06:48 19:35	06:10 20:06	05:56 20:37
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11	06:15 20:50	06:50 20:29	07:19 19:51	06:47 18:05	07:14 17:28	07:36 17:12	07:39 17:21	07:14 17:45	06:31 18:11	06:45 19:37	06:08 20:09	05:56 20:39
12	06:16 20:49	06:51 20:27	07:20 19:50	06:48 18:03	07:15 17:27	07:37 17:12	07:38 17:22	07:13 17:46	06:30 18:12	06:44 19:38	06:07 20:10	05:56 20:40
13	06:17 20:49	06:52 20:26	19:49-19:52/3 07:21	06:49 18:02	07:16 17:26	07:37 17:12	07:38 17:22	07:12 17:46	06:28 18:12	06:43 19:39	06:06 20:11	05:56 20:40
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16	06:20 20:48	06:55 20:23	19:43-19:58/15 07:23	06:52 17:58	07:18 17:24	07:38 17:12	07:36 17:24	07:08 17:49	06:24 18:15	06:38 19:42	06:04 20:14	05:57 20:42
17	06:21 20:48	06:56 20:22	19:42-19:59/17 07:24	06:53 17:57	07:19 17:23	07:39 17:12	07:36 17:25	07:07 17:50	06:22 18:16	06:37 19:43	19:16-19:21/5 06:03	05:57 20:43
18	06:23 20:47	06:57 20:20	19:41-19:58/17 07:25	06:53 17:55	07:20 17:22	07:39 17:12	07:35 17:26	07:06 17:51	06:21 18:17	06:36 19:43	19:15-19:23/8 06:02	05:58 20:44
19	06:24 20:47	06:58 20:19	19:42-19:57/15 07:26	06:54 17:54	07:21 17:22	07:39 17:12	07:35 17:26	07:04 17:51	06:19 18:17	06:34 19:44	19:13-19:23/10 06:02	05:58 20:44
20	06:25 20:46	06:59 20:18	19:42-19:56/14 07:27	06:55 17:52	07:22 17:21	07:40 17:12	07:34 17:27	07:03 17:52	06:17 18:18	06:33 19:45	19:12-19:24/12 06:01	05:59 20:45
21	06:26 20:46	07:00 20:17	19:42-19:55/13 07:28	06:56 17:51	07:22 17:20	07:40 17:12	07:33 17:28	07:02 17:53	06:16 18:19	06:31 19:46	19:12-19:26/14 06:01	05:59 20:45
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24	06:29 20:44	07:04 20:13	19:44-19:51/7 07:31	06:59 17:47	07:25 17:18	07:40 17:13	07:31 17:30	06:58 17:56	06:11 18:22	06:28 19:49	19:12-19:28/16 05:59	06:01 20:47
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26	06:31 20:43	07:06 20:10	07:33 19:29	07:01 17:45	07:26 17:17	07:41 17:14	07:30 17:32	06:55 17:57	06:08 18:23	06:25 19:52	19:13-19:28/15 05:58	06:02 20:48
27	06:33 20:42	07:07 20:09	07:34 19:27	07:02 17:43	07:27 17:16	07:41 17:14	07:29 17:32	06:54 17:58	06:07 18:24	06:24 19:53	19:15-19:27/12 05:58	06:02 20:48
28	06:34 20:42	07:08 20:07	07:35 19:26	07:02 17:42	07:28 17:16	07:41 17:14	07:28 17:33	06:52 17:59	06:05 18:25	06:23 19:54	19:15-19:24/9 05:57	06:03 20:48
29	06:35 20:41	07:09	07:36 19:24	07:03 17:41	07:28 17:15	07:41 17:15	07:27 17:34	06:51 18:00	06:04 18:26	06:21 19:55	05:57 20:28	06:04 20:49
30	06:36 20:40	07:10	07:36 19:23	07:04 17:40	07:29 17:15	07:41 17:15	07:27 17:35	06:49 18:01	06:02 18:27	06:20 19:56	05:57 20:29	06:04 20:49
31	06:37 20:39	07:11	07:37 19:21	07:05	07:30	07:42	07:26 17:36	06:48 18:02	06:03 19:57	06:19	06:05 20:49	06:05 20:49
Potential sun hours	447	378	383	334	314	288	305	331	355	405	424	456
Sum of minutes with flicker	0	149	0	0	0	0	0	0	0	149	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:

Elaine Wind Farm adjusted Sep 2014

Description:

Elaine section of the Lal Lal Wind Farm

Printed/Page

12/02/2015 1:30 PM / 15

Licensed user:

West Wind Energy Pty Ltd

Office 5, Level 1, Nexus Centre 12-14 Prince Street

AU-GISBORNE Victoria 3437

+61 3 5421 9999

Adam Gray / gray@w-wind.com.au

Calculated:

12/02/2015 1:30 PM/2.9.285

## SHADOW - Calendar per WTG

WTG: 8 - REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (57)

## Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December		
1	06:06 20:50	06:38 20:38	07:09 20:06	19:15-19:35/20 19:20	07:38 17:39	07:05 17:14	07:30 17:16	07:41 17:36	07:25 18:02	06:46 18:28	06:00 17:54-18:07/13 18:28	06:18 19:58	05:57 20:30	
2	06:07 20:50	06:39 20:37	07:10 20:04	19:13-19:36/23 20:04	07:39 19:18	07:06 17:38	07:31 17:14	07:41 17:16	07:24 17:37	06:45 18:03	05:59 18:29	17:52-18:08/16 19:59	06:17 20:31	
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10	06:14 20:50	06:48 20:30	07:18 19:53	19:12-19:32/20 19:53	07:46 18:06	07:13 17:29	07:36 17:12	07:39 17:20	07:15 17:44	06:33 18:10	06:47 19:36	18:47-19:11/24 20:07	06:09 20:38	
11	06:15 20:49	06:50 20:29	07:19 19:51	19:13-19:30/17 19:51	07:47 18:05	07:14 17:28	07:36 17:12	07:38 17:21	07:14 17:45	06:31 18:11	06:45 19:37	18:46-19:10/24 20:09	06:08 20:39	
12	06:16 20:49	06:51 20:27	07:20 19:50	19:14-19:29/15 19:50	07:48 18:03	07:15 17:27	07:37 17:12	07:38 17:22	07:13 17:46	06:30 18:12	06:44 19:38	18:47-19:09/22 20:10	06:07 20:40	
13	06:17 20:49	06:52 20:26	07:21 19:48	19:17-19:27/10 19:48	07:49 18:02	07:16 17:26	07:37 17:12	07:38 17:22	07:12 17:46	06:28 18:12	06:43 19:39	18:49-19:08/19 20:11	06:06 20:40	
14	06:18 20:49	06:53 20:25	07:22 19:47	19:17-19:31/09 19:47	07:50 18:01	07:17 17:26	07:38 17:12	07:37 17:23	07:11 17:47	06:27 18:13	06:41 19:40	18:49-19:06/17 20:12	06:05 20:41	
15	06:19 20:48	06:54 20:24	07:23 19:45	19:17-19:28/08 19:45	07:51 17:59	07:17 17:25	07:38 17:12	07:37 17:24	07:09 17:48	06:25 18:14	06:40 19:41	18:51-19:04/13 20:13	06:05 20:42	
16	06:20 20:48	06:55 20:23	07:23 19:44	19:17-19:26/07 19:44	07:52 17:58	07:18 17:24	07:38 17:12	07:36 17:24	07:08 17:49	06:24 18:15	06:38 19:42	18:54-19:00/6 20:14	06:04 20:42	
17	06:21 20:48	06:56 20:22	07:24 19:42	19:17-19:23/06 19:42	07:53 17:56	07:19 17:23	07:39 17:12	07:36 17:25	07:07 17:50	06:22 18:16	06:37 19:43	19:04-19:04/04 20:15	06:03 20:43	
18	06:23 20:47	06:57 20:20	07:25 19:41	19:17-19:20/05 19:41	07:54 17:55	07:20 17:22	07:39 17:12	07:35 17:26	07:06 17:51	06:21 18:17	06:36 19:43	19:04-19:04/04 20:16	06:02 20:44	
19	06:24 20:47	06:58 20:19	07:26 19:39	19:17-19:19/04 19:39	07:54 17:54	07:21 17:21	07:39 17:12	07:35 17:26	07:04 17:51	06:19 18:17	06:34 19:44	19:04-19:04/04 20:17	06:02 20:44	
20	06:25 20:46	06:59 20:18	07:27 19:38	19:17-19:17/03 19:38	07:55 17:52	07:22 17:21	07:39 17:12	07:34 17:27	07:03 17:52	06:17 18:18	06:33 19:45	19:04-19:04/04 20:18	06:01 20:45	
21	06:26 20:46	07:00 20:17	07:28 19:36	19:17-19:17/02 19:36	07:56 17:51	07:22 17:20	07:40 17:12	07:33 17:28	07:02 17:53	06:16 18:19	06:31 19:46	19:04-19:04/04 20:19	06:01 20:45	
22	06:27 20:45	07:02 20:15	07:29 19:35	19:17-19:17/01 19:35	07:57 17:50	07:23 17:19	07:40 17:13	07:33 17:29	07:00 17:54	06:14 18:20	06:30 19:47	19:04-19:04/04 20:20	06:00 20:46	
23	06:28 20:45	07:03 20:14	07:30 19:33	19:17-19:17/00 19:33	07:58 17:49	07:24 17:19	07:40 17:13	07:32 17:29	06:59 17:55	06:13 18:21	06:29 19:48	19:04-19:04/04 20:21	06:00 20:46	
24	06:29 20:44	07:04 20:13	07:31 19:32	19:17-19:17/00 19:32	07:59 17:47	07:25 17:18	07:40 17:13	07:31 17:30	06:58 17:56	06:11 18:22	06:28 19:49	19:04-19:04/04 20:22	06:01 20:47	
25	06:30 20:44	07:05 20:11	07:32 19:30	19:17-19:17/00 19:30	08:00 17:46	07:25 17:18	07:40 17:13	07:31 17:31	06:56 17:56	06:10 18:22	06:26 19:50	19:04-19:04/04 20:23	06:01 20:47	
26	06:31 20:43	07:06 20:10	07:33 19:29	19:17-19:17/00 19:29	08:01 17:45	07:26 17:17	07:40 17:14	07:30 17:32	06:55 17:57	06:08 18:23	06:25 19:52	19:04-19:04/04 20:24	06:02 20:48	
27	06:33 20:42	07:07 20:09	07:34 19:27	19:17-19:17/00 19:27	08:02 17:43	07:27 17:16	07:41 17:14	07:29 17:32	06:54 17:58	06:07 18:24	06:24 19:53	19:04-19:04/04 20:25	06:02 20:48	
28	06:34 20:41	07:08 20:07	07:35 19:26	19:17-19:17/00 19:26	08:03 17:42	07:28 17:16	07:41 17:14	07:28 17:33	06:52 17:59	06:05 18:25	06:23 19:54	19:04-19:04/04 20:26	06:03 20:48	
29	06:35 20:41		07:35 19:24	19:17-19:17/00 19:24	08:03 17:41	07:28 17:15	07:41 17:15	07:27 17:34	06:51 18:00	06:03 18:26	06:21 19:55	19:04-19:04/04 20:27	06:04 20:49	
30	06:36 20:40		07:36 19:23	19:17-19:17/00 19:23	08:04 17:40	07:29 17:15	07:41 17:15	07:27 17:35	06:49 18:01	06:02 18:27	06:20 19:56	17:57-18:06/9 20:29	06:04 20:49	
31	06:37 20:39		07:37 19:21	19:17-19:17/00 19:21	08:04 17:40	07:30 17:15	07:41 17:15	07:26 17:36	06:48 18:02	06:03 18:28	06:19 19:57		06:05 20:49	
Potential sun hours	447	378	383	376	334	314	288	305	331	355	405	315	424	456
Sum of minutes with flicker	0	42	276	0	0	0	0	0	0	9	315	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
--------------	------------------	-----------------	---

Project:

Elaine Wind Farm adjusted Sep 2014

Description:

Elaine section of the Lal Lal Wind Farm

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12/02/2015 1:30 PM / 16

Licensed user:

West Wind Energy Pty Ltd
Office 5, Level 1, Nexus Centre 12-14 Prince Street
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Adam Gray / gray@w-wind.com.au

Calculated:

12/02/2015 1:30 PM/2.9.285

SHADOW - Calendar per WTG

WTG: 9 - REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (59)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

Table with 12 columns (January to December) and multiple rows of shadow calculation data including sun rise/set times and potential sun hours.

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:

Elaine Wind Farm adjusted Sep 2014

Description:

Elaine section of the Lal Lal Wind Farm

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Licensed user:

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Calculated:

12/02/2015 1:30 PM/2.9.285

**SHADOW - Calendar per WTG**

WTG: 10 - REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (60)

**Assumptions for shadow calculations**

The calculated times are "worst case" given by the following assumptions:  
The sun is shining all the day, from sunrise to sunset  
The rotor plane is always perpendicular to the line from the WTG to the sun  
The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	06:06	06:38	07:09	07:38	07:05	07:31	07:41	07:25	06:47	06:01	06:18	05:57
	20:50	20:38	20:06	19:20	17:39	17:14	17:16	17:37	18:02	18:28	19:58	20:30
2	06:07	06:39	07:10	07:39	07:06	07:31	07:41	07:24	06:45	05:59	06:17	05:56
	20:50	20:38	20:05	19:18	17:38	17:14	17:16	17:37	18:03	18:29	19:59	20:31
3	06:08	06:41	07:11	07:40	07:07	07:32	07:41	07:23	06:44	05:57	06:16	05:56
	20:50	20:37	20:03	19:17	17:37	17:14	17:17	17:38	18:04	18:30	20:00	20:32
4	06:09	06:42	07:12	07:41	07:08	07:33	07:40	07:22	06:42	06:56	06:15	05:56
	20:50	20:36	20:02	19:15	17:35	17:13	17:17	17:39	18:05	19:31	20:01	20:33
5	06:10	06:43	07:13	06:42	07:09	07:33	07:40	07:21	06:41	06:54	06:14	05:56
	20:50	20:35	20:00	18:14	17:34	17:13	17:18	17:40	18:06	19:31	20:02	20:34
6	06:11	06:44	07:14	06:43	07:10	07:34	07:40	07:20	06:39	06:53	06:13	05:56
	20:50	20:34	19:59	18:12	17:33	17:13	17:18	17:41	18:07	19:32	20:03	20:35
7	06:11	06:45	07:15	06:44	07:11	07:34	07:40	07:19	06:38	06:51	06:12	05:56
	20:50	20:33	19:57	18:11	17:32	17:13	17:19	17:41	18:07	19:33	20:04	20:36
8	06:12	06:46	07:16	06:45	07:12	07:35	07:40	07:18	06:36	06:50	06:11	05:56
	20:50	20:32	19:56	18:09	17:31	17:12	17:19	17:42	18:08	19:34	20:05	20:36
9	06:13	06:47	07:17	06:46	07:12	07:35	07:39	07:17	06:35	06:48	06:10	05:56
	20:50	20:31	19:54	18:08	17:30	17:12	17:20	17:43	18:09	19:35	20:07	20:37
10	06:14	06:49	07:18	06:46	07:13	07:36	07:39	07:16	06:33	06:47	06:09	05:56
	20:50	20:30	19:53	18:06	17:29	17:12	17:20	17:44	18:10	19:36	20:08	20:38
11	06:15	06:50	07:19	06:47	07:14	07:36	07:39	07:14	06:32	06:46	06:08	05:56
	20:50	20:29	19:51	18:05	17:28	17:12	17:21	17:45	18:11	19:37	20:09	20:39
12	06:16	06:51	07:20	06:48	07:15	07:37	07:38	07:13	06:30	06:44	06:07	05:56
	20:49	20:28	19:50	18:04	17:27	17:12	17:22	17:46	18:12	19:38	20:10	20:40
13	06:17	06:52	07:21	06:49	07:16	07:37	07:38	07:12	06:28	06:43	06:06	05:56
	20:49	20:26	19:48	18:02	17:26	17:12	17:22	17:47	18:12	19:39	20:11	20:40
14	06:18	06:53	07:22	06:50	07:17	07:38	07:37	07:11	06:27	06:41	06:05	05:57
	20:49	20:25	19:47	18:01	17:26	17:12	17:23	17:47	18:13	19:40	20:12	20:41
15	06:19	06:54	07:23	06:51	07:18	07:38	07:37	07:10	06:25	06:40	06:05	05:57
	20:49	20:24	19:45	17:59	17:25	17:12	17:24	17:48	18:14	19:41	20:13	20:42
16	06:20	06:55	07:24	06:52	07:18	07:38	07:36	07:08	06:24	06:38	06:04	05:57
	20:48	20:23	19:44	17:58	17:24	17:12	17:24	17:49	18:15	19:42	20:14	20:43
17	06:22	06:56	07:25	06:53	07:19	07:39	07:36	07:07	06:22	06:37	06:03	05:57
	20:48	20:22	19:42	17:57	17:23	17:12	17:25	17:50	18:16	19:43	20:15	20:43
18	06:23	06:57	07:25	06:54	07:20	07:39	07:35	07:06	06:21	06:36	06:03	05:58
	20:48	20:20	19:41	17:55	17:22	17:12	17:26	17:51	18:17	19:44	20:16	20:44
19	06:24	06:58	07:26	06:55	07:21	07:39	07:35	07:05	06:19	06:34	06:02	05:58
	20:47	20:19	19:39	17:54	17:22	17:12	17:26	17:52	18:17	19:45	20:17	20:45
20	06:25	06:59	07:27	06:55	07:22	07:40	07:34	07:03	06:18	06:33	06:01	05:59
	20:47	20:18	19:38	17:53	17:21	17:12	17:27	17:52	18:18	19:46	20:19	20:45
21	06:26	07:01	07:28	06:56	07:23	07:40	07:34	07:02	06:16	06:32	06:01	05:59
	20:46	20:17	19:36	17:51	17:20	17:12	17:28	17:53	18:19	19:47	20:20	20:46
22	06:27	07:02	07:29	06:57	07:23	07:40	07:33	07:01	06:14	06:30	06:00	06:00
	20:46	20:15	19:35	17:50	17:19	17:13	17:29	17:54	18:20	19:48	20:21	20:46
23	06:28	07:03	07:30	06:58	07:24	07:40	07:32	06:59	06:13	06:29	06:00	06:00
	20:45	20:14	19:33	17:49	17:19	17:13	17:29	17:55	18:21	19:49	20:22	20:47
24	06:29	07:04	07:31	06:59	07:25	07:40	07:32	06:58	06:11	06:28	05:59	06:01
	20:44	20:13	19:32	17:47	17:18	17:13	17:30	17:56	18:22	19:50	20:23	20:47
25	06:30	07:05	07:32	07:00	07:26	07:41	07:31	06:56	06:10	06:26	05:59	06:01
	20:44	20:11	19:30	17:46	17:18	17:13	17:31	17:57	18:23	19:51	20:24	20:48
26	06:31	07:06	07:33	07:01	07:26	07:41	07:30	06:55	06:08	06:25	05:58	06:02
	20:43	20:10	19:29	17:45	17:17	17:14	17:32	17:57	18:23	19:52	20:25	20:48
27	06:33	07:07	07:34	07:02	07:27	07:41	07:29	06:54	06:07	06:24	05:58	06:02
	20:42	20:09	19:27	17:44	17:16	17:14	17:32	17:58	18:24	19:53	20:26	20:48
28	06:34	07:08	07:35	07:03	07:28	07:41	07:28	06:52	06:05	06:23	05:57	06:03
	20:42	20:07	19:26	17:42	17:16	17:14	17:33	17:59	18:25	19:54	20:27	20:49
29	06:35		07:36	07:04	07:29	07:41	07:28	06:51	06:04	06:21	05:57	06:04
	20:41		19:24	17:41	17:15	17:15	17:34	18:00	18:26	19:55	20:28	20:49
30	06:36		07:36	07:04	07:29	07:41	07:27	06:49	06:02	06:20	05:57	06:05
	20:40		19:23	17:40	17:15	17:15	17:35	18:01	18:27	19:56	20:29	20:49
31	06:37		07:37		07:30		07:26	06:48		06:19		06:05
	20:39		19:21		17:15		17:36	18:02		19:57		20:49
Potential sun hours	447	378	383	334	313	288	305	331	355	405	424	456
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	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:

Elaine Wind Farm adjusted Sep 2014

Description:

Elaine section of the Lal Lal Wind Farm

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12/02/2015 1:30 PM / 18

Licensed user:

West Wind Energy Pty Ltd
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Calculated:

12/02/2015 1:30 PM/2.9.285

SHADOW - Calendar per WTG

WTG: 11 - REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (61)

Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

Table with 12 columns (January to December) and 31 rows (1 to 31) showing shadow calculation data. Includes 'Potential sun hours' and 'Sum of minutes with flicker' at the bottom.

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

Matrix with 2 rows and 3 columns: 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.



Project:

Elaine Wind Farm adjusted Sep 2014

Description:

Elaine section of the Lal Lal Wind Farm

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Licensed user:

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Calculated:

12/02/2015 1:30 PM/2.9.285

## SHADOW - Calendar per WTG

WTG: 12 - REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (62)

### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	06:06	06:38	20:04-20:15/11	07:09	07:38	07:05	07:31	07:41	07:25	06:46	06:01	06:18
	20:50	20:38		20:06	19:20	17:39	17:14	17:16	17:36	18:02	18:28	19:58
2	06:07	06:39	20:05-20:14/9	07:10	07:39	07:06	07:31	07:41	07:24	06:45	06:59	06:17
	20:50	20:38		20:04	19:18	17:38	17:14	17:16	17:37	18:03	18:29	19:59
3	06:08	06:41	20:07-20:14/7	07:11	07:40	07:07	07:32	07:41	07:23	06:44	06:57	06:16
	20:50	20:37		20:03	19:17	17:37	17:14	17:17	17:38	18:04	18:30	20:00
4	06:09	06:42	20:09-20:13/4	07:12	07:41	07:08	07:33	07:40	07:22	06:42	06:56	06:15
	20:50	20:36		20:02	19:15	17:35	17:13	17:17	17:39	18:05	19:30	20:01
5	06:10	20:04-20:06/2	06:43	07:13	06:42	07:09	07:33	07:40	07:21	06:41	06:54	06:14
	20:50		20:35	20:00	18:14	17:34	17:13	17:18	17:40	18:06	19:31	20:02
6	06:11	20:02-20:09/7	06:44	07:14	06:43	07:10	07:34	07:40	07:20	06:39	06:53	06:13
	20:50		20:34	19:59	18:12	17:33	17:13	17:18	17:41	18:07	19:32	20:03
7	06:11	20:01-20:11/10	06:45	07:15	06:44	07:11	07:34	07:40	07:19	06:38	06:51	06:12
	20:50		20:33	19:57	18:11	17:32	17:12	17:19	17:41	18:07	19:33	20:04
8	06:12	20:00-20:13/13	06:46	07:16	06:45	07:12	07:35	07:40	07:18	06:36	06:50	06:11
	20:50		20:32	19:56	18:09	17:31	17:12	17:19	17:42	18:08	19:34	20:05
9	06:13	20:00-20:14/14	06:47	07:17	06:45	07:12	07:35	07:39	07:17	06:35	06:48	06:10
	20:50		20:31	19:54	18:08	17:30	17:12	17:20	17:43	18:09	19:35	20:07
10	06:14	19:58-20:15/17	06:48	07:18	06:46	07:13	07:36	07:39	07:15	06:33	06:47	06:09
	20:50		20:30	19:53	18:06	17:29	17:12	17:20	17:44	18:10	19:36	20:08
11	06:15	19:58-20:16/18	06:50	07:19	06:47	07:14	07:36	07:39	07:14	06:31	06:46	06:08
	20:50		20:29	19:51	18:05	17:28	17:12	17:21	17:45	18:11	19:37	20:09
12	06:16	19:58-20:17/19	06:51	07:20	06:48	07:15	07:37	07:38	07:13	06:30	06:44	06:07
	20:49		20:28	19:50	18:04	17:27	17:12	17:22	17:46	18:12	19:38	20:10
13	06:17	19:57-20:18/21	06:52	07:21	06:49	07:16	07:37	07:38	07:12	06:28	06:43	06:06
	20:49		20:26	19:48	18:02	17:26	17:12	17:22	17:46	18:12	19:39	20:11
14	06:18	19:57-20:19/22	06:53	07:22	06:50	07:17	07:38	07:37	07:11	06:27	06:41	06:05
	20:49		20:25	19:47	18:01	17:26	17:12	17:23	17:47	18:13	19:40	20:12
15	06:19	19:57-20:20/23	06:54	07:23	06:51	07:18	07:38	07:37	07:10	06:25	06:40	06:05
	20:49		20:24	19:45	17:59	17:25	17:12	17:24	17:48	18:14	19:41	20:13
16	06:20	19:57-20:21/24	06:55	07:24	06:52	07:18	07:38	07:36	07:08	06:24	06:38	06:04
	20:48		20:23	19:44	17:58	17:24	17:12	17:24	17:49	18:15	19:42	20:14
17	06:21	19:57-20:22/25	06:56	07:24	06:53	07:19	07:39	07:36	07:07	06:22	06:37	06:03
	20:48		20:22	19:42	17:57	17:23	17:12	17:25	17:50	18:16	19:43	20:15
18	06:23	19:57-20:22/25	06:57	07:25	06:54	07:20	07:39	07:35	07:06	06:21	06:36	06:03
	20:47		20:20	19:41	17:55	17:22	17:12	17:26	17:51	18:17	19:44	20:16
19	06:24	19:56-20:23/27	06:58	07:26	06:54	07:21	07:39	07:35	07:04	06:19	06:34	06:02
	20:47		20:19	19:39	17:54	17:22	17:12	17:26	17:52	18:17	19:45	20:17
20	06:25	19:57-20:23/26	06:59	07:27	06:55	07:22	07:40	07:34	07:03	06:18	06:33	06:01
	20:47		20:18	19:38	17:53	17:21	17:12	17:27	17:52	18:18	19:46	20:18
21	06:26	19:57-20:22/25	07:01	07:28	06:56	07:22	07:40	07:34	07:02	06:16	06:32	06:01
	20:46		20:17	19:36	17:51	17:20	17:12	17:28	17:53	18:19	19:47	20:20
22	06:27	19:58-20:22/24	07:02	07:29	06:57	07:23	07:40	07:33	07:01	06:14	06:30	06:00
	20:46		20:15	19:35	17:50	17:19	17:13	17:29	17:54	18:20	19:48	20:21
23	06:28	19:58-20:21/23	07:03	07:30	06:58	07:24	07:40	07:32	06:59	06:13	06:29	06:00
	20:45		20:14	19:33	17:49	17:19	17:13	17:29	17:55	18:21	19:49	20:22
24	06:29	19:58-20:21/23	07:04	07:31	06:59	07:25	07:40	07:31	06:58	06:11	06:28	06:00
	20:44		20:13	19:32	17:47	17:18	17:13	17:30	17:56	18:22	19:50	20:23
25	06:30	19:58-20:20/22	07:05	07:32	07:00	07:26	07:41	07:31	06:56	06:10	06:26	06:00
	20:44		20:11	19:30	17:46	17:18	17:13	17:31	17:57	18:23	19:51	20:24
26	06:31	19:58-20:19/21	07:06	07:33	07:01	07:26	07:41	07:30	06:55	06:08	06:25	06:00
	20:43		20:10	19:29	17:45	17:17	17:14	17:32	17:57	18:23	19:52	20:25
27	06:33	19:59-20:19/20	07:07	07:34	07:02	07:27	07:41	07:29	06:54	06:07	06:24	06:00
	20:42		20:09	19:27	17:44	17:16	17:14	17:32	17:58	18:24	19:53	20:26
28	06:34	19:59-20:18/19	07:08	07:35	07:03	07:28	07:41	07:28	06:52	06:05	06:23	06:00
	20:42		20:07	19:26	17:42	17:16	17:14	17:33	17:59	18:25	19:54	20:27
29	06:35	20:00-20:17/17		07:36	07:03	07:29	07:41	07:28	06:51	06:04	06:21	06:00
	20:41			19:24	17:41	17:15	17:15	17:34	18:00	18:26	19:55	20:28
30	06:36	20:01-20:16/15		07:36	07:04	07:29	07:41	07:27	06:49	06:02	06:20	06:00
	20:40			19:23	17:40	17:15	17:15	17:35	18:01	18:27	19:56	20:29
31	06:37	20:02-20:16/14		07:37		07:30		07:26	06:48		06:19	
	20:39			19:21		17:15		17:36	18:02		19:57	
Potential sun hours	447	378		383	334	313	288	305	331	355	405	424
Sum of minutes with flicker	516	31		0	0	0	0	0	0	0	0	469
												84

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:

Elaine Wind Farm adjusted Sep 2014

Description:

Elaine section of the Lal Lal Wind Farm

Printed/Page

12/02/2015 1:30 PM / 20

Licensed user:

West Wind Energy Pty Ltd  
Office 5, Level 1, Nexus Centre 12-14 Prince Street  
AU-GISBORNE Victoria 3437  
+61 3 5421 9999

Adam Gray / gray@w-wind.com.au

Calculated:

12/02/2015 1:30 PM/2.9.285

### SHADOW - Calendar per WTG

WTG: 13 - REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (63)

#### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	06:06	06:38	07:09	07:38	07:05	07:31	07:41	07:25	06:47	06:01	06:18	05:57
	20:50	20:38	20:06	19:20	17:39	17:14	17:16	17:36	18:02	18:28	19:58	20:30
2	06:07	06:39	07:10	07:39	07:06	07:31	07:41	07:24	06:45	05:59	06:17	05:56
	20:50	20:38	20:04	19:18	17:38	17:14	17:16	17:37	18:03	18:29	19:59	20:31
3	06:08	06:41	07:11	07:40	07:07	07:32	07:41	07:23	06:44	05:57	06:16	05:56
	20:50	20:37	20:03	19:17	17:37	17:14	17:17	17:38	18:04	18:30	20:00	20:32
4	06:09	06:42	07:12	07:41	07:08	07:33	07:40	07:22	06:42	06:56	06:15	05:56
	20:50	20:36	20:02	19:15	17:35	17:13	17:17	17:39	18:05	19:30	20:01	20:33
5	06:10	06:43	07:13	06:42	07:09	07:33	07:40	07:21	06:41	06:54	06:14	05:56
	20:50	20:35	20:00	18:14	17:34	17:13	17:18	17:40	18:06	19:31	20:02	20:34
6	06:11	06:44	07:14	06:43	07:10	07:34	07:40	07:20	06:39	06:53	06:13	05:56
	20:50	20:34	19:59	18:12	17:33	17:13	17:18	17:41	18:07	19:32	20:03	20:35
7	06:11	06:45	07:15	06:44	07:11	07:34	07:40	07:19	06:38	06:51	06:12	05:56
	20:50	20:33	19:57	18:11	17:32	17:12	17:19	17:41	18:07	19:33	20:04	20:36
8	06:12	06:46	07:16	06:45	07:12	07:35	07:40	07:18	06:36	06:50	06:11	05:56
	20:50	20:32	19:56	18:09	17:31	17:12	17:19	17:42	18:08	19:34	20:05	20:36
9	06:13	06:47	07:17	06:45	07:12	07:35	07:39	07:17	06:35	06:48	06:10	05:56
	20:50	20:31	19:54	18:08	17:30	17:12	17:20	17:43	18:09	19:35	20:07	20:37
10	06:14	06:48	07:18	06:46	07:13	07:36	07:39	07:15	06:33	06:47	06:09	05:56
	20:50	20:30	19:53	18:06	17:29	17:12	17:20	17:44	18:10	19:36	20:08	20:38
11	06:15	06:50	07:19	06:47	07:14	07:36	07:39	07:14	06:31	06:46	06:08	05:56
	20:50	20:29	19:51	18:05	17:28	17:12	17:21	17:45	18:11	19:37	20:09	20:39
12	06:16	06:51	07:20	06:48	07:15	07:37	07:38	07:13	06:30	06:44	06:07	05:56
	20:49	20:28	19:50	18:04	17:27	17:12	17:22	17:46	18:12	19:38	20:10	20:40
13	06:17	06:52	07:21	06:49	07:16	07:37	07:38	07:12	06:28	06:43	06:06	05:56
	20:49	20:26	19:48	18:02	17:26	17:12	17:22	17:46	18:12	19:39	20:11	20:40
14	06:18	06:53	07:22	06:50	07:17	07:38	07:37	07:11	06:27	06:41	06:05	05:57
	20:49	20:25	19:47	18:01	17:26	17:12	17:23	17:47	18:13	19:40	20:12	20:41
15	06:19	06:54	07:23	06:51	07:18	07:38	07:37	07:10	06:25	06:40	06:05	05:57
	20:49	20:24	19:45	17:59	17:25	17:12	17:24	17:48	18:14	19:41	20:13	20:42
16	06:20	06:55	07:24	06:52	07:18	07:38	07:36	07:08	06:24	06:38	06:04	05:57
	20:48	20:23	19:44	17:58	17:24	17:12	17:24	17:49	18:15	19:42	20:14	20:43
17	06:21	06:56	07:24	06:53	07:19	07:39	07:36	07:07	06:22	06:37	06:03	05:57
	20:48	20:22	19:42	17:57	17:23	17:12	17:25	17:50	18:16	19:43	20:15	20:43
18	06:23	06:57	07:25	06:54	07:20	07:39	07:35	07:06	06:21	06:36	06:03	05:58
	20:48	20:20	19:41	17:55	17:22	17:12	17:26	17:51	18:17	19:44	20:16	20:44
19	06:24	06:58	07:26	06:54	07:21	07:39	07:35	07:05	06:19	06:34	06:02	05:58
	20:47	20:19	19:39	17:54	17:22	17:12	17:26	17:52	18:17	19:45	20:17	20:44
20	06:25	06:59	07:27	06:55	07:22	07:40	07:34	07:03	06:18	06:33	06:01	05:59
	20:47	20:18	19:38	17:53	17:21	17:12	17:27	17:52	18:18	19:46	20:19	20:45
21	06:26	07:01	07:28	06:56	07:23	07:40	07:34	07:02	06:16	06:32	06:01	05:59
	20:46	20:17	19:36	17:51	17:20	17:12	17:28	17:53	18:19	19:47	20:20	20:46
22	06:27	07:02	07:29	06:57	07:23	07:40	07:33	07:01	06:14	06:30	06:00	06:00
	20:46	20:15	19:35	17:50	17:19	17:13	17:29	17:54	18:20	19:48	20:21	20:46
23	06:28	07:03	07:30	06:58	07:24	07:40	07:32	06:59	06:13	06:29	06:00	06:00
	20:45	20:14	19:33	17:49	17:19	17:13	17:29	17:55	18:21	19:49	20:22	20:47
24	06:29	07:04	07:31	06:59	07:25	07:40	07:32	06:58	06:11	06:28	05:59	06:01
	20:44	20:13	19:32	17:47	17:18	17:13	17:30	17:56	18:22	19:50	20:23	20:47
25	06:30	07:05	07:32	07:00	07:26	07:41	07:31	06:56	06:10	06:26	05:59	06:01
	20:44	20:11	19:30	17:46	17:18	17:13	17:31	17:57	18:23	19:51	20:24	20:48
26	06:31	07:06	07:33	07:01	07:26	07:41	07:30	06:55	06:08	06:25	05:58	06:02
	20:43	20:10	19:29	17:45	17:17	17:14	17:32	17:57	18:23	19:52	20:25	20:48
27	06:33	07:07	07:34	07:02	07:27	07:41	07:29	06:54	06:07	06:24	05:58	06:02
	20:42	20:09	19:27	17:44	17:16	17:14	17:32	17:58	18:24	19:53	20:26	20:48
28	06:34	07:08	07:35	07:03	07:28	07:41	07:28	06:52	06:05	06:23	05:57	06:03
	20:42	20:07	19:26	17:42	17:16	17:14	17:33	17:59	18:25	19:54	20:27	20:49
29	06:35		07:36	07:03	07:29	07:41	07:28	06:51	06:04	06:21	05:57	06:04
	20:41		19:24	17:41	17:15	17:15	17:34	18:00	18:26	19:55	20:28	20:49
30	06:36		07:36	07:04	07:29	07:41	07:27	06:49	06:02	06:20	05:57	06:05
	20:40		19:23	17:40	17:15	17:15	17:35	18:01	18:27	19:56	20:29	20:49
31	06:37		07:37		07:30		07:26	06:48		06:19		06:05
	20:39		19:21		17:15		17:36	18:02		19:57		20:49
Potential sun hours	447	378	383	334	313	288	305	331	355	405	424	456
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	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:

Elaine Wind Farm adjusted Sep 2014

Description:

Elaine section of the Lal Lal Wind Farm

Printed/Page

12/02/2015 1:30 PM / 21

Licensed user:

**West Wind Energy Pty Ltd**  
Office 5, Level 1, Nexus Centre 12-14 Prince Street  
AU-GISBORNE Victoria 3437  
+61 3 5421 9999

Adam Gray / gray@w-wind.com.au

Calculated:

12/02/2015 1:30 PM/2.9.285

### SHADOW - Calendar per WTG

WTG: 14 - REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (64)

#### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	06:06	06:38	07:09	07:38	07:05	07:31	07:41	07:25	06:46	06:00	06:18	05:57
	20:50	20:38	20:06	19:20	17:39	17:14	17:16	17:36	18:02	18:28	19:58	20:30
2	06:07	06:39	07:10	07:39	07:06	07:31	07:41	07:24	06:45	05:59	06:17	05:56
	20:50	20:38	20:04	19:18	17:38	17:14	17:16	17:37	18:03	18:29	19:59	20:31
3	06:08	06:41	07:11	07:40	07:07	07:32	07:41	07:23	06:44	05:57	06:16	05:56
	20:50	20:37	20:03	19:17	17:36	17:13	17:17	17:38	18:04	18:30	20:00	20:32
4	06:09	06:42	07:12	07:41	07:08	07:33	07:40	07:22	06:42	06:56	06:15	05:56
	20:50	20:36	20:02	19:15	17:35	17:13	17:17	17:39	18:05	19:30	20:01	20:33
5	06:10	06:43	07:13	06:42	07:09	07:33	07:40	07:21	06:41	06:54	06:14	05:56
	20:50	20:35	20:00	18:14	17:34	17:13	17:18	17:40	18:06	19:31	20:02	20:34
6	06:11	06:44	07:14	06:43	07:10	07:34	07:40	07:20	06:39	06:53	06:13	05:56
	20:50	20:34	19:59	18:12	17:33	17:13	17:18	17:41	18:07	19:32	20:03	20:35
7	06:11	06:45	07:15	06:44	07:11	07:34	07:40	07:19	06:38	06:51	06:12	05:56
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	20:50	20:32	19:56	18:09	17:31	17:12	17:19	17:42	18:08	19:34	20:05	20:36
9	06:13	06:47	07:17	06:45	07:12	07:35	07:39	07:17	06:35	06:48	06:10	05:56
	20:50	20:31	19:54	18:08	17:30	17:12	17:20	17:43	18:09	19:35	20:07	20:37
10	06:14	06:48	07:18	06:46	07:13	07:36	07:39	07:15	06:33	06:47	06:09	05:56
	20:50	20:30	19:53	18:06	17:29	17:12	17:20	17:44	18:10	19:36	20:08	20:38
11	06:15	06:50	07:19	06:47	07:14	07:36	07:39	07:14	06:31	06:46	06:08	05:56
	20:50	20:29	19:51	18:05	17:28	17:12	17:21	17:45	18:11	19:37	20:09	20:39
12	06:16	06:51	07:20	06:48	07:15	07:37	07:38	07:13	06:30	06:44	06:07	05:56
	20:49	20:28	19:50	18:04	17:27	17:12	17:22	17:46	18:12	19:38	20:10	20:40
13	06:17	06:52	07:21	06:49	07:16	07:37	07:38	07:12	06:28	06:43	06:06	05:56
	20:49	20:26	19:48	18:02	17:26	17:12	17:22	17:46	18:12	19:39	20:11	20:40
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	20:49	20:25	19:47	18:01	17:26	17:12	17:23	17:47	18:13	19:40	20:12	20:41
15	06:19	06:54	07:23	06:51	07:18	07:38	07:37	07:10	06:25	06:40	06:05	05:57
	20:49	20:24	19:45	17:59	17:25	17:12	17:24	17:48	18:14	19:41	20:13	20:42
16	06:20	06:55	07:24	06:52	07:18	07:38	07:36	07:08	06:24	06:38	06:04	05:57
	20:48	20:23	19:44	17:58	17:24	17:12	17:24	17:49	18:15	19:42	20:14	20:43
17	06:21	06:56	07:24	06:53	07:19	07:39	07:36	07:07	06:22	06:37	06:03	05:57
	20:48	20:22	19:42	17:57	17:23	17:12	17:25	17:50	18:16	19:43	20:15	20:43
18	06:23	06:57	07:25	06:54	07:20	07:39	07:35	07:06	06:21	06:36	06:03	05:58
	20:47	20:20	19:41	17:55	17:22	17:12	17:26	17:51	18:17	19:44	20:16	20:44
19	06:24	06:58	07:26	06:54	07:21	07:39	07:35	07:04	06:19	06:34	06:02	05:58
	20:47	20:19	19:39	17:54	17:22	17:12	17:26	17:52	18:17	19:45	20:17	20:44
20	06:25	06:59	07:27	06:55	07:22	07:40	07:34	07:03	06:18	06:33	06:01	05:59
	20:47	20:18	19:38	17:52	17:21	17:12	17:27	17:52	18:18	19:46	20:18	20:45
21	06:26	07:00	07:28	06:56	07:23	07:40	07:34	07:02	06:16	06:32	06:01	05:59
	20:46	20:17	19:36	17:51	17:20	17:12	17:28	17:53	18:19	19:47	20:20	20:46
22	06:27	07:02	07:29	06:57	07:23	07:40	07:33	07:01	06:14	06:30	06:00	05:59
	20:46	20:15	19:35	17:50	17:19	17:13	17:29	17:54	18:20	19:48	20:21	20:46
23	06:28	07:03	07:30	06:58	07:24	07:40	07:32	06:59	06:13	06:29	06:00	06:00
	20:45	20:14	19:33	17:49	17:19	17:13	17:29	17:55	18:21	19:49	20:22	20:47
24	06:29	07:04	07:31	06:59	07:25	07:40	07:31	06:58	06:11	06:28	05:59	06:01
	20:44	20:13	19:32	17:47	17:18	17:13	17:30	17:56	18:22	19:50	20:23	20:47
25	06:30	07:05	07:32	07:00	07:26	07:41	07:31	06:56	06:10	06:26	05:59	06:01
	20:44	20:11	19:30	17:46	17:18	17:13	17:31	17:57	18:23	19:51	20:24	20:48
26	06:31	07:06	07:33	07:01	07:26	07:41	07:30	06:55	06:08	06:25	05:58	06:02
	20:43	20:10	19:29	17:45	17:17	17:14	17:32	17:57	18:23	19:52	20:25	20:48
27	06:33	07:07	07:34	07:02	07:27	07:41	07:29	06:54	06:07	06:24	05:58	06:02
	20:42	20:09	19:27	17:44	17:16	17:14	17:32	17:58	18:24	19:53	20:26	20:48
28	06:34	07:08	07:35	07:03	07:28	07:41	07:28	06:52	06:05	06:23	05:57	06:03
	20:42	20:07	19:26	17:42	17:16	17:14	17:33	17:59	18:25	19:54	20:27	20:49
29	06:35		07:36	07:03	07:29	07:41	07:28	06:51	06:04	06:21	05:57	06:04
	20:41		19:24	17:41	17:15	17:15	17:34	18:00	18:26	19:55	20:28	20:49
30	06:36		07:36	07:04	07:29	07:41	07:27	06:49	06:02	06:20	05:57	06:04
	20:40		19:23	17:40	17:15	17:15	17:35	18:01	18:27	19:56	20:29	20:49
31	06:37		07:37		07:30		07:26	06:48		06:19		06:05
	20:39		19:21		17:15		17:36	18:02		19:57		20:49
Potential sun hours	447	378	383	334	313	288	305	331	355	405	424	456
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	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:

Elaine Wind Farm adjusted Sep 2014

Description:

Elaine section of the Lal Lal Wind Farm

Printed/Page

12/02/2015 1:30 PM / 22

Licensed user:

West Wind Energy Pty Ltd  
Office 5, Level 1, Nexus Centre 12-14 Prince Street  
AU-GISBORNE Victoria 3437  
+61 3 5421 9999

Adam Gray / gray@w-wind.com.au

Calculated:

12/02/2015 1:30 PM/2.9.285

### SHADOW - Calendar per WTG

WTG: 15 - REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (65)

#### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	06:06 20:50	06:38 20:38	07:09 20:06	07:38 19:20	08:02-08:29/27 17:39	07:05 17:14	07:31 17:16	07:41 17:36	06:46 18:02	06:00 18:28	06:18 19:58	05:57 20:30
2	06:07 20:50	06:39 20:37	07:10 20:04	07:39 19:18	08:02-08:28/26 17:38	07:06 17:38	07:31 17:14	07:41 17:16	06:45 18:03	06:59 18:29	06:17 19:59	05:56 20:31
3	06:08 20:50	06:40 20:37	07:11 20:03	07:40 19:17	08:02-08:28/26 17:36	07:07 17:36	07:32 17:13	07:40 17:16	06:43 18:04	07:08-07:13/5 18:29	05:57 18:29	06:16 20:00
4	06:09 20:50	06:42 20:36	07:12 20:02	07:41 19:15	08:03-08:27/24 17:35	07:08 17:13	07:32 17:17	07:40 17:39	06:42 18:05	07:04-07:17/13 19:30	06:56 20:01	06:15 20:33
5	06:10 20:50	06:43 20:35	07:13 20:00	06:42 18:14	08:03-08:26/23 17:34	07:09 17:13	07:33 17:17	07:40 17:40	06:40 18:06	07:01-07:19/18 19:31	06:54 20:02	06:14 20:34
6	06:10 20:50	06:44 20:34	07:14 19:59	06:43 18:12	07:04-07:24/20 17:33	07:10 17:13	07:34 17:18	07:40 17:41	06:39 18:07	07:00-07:20/20 19:32	06:53 20:03	06:13 20:35
7	06:11 20:50	06:45 20:33	07:15 19:57	06:44 18:11	07:05-07:23/18 17:32	07:11 17:12	07:34 17:19	07:40 17:41	06:37 18:07	06:58-07:21/23 19:33	06:51 20:04	06:12 20:35
8	06:12 20:50	06:46 20:32	07:16 19:56	06:44 18:09	07:07-07:20/13 17:31	07:11 17:12	07:35 17:19	07:39 17:42	06:36 18:08	06:58-07:22/24 19:34	06:50 20:05	06:11 20:36
9	06:13 20:50	06:47 20:31	07:17 19:54	06:45 18:08	07:10-07:15/5 17:30	07:12 17:12	07:35 17:20	07:39 17:43	06:34 18:09	06:56-07:21/25 19:35	06:48 20:06	06:10 20:37
10	06:14 20:50	06:48 20:30	07:18 19:53	06:46 18:06	07:13 17:29	07:13 17:12	07:39 17:20	07:41 17:44	06:33 18:10	06:55-07:21/26 19:36	06:47 20:08	06:09 20:38
11	06:15 20:50	06:50 20:29	07:19 19:51	06:47 18:05	07:14 17:28	07:14 17:12	07:39 17:21	07:41 17:45	06:31 18:11	06:55-07:21/26 19:37	06:45 20:09	06:08 20:39
12	06:16 20:49	06:51 20:27	07:20 19:50	06:48 18:03	07:15 17:27	07:15 17:12	07:37 17:22	07:38 17:46	06:30 18:12	06:54-07:21/27 19:38	06:44 20:10	06:07 20:40
13	06:17 20:49	06:52 20:26	07:21 19:48	06:49 18:02	07:16 17:26	07:16 17:12	07:37 17:22	07:38 17:46	06:28 18:12	06:55-07:21/26 19:39	06:43 20:11	06:06 20:40
14	06:18 20:49	06:53 20:25	07:22 19:47	06:50 18:01	07:17 17:26	07:17 17:12	07:38 17:23	07:37 17:47	06:27 18:13	06:54-07:19/25 19:40	06:41 20:12	06:05 20:41
15	06:19 20:49	06:54 20:24	07:23 19:45	06:51 17:59	07:17 17:25	07:18 17:12	07:38 17:23	07:37 17:48	06:25 18:14	06:55-07:19/24 19:41	06:40 20:13	06:05 20:42
16	06:20 20:48	06:55 20:23	07:23 19:44	06:52 17:58	07:18 17:24	07:18 17:12	07:38 17:24	07:36 17:49	06:24 18:15	06:55-07:17/22 19:42	06:38 20:14	06:04 20:42
17	06:21 20:48	06:56 20:22	07:24 19:42	06:53 17:56	07:19 17:23	07:19 17:12	07:39 17:25	07:37 17:50	06:22 18:16	06:55-07:16/21 19:43	06:37 20:15	06:03 20:43
18	06:22 20:47	06:57 20:20	07:25 19:41	06:53 17:55	07:20 17:22	07:20 17:12	07:39 17:26	07:35 17:51	06:21 18:17	06:57-07:14/17 19:43	06:36 20:16	06:02 20:44
19	06:24 20:47	06:58 20:19	07:26 19:39	06:54 17:54	07:21 17:21	07:21 17:12	07:39 17:26	07:35 17:51	06:19 18:17	06:58-07:11/13 19:44	06:34 20:17	06:02 20:44
20	06:25 20:46	06:59 20:18	07:27 19:38	06:55 17:52	07:22 17:21	07:22 17:12	07:40 17:27	07:34 17:52	06:17 18:18	07:02-07:08/6 19:45	06:33 20:18	06:01 20:45
21	06:26 20:46	07:00 20:17	07:28 19:36	06:56 17:51	07:22 17:20	07:22 17:12	07:40 17:28	07:33 17:53	07:02 18:19	06:16 19:46	06:31 20:19	06:01 20:45
22	06:27 20:45	07:02 20:15	07:29 19:35	06:57 17:50	07:23 17:19	07:23 17:13	07:40 17:29	07:33 17:54	06:14 18:20	06:14 19:47	06:30 20:21	06:00 20:46
23	06:28 20:45	07:03 20:14	07:30 19:33	06:58 17:48	07:24 17:19	07:24 17:13	07:40 17:29	07:32 17:55	06:13 18:21	06:59 19:48	06:13 20:22	06:00 20:47
24	06:29 20:44	07:04 20:13	07:31 19:32	06:59 17:47	08:12-08:24/12 17:47	07:25 17:18	07:40 17:30	07:31 17:56	06:11 18:22	06:11 19:49	06:28 20:23	06:01 20:47
25	06:30 20:44	07:05 20:11	07:32 19:30	07:00 17:46	08:09-08:26/17 17:46	07:26 17:17	07:40 17:13	07:31 17:56	06:10 18:22	06:10 19:50	06:26 20:24	06:01 20:47
26	06:31 20:43	07:06 20:10	07:33 19:29	07:01 17:45	08:08-08:28/20 17:45	07:26 17:17	07:41 17:14	06:55 17:32	06:08 18:23	06:08 19:52	06:25 20:25	06:02 20:48
27	06:32 20:42	07:07 20:09	07:34 19:27	07:02 17:43	08:06-08:28/22 17:43	07:27 17:16	07:41 17:14	06:54 17:58	06:07 18:24	06:07 19:53	06:24 20:26	06:02 20:48
28	06:34 20:42	07:08 20:07	07:35 19:26	07:02 17:42	08:05-08:29/24 17:42	07:28 17:16	07:41 17:14	06:52 17:33	06:05 18:25	06:05 19:54	06:23 20:27	06:03 20:48
29	06:35 20:41		07:35 19:24	07:03 17:41	08:04-08:30/26 17:41	07:28 17:15	07:41 17:15	07:27 17:34	06:03 18:00	06:03 18:26	06:21 19:55	06:04 20:49
30	06:36 20:40		07:36 19:23	07:04 17:40	08:03-08:29/26 17:40	07:29 17:15	07:41 17:15	07:27 17:35	06:02 18:01	06:02 18:27	06:20 19:56	06:04 20:49
31	06:37 20:39		07:37 19:21		08:02-08:29/27 17:40	07:30 17:15		07:26 17:36	06:48 18:02		06:19 19:57	06:05 20:49
Potential sun hours	447	378	383	334	314	288	305	331	355	405	424	456
Sum of minutes with flicker	0	0	174	182	0	0	0	0	361	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:

Elaine Wind Farm adjusted Sep 2014

Description:

Elaine section of the Lal Lal Wind Farm

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12/02/2015 1:30 PM / 23

Licensed user:

West Wind Energy Pty Ltd  
Office 5, Level 1, Nexus Centre 12-14 Prince Street  
AU-GISBORNE Victoria 3437  
+61 3 5421 9999

Adam Gray / gray@w-wind.com.au

Calculated:

12/02/2015 1:30 PM/2.9.285

### SHADOW - Calendar per WTG

WTG: 16 - REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (66)

#### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	06:06	06:38	07:09	07:38	07:05	07:31	07:41	07:25	06:46	06:00	06:18	05:57
	20:50	20:38	20:06	19:20	17:39	17:14	17:16	17:36	18:02	18:28	19:58	20:30
2	06:07	06:39	07:10	07:39	07:06	07:31	07:41	07:24	06:45	05:59	06:17	05:56
	20:50	20:37	20:04	19:18	17:38	17:14	17:16	17:37	18:03	18:29	19:59	20:31
3	06:08	06:40	07:11	07:40	07:07	07:32	07:40	07:23	06:43	05:57	06:16	05:56
	20:50	20:37	20:03	19:17	17:36	17:13	17:16	17:38	18:04	18:30	20:00	20:32
4	06:09	06:42	07:12	07:41	07:08	07:32	07:40	07:22	06:42	06:56	06:15	05:56
	20:50	20:36	20:02	19:15	17:35	17:13	17:17	17:39	18:05	19:30	20:01	20:33
5	06:10	06:43	07:13	06:42	07:09	07:33	07:40	07:21	06:40	06:54	06:14	05:56
	20:50	20:35	20:00	18:14	17:34	17:13	17:17	17:40	18:06	19:31	20:02	20:34
6	06:10	06:44	07:14	06:43	07:10	07:34	07:40	07:20	06:39	06:53	06:13	05:56
	20:50	20:34	19:59	18:12	17:33	17:13	17:18	17:41	18:07	19:32	20:03	20:35
7	06:11	06:45	07:15	06:44	07:11	07:34	07:40	07:19	06:37	06:51	06:12	05:56
	20:50	20:33	19:57	18:11	17:32	17:12	17:19	17:41	18:07	19:33	20:04	20:35
8	06:12	06:46	07:16	06:45	07:11	07:35	07:39	07:18	06:36	06:50	06:11	05:56
	20:50	20:32	19:56	18:09	17:31	17:12	17:19	17:42	18:08	19:34	20:05	20:36
9	06:13	06:47	07:17	06:45	07:12	07:35	07:39	07:17	06:34	06:48	06:10	05:56
	20:50	20:31	19:54	18:08	17:30	17:12	17:20	17:43	18:09	19:35	20:06	20:37
10	06:14	06:48	07:18	06:46	07:13	07:36	07:39	07:15	06:33	06:47	06:09	05:56
	20:50	20:30	19:53	18:06	17:29	17:12	17:20	17:44	18:10	19:36	20:08	20:38
11	06:15	06:50	07:19	06:47	07:14	07:36	07:39	07:14	06:31	06:45	06:08	05:56
	20:50	20:29	19:51	18:05	17:28	17:12	17:21	17:45	18:11	19:37	20:09	20:39
12	06:16	06:51	07:20	06:48	07:15	07:37	07:38	07:13	06:30	06:44	06:07	05:56
	20:49	20:27	19:50	18:03	17:27	17:12	17:22	17:46	18:12	19:38	20:10	20:40
13	06:17	06:52	07:21	06:49	07:16	07:37	07:38	07:12	06:28	06:43	06:06	05:56
	20:49	20:26	19:48	18:02	17:26	17:12	17:22	17:46	18:12	19:39	20:11	20:40
14	06:18	06:53	07:22	06:50	07:17	07:38	07:37	07:11	06:27	06:41	06:05	05:56
	20:49	20:25	19:47	18:01	17:25	17:12	17:23	17:47	18:13	19:40	20:12	20:41
15	06:19	06:54	07:23	06:51	07:17	07:38	07:37	07:09	06:25	06:40	06:05	05:57
	20:49	20:24	19:45	17:59	17:25	17:12	17:23	17:48	18:14	19:41	20:13	20:42
16	06:20	06:55	07:23	06:52	07:18	07:38	07:36	07:08	06:24	06:38	06:04	05:57
	20:48	20:23	19:44	17:58	17:24	17:12	17:24	17:49	18:15	19:42	20:14	20:42
17	06:21	06:56	07:24	06:53	07:19	07:39	07:36	07:07	06:22	06:37	06:03	05:57
	20:48	20:22	19:42	17:56	17:23	17:12	17:25	17:50	18:16	19:43	20:15	20:43
18	06:22	06:57	07:25	06:53	07:20	07:39	07:35	07:06	06:21	06:36	06:02	05:58
	20:47	20:20	19:41	17:55	17:22	17:12	17:26	17:51	18:17	19:44	20:16	20:44
19	06:24	06:58	07:26	06:54	07:21	07:39	07:35	07:04	06:19	06:34	06:02	05:58
	20:47	20:19	19:39	17:54	17:21	17:12	17:26	17:51	18:17	19:44	20:17	20:44
20	06:25	06:59	07:27	06:55	07:22	07:40	07:34	07:03	06:17	06:33	06:01	05:59
	20:46	20:18	19:38	17:52	17:21	17:12	17:27	17:52	18:18	19:45	20:18	20:45
21	06:26	07:00	07:28	06:56	07:22	07:40	07:33	07:02	06:16	06:31	06:01	05:59
	20:46	20:17	19:36	17:51	17:20	17:12	17:28	17:53	18:19	19:46	20:19	20:46
22	06:27	07:01	07:29	06:57	07:23	07:40	07:33	07:00	06:14	06:30	06:00	05:59
	20:45	20:15	19:35	17:50	17:19	17:13	17:28	17:54	18:20	19:47	20:21	20:46
23	06:28	07:03	07:30	06:58	07:24	07:40	07:32	06:59	06:13	06:29	05:59	06:00
	20:45	20:14	19:33	17:48	17:19	17:13	17:29	17:55	18:21	19:48	20:22	20:47
24	06:29	07:04	07:31	06:59	07:25	07:40	07:31	06:58	06:11	06:28	05:59	06:01
	20:44	20:13	19:32	17:47	17:18	17:13	17:30	17:56	18:22	19:49	20:23	20:47
25	06:30	07:05	07:32	07:00	07:26	07:40	07:31	06:56	06:10	06:26	05:59	06:01
	20:44	20:11	19:30	17:46	17:17	17:13	17:31	17:56	18:22	19:51	20:24	20:47
26	06:31	07:06	07:33	07:01	07:26	07:41	07:30	06:55	06:08	06:25	05:58	06:02
	20:43	20:10	19:29	17:45	17:17	17:14	17:32	17:57	18:23	19:52	20:25	20:48
27	06:32	07:07	07:34	07:02	07:27	07:41	07:29	06:54	06:07	06:24	05:58	06:02
	20:42	20:09	19:27	17:43	17:16	17:14	17:32	17:58	18:24	19:53	20:26	20:48
28	06:34	07:08	07:35	07:02	07:28	07:41	07:28	06:52	06:05	06:23	05:57	06:03
	20:42	20:07	19:26	17:42	17:16	17:14	17:33	17:59	18:25	19:54	20:27	20:49
29	06:35		07:35	07:03	07:28	07:41	07:27	06:51	06:03	06:21	05:57	06:04
	20:41		19:24	17:41	17:15	17:15	17:34	18:00	18:26	19:55	20:28	20:49
30	06:36		07:36	07:04	07:29	07:41	07:27	06:49	06:02	06:20	05:57	06:04
	20:40		19:23	17:40	17:15	17:15	17:35	18:01	18:27	19:56	20:29	20:49
31	06:37		07:37		07:30		07:26	06:48		06:19		06:05
	20:39		19:21		17:15		17:36	18:02		19:57		20:49
Potential sun hours	447	378	383	334	313	288	305	331	355	405	424	456
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	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:

Elaine Wind Farm adjusted Sep 2014

Description:

Elaine section of the Lal Lal Wind Farm

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12/02/2015 1:30 PM / 24

Licensed user:

West Wind Energy Pty Ltd  
Office 5, Level 1, Nexus Centre 12-14 Prince Street  
AU-GISBORNE Victoria 3437  
+61 3 5421 9999

Adam Gray / gray@w-wind.com.au

Calculated:

12/02/2015 1:30 PM/2.9.285

### SHADOW - Calendar per WTG

WTG: 17 - REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (67)

#### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	06:06 06:27-06:44/17 20:50	06:38 20:38	07:09 20:06	07:38 19:20	07:05 17:39	07:31 17:14	07:41 17:16	07:25 17:36	06:46 18:02	06:00 18:28	06:18 19:58	05:57 20:30
2	06:07 06:28-06:45/17 20:50	06:39 20:37	07:10 20:04	07:39 19:18	07:06 17:38	07:31 17:14	07:41 17:16	07:24 17:37	06:45 18:03	05:59 18:29	06:17 19:59	05:56 20:31
3	06:08 06:28-06:44/16 20:50	06:40 20:37	07:11 20:03	07:40 19:17	07:07 17:36	07:32 17:13	07:40 17:16	07:23 17:38	06:43 18:04	05:57 18:29	06:16 20:00	05:56 20:32
4	06:09 06:29-06:44/15 20:50	06:42 20:36	07:12 20:02	07:41 19:15	07:08 17:35	07:32 17:13	07:40 17:17	07:22 17:39	06:42 18:05	06:56 19:30	06:15 20:01	05:56 20:33
5	06:10 06:30-06:44/14 20:50	06:43 20:35	07:13 20:00	06:42 18:14	07:09 17:34	07:33 17:13	07:40 17:17	07:21 17:40	06:40 18:06	06:54 19:31	06:14 20:02	05:56 20:34
6	06:10 06:31-06:44/13 20:50	06:44 20:34	07:14 19:59	06:43 18:12	07:10 17:33	07:34 17:13	07:40 17:18	07:20 17:41	06:39 18:07	06:53 19:32	06:13 20:03	05:56 20:35
7	06:11 06:32-06:44/12 20:50	06:45 20:33	07:15 19:57	06:44 18:11	07:11 17:32	07:34 17:12	07:40 17:19	07:19 17:41	06:37 18:07	06:51 19:33	06:12 20:04	05:56 20:35
8	06:12 06:33-06:44/11 20:50	06:46 20:32	07:16 19:56	06:44 18:09	07:11 17:31	07:35 17:12	07:39 17:19	07:18 17:42	06:36 18:08	06:50 19:34	06:11 20:05	05:56 20:36
9	06:13 06:34-06:44/10 20:50	06:47 20:31	07:17 19:54	06:45 18:08	07:12 17:30	07:35 17:12	07:39 17:20	07:17 17:43	06:34 18:09	06:48 19:35	06:10 20:06	05:56 20:37
10	06:14 06:34-06:42/8 20:50	06:48 20:30	07:18 19:53	06:46 18:06	07:13 17:29	07:36 17:12	07:39 17:20	07:15 17:44	06:33 18:10	06:47 19:36	06:09 20:08	05:56 20:38
11	06:15 06:36-06:40/4 20:49	06:50 20:29	07:19 19:51	06:47 18:05	07:14 17:28	07:36 17:12	07:39 17:21	07:14 17:45	06:31 18:11	06:45 19:37	06:08 20:09	05:56 20:39
12	06:16 20:49	06:51 20:27	07:20 19:50	06:48 18:03	07:15 17:27	07:37 17:12	07:38 17:22	07:13 17:46	06:30 18:11	06:44 19:38	06:07 20:10	05:56 20:40
13	06:17 20:49	06:52 20:26	07:21 19:48	06:49 18:02	07:16 17:26	07:37 17:12	07:38 17:22	07:12 17:46	06:28 18:12	06:43 19:39	06:06 20:11	05:56 20:40
14	06:18 20:49	06:53 20:25	07:22 19:47	06:50 18:01	07:17 17:25	07:38 17:12	07:37 17:23	07:11 17:47	06:27 18:13	06:41 19:40	06:05 20:12	05:56 20:41
15	06:19 20:49	06:54 20:24	07:23 19:45	06:51 17:59	07:17 17:25	07:38 17:12	07:37 17:23	07:09 17:48	06:25 18:14	06:40 19:41	06:05 20:13	05:57 20:42
16	06:20 20:48	06:55 20:23	07:23 19:44	06:52 17:58	07:18 17:24	07:38 17:12	07:36 17:24	07:08 17:49	06:24 18:15	06:38 19:42	06:04 20:14	05:57 20:42
17	06:21 20:48	06:56 20:22	07:24 19:42	06:53 17:56	07:19 17:23	07:39 17:12	07:36 17:25	07:07 17:50	06:22 18:16	06:37 19:43	06:03 20:15	05:57 20:43
18	06:22 20:47	06:57 20:20	07:25 19:41	06:53 17:55	07:20 17:22	07:39 17:12	07:35 17:26	07:06 17:51	06:21 18:17	06:36 19:43	06:02 20:16	05:58 20:44
19	06:24 20:47	06:58 20:19	07:26 19:39	06:54 17:54	07:21 17:21	07:39 17:12	07:35 17:26	07:04 17:51	06:19 18:17	06:34 19:44	06:02 20:17	05:58 20:44
20	06:25 20:46	06:59 20:18	07:27 19:38	06:55 17:52	07:22 17:21	07:40 17:12	07:34 17:27	07:03 17:52	06:17 18:18	06:33 19:45	06:01 20:18	05:59 20:45
21	06:26 20:46	07:00 20:17	07:28 19:36	06:56 17:51	07:22 17:20	07:40 17:12	07:33 17:28	07:02 17:53	06:16 18:19	06:31 19:46	06:01 20:19	05:59 20:46
22	06:27 20:45	07:01 20:15	07:29 19:35	06:57 17:50	07:23 17:19	07:40 17:13	07:33 17:28	07:00 17:54	06:14 18:20	06:30 19:47	06:00 20:21	05:59 20:46
23	06:28 20:45	07:03 20:14	07:30 19:33	06:58 17:48	07:24 17:19	07:40 17:13	07:32 17:29	06:59 17:55	06:13 18:21	06:29 19:48	05:59 20:22	06:00 20:47
24	06:29 20:44	07:04 20:13	07:31 19:32	06:59 17:47	07:25 17:18	07:40 17:13	07:31 17:30	06:58 17:56	06:11 18:22	06:28 19:49	05:59 20:23	06:01 20:47
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27	06:32 20:42	07:07 20:09	07:34 19:27	07:02 17:43	07:27 17:16	07:41 17:14	07:29 17:32	06:54 17:58	06:07 18:24	06:24 19:53	05:58 20:26	06:02 20:48
28	06:34 20:42	07:08 20:07	07:35 19:26	07:02 17:42	07:28 17:16	07:41 17:14	07:28 17:33	06:52 17:59	06:05 18:25	06:23 19:54	05:57 20:27	06:03 20:49
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31	06:37 20:39	07:11 19:21	07:37 19:21	07:05 17:39	07:30 17:15	07:42 17:16	07:28 17:36	06:48 18:01	06:03 18:27	06:19 19:57	05:57 20:29	06:05 20:49
Potential sun hours	447	378	383	334	313	288	305	331	355	405	424	456
Sum of minutes with flicker	137	0	0	0	0	0	0	0	0	0	0	520

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:

**Elaine Wind Farm adjusted Sep 2014**

Description:

Elaine section of the Lal Lal Wind Farm

Printed/Page

12/02/2015 1:30 PM / 26

Licensed user:

**West Wind Energy Pty Ltd**  
Office 5, Level 1, Nexus Centre 12-14 Prince Street  
AU-GISBORNE Victoria 3437  
+61 3 5421 9999

Adam Gray / gray@w-wind.com.au

Calculated:

12/02/2015 1:30 PM/2.9.285

### SHADOW - Calendar per WTG

WTG: 19 - REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (69)

#### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

The sun is shining all the day, from sunrise to sunset

The rotor plane is always perpendicular to the line from the WTG to the sun

The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	06:06 20:50	06:38 20:38	07:09 20:06	07:38 19:20	07:05 17:39	07:30 17:14	07:41 17:16	07:25 17:36	06:46 18:02	06:00 18:28	06:18 19:58	05:57 20:30
2	06:07 20:50	06:39 20:37	07:10 20:04	07:39 19:18	07:06 17:38	07:31 17:14	07:41 17:16	07:24 17:37	06:45 18:03	05:59 18:29	06:17 19:59	05:56 20:31
3	06:08 20:50	06:40 20:37	07:11 20:03	07:40 19:17	07:07 17:36	07:32 17:13	07:40 17:16	07:23 17:38	06:43 18:04	05:57 18:29	06:16 20:00	05:56 20:32
4	06:09 20:50	06:42 20:36	07:12 20:02	07:41 19:15	07:08 17:35	07:32 17:13	07:40 17:17	07:22 17:39	06:42 18:05	05:56 19:30	06:15 20:01	05:56 20:33
5	06:10 20:50	06:43 20:35	07:13 20:00	06:42 18:14	07:09 17:34	07:33 17:13	07:40 17:17	07:21 17:40	06:40 18:06	06:54 19:31	06:14 20:02	05:56 20:34
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16	06:20 20:48	06:55 20:23	07:23 19:44	06:52 17:58	07:18 17:24	07:38 17:12	07:36 17:24	07:08 17:49	06:24 18:15	06:38 19:42	06:04 20:14	05:57 20:42
17	06:21 20:48	06:56 20:22	07:24 19:42	06:53 17:56	07:19 17:23	07:39 17:12	07:36 17:25	07:07 17:50	06:22 18:16	06:40-06:45/5	06:03 19:42	05:57 20:43
18	06:22 20:47	06:57 20:20	07:25 19:41	06:53 17:55	07:20 17:22	07:39 17:12	07:35 17:26	07:06 17:51	06:21 18:16	06:39-06:47/8	06:35 19:43	05:58 20:44
19	06:24 20:47	06:58 20:19	07:26 19:39	06:54 17:54	07:21 17:21	07:39 17:12	07:35 17:26	07:04 17:51	06:19 18:17	06:37-06:48/11	06:34 19:44	05:58 20:44
20	06:25 20:46	06:59 20:18	07:27 19:38	06:55 17:52	07:22 17:21	07:39 17:12	07:34 17:27	07:03 17:52	06:17 18:18	06:36-06:49/13	06:33 19:45	05:59 20:45
21	06:26 20:46	07:00 20:17	07:28 19:36	06:56 17:51	07:22 17:20	07:40 17:12	07:33 17:28	07:02 17:53	06:16 18:19	06:34-06:48/14	06:31 19:46	05:59 20:45
22	06:27 20:45	07:01 20:15	07:29 19:35	06:57 17:50	07:23 17:19	07:40 17:13	07:33 17:28	07:00 17:54	06:14 18:20	06:33-06:49/16	06:30 19:47	05:59 20:46
23	06:28 20:45	07:03 20:14	07:30 19:33	06:58 17:48	07:24 17:19	07:40 17:13	07:32 17:29	06:59 17:55	06:13 18:21	06:31-06:48/17	06:29 19:48	06:00 20:46
24	06:29 20:44	07:04 20:13	07:31 19:32	06:59 17:47	07:25 17:18	07:40 17:13	07:31 17:30	06:58 17:56	06:11 18:22	06:29-06:47/18	06:28 19:49	06:01 20:47
25	06:30 20:44	07:05 20:11	07:32 19:30	07:00 17:46	07:25 17:17	07:40 17:13	07:31 17:31	06:56 17:56	06:10 18:22	06:30-06:46/16	06:26 19:50	06:01 20:47
26	06:31 20:43	07:06 20:10	07:33 19:29	07:01 17:45	07:26 17:17	07:41 17:14	07:30 17:32	06:55 17:57	06:08 18:23	06:30-06:44/14	06:25 19:52	06:02 20:48
27	06:32 20:42	07:07 20:09	07:34 19:27	07:02 17:43	07:27 17:16	07:41 17:14	07:29 17:32	06:54 17:58	06:07 18:24	06:32-06:43/11	06:24 19:53	06:02 20:48
28	06:34 20:41	07:08 20:07	07:35 19:26	07:02 17:42	07:28 17:16	07:41 17:14	07:28 17:33	06:52 17:59	06:05 18:25	06:35-06:38/3	06:23 19:54	06:03 20:48
29	06:35 20:41		07:35 19:24	07:03 17:41	07:28 17:15	07:41 17:15	07:27 17:34	06:51 18:00	06:03 18:26		06:21 19:55	06:04 20:49
30	06:36 20:40		07:36 19:23	07:04 17:40	07:29 17:15	07:41 17:15	07:27 17:35	06:49 18:01	06:02 18:27		06:20 19:56	06:04 20:49
31	06:37 20:39		07:37 19:21		07:30 17:15		07:26 17:36	06:48 18:01			06:19 19:57	06:05 20:49
Potential sun hours	447	378	383	334	314	288	305	331	355	405	424	456
Sum of minutes with flicker	0	0	142	0	0	0	0	0	146	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:

Elaine Wind Farm adjusted Sep 2014

Description:

Elaine section of the Lal Lal Wind Farm

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12/02/2015 1:30 PM / 27

Licensed user:

**West Wind Energy Pty Ltd**  
Office 5, Level 1, Nexus Centre 12-14 Prince Street  
AU-GISBORNE Victoria 3437  
+61 3 5421 9999

Adam Gray / gray@w-wind.com.au

Calculated:

12/02/2015 1:30 PM/2.9.285

**SHADOW - Calendar per WTG**

**WTG: 20 - REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (70)**

**Assumptions for shadow calculations**

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	06:06	06:38	07:09	07:38	07:05	07:30	07:41	07:25	06:46	06:00	06:18	05:57
	20:50	20:38	20:06	19:20	17:39	17:14	17:16	17:36	18:02	18:28	19:58	20:30
2	06:07	06:39	07:10	07:39	07:06	07:31	07:40	07:24	06:45	05:59	06:17	05:56
	20:50	20:37	20:04	19:18	17:38	17:14	17:16	17:37	18:03	18:29	19:59	20:31
3	06:08	06:40	07:11	07:40	07:07	07:32	07:40	07:23	06:43	05:57	06:16	05:56
	20:50	20:37	20:03	19:17	17:36	17:13	17:16	17:38	18:04	18:29	20:00	20:32
4	06:09	06:42	07:12	07:41	07:08	07:32	07:40	07:22	06:42	05:56	06:15	05:56
	20:50	20:36	20:02	19:15	17:35	17:13	17:17	17:39	18:05	19:30	20:01	20:33
5	06:10	06:43	07:13	06:42	07:09	07:33	07:40	07:21	06:40	05:54	06:14	05:56
	20:50	20:35	20:00	18:14	17:34	17:13	17:17	17:40	18:06	19:31	20:02	20:34
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	20:49	20:28	19:51	18:05	17:28	17:12	17:21	17:45	18:11	19:37	20:09	20:39
12	06:16	06:51	07:20	06:48	07:15	07:37	07:38	07:13	06:30	05:44	06:07	05:56
	20:49	20:27	19:50	18:03	17:27	17:12	17:22	17:46	18:11	19:38	20:10	20:40
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	20:49	20:26	19:48	18:02	17:26	17:12	17:22	17:46	18:12	19:39	20:11	20:40
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	20:48	20:24	19:45	17:59	17:25	17:12	17:23	17:48	18:14	19:41	20:13	20:42
16	06:20	06:55	07:23	06:52	07:18	07:38	07:36	07:08	06:24	05:38	06:04	05:57
	20:48	20:23	19:44	17:58	17:24	17:12	17:24	17:49	18:15	19:42	20:14	20:42
17	06:21	06:56	07:24	06:53	07:19	07:39	07:36	07:07	06:22	05:37	06:03	05:57
	20:48	20:22	19:42	17:56	17:23	17:12	17:25	17:50	18:16	19:42	20:15	20:43
18	06:22	06:57	07:25	06:53	07:20	07:39	07:35	07:06	06:21	05:35	06:02	05:58
	20:47	20:20	19:41	17:55	17:22	17:12	17:26	17:51	18:16	19:43	20:16	20:44
19	06:24	06:58	07:26	06:54	07:21	07:39	07:35	07:04	06:19	05:34	06:02	05:58
	20:47	20:19	19:39	17:54	17:21	17:12	17:26	17:51	18:17	19:44	20:17	20:44
20	06:25	06:59	07:27	06:55	07:22	07:39	07:34	07:03	06:17	05:33	06:01	05:58
	20:46	20:18	19:38	17:52	17:21	17:12	17:27	17:52	18:18	19:45	20:18	20:45
21	06:26	07:00	07:28	06:56	07:22	07:40	07:33	07:02	06:16	05:31	06:01	05:59
	20:46	20:17	19:36	17:51	17:20	17:12	17:28	17:53	18:19	19:46	20:19	20:45
22	06:27	07:01	07:29	06:57	07:23	07:40	07:33	07:00	06:14	05:30	06:00	05:59
	20:45	20:15	19:35	17:50	17:19	17:13	17:28	17:54	18:20	19:47	20:20	20:46
23	06:28	07:03	07:30	06:58	07:24	07:40	07:32	06:59	06:13	05:29	05:59	06:00
	20:45	20:14	19:33	17:48	17:19	17:13	17:29	17:55	18:21	19:48	20:22	20:46
24	06:29	07:04	07:31	06:59	07:25	07:40	07:31	06:58	06:11	05:28	05:59	06:01
	20:44	20:13	19:32	17:47	17:18	17:13	17:30	17:56	18:22	19:49	20:23	20:47
25	06:30	07:05	07:32	07:00	07:25	07:40	07:31	06:56	06:10	05:26	05:59	06:01
	20:44	20:11	19:30	17:46	17:17	17:13	17:31	17:56	18:22	19:50	20:24	20:47
26	06:31	07:06	07:33	07:01	07:26	07:40	07:30	06:55	06:08	05:25	05:58	06:02
	20:43	20:10	19:29	17:45	17:17	17:14	17:32	17:57	18:23	19:51	20:25	20:48
27	06:32	07:07	07:34	07:02	07:27	07:41	07:29	06:54	06:07	05:24	05:58	06:02
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28	06:34	07:08	07:35	07:02	07:28	07:41	07:28	06:52	06:05	05:23	05:57	06:03
	20:41	20:07	19:26	17:42	17:16	17:14	17:33	17:59	18:25	19:54	20:27	20:48
29	06:35		07:35	07:03	07:28	07:41	07:27	06:51	06:03	05:21	05:57	06:04
	20:41		19:24	17:41	17:15	17:15	17:34	18:00	18:26	19:55	20:28	20:49
30	06:36		07:36	07:04	07:29	07:41	07:26	06:49	06:02	05:20	05:57	06:04
	20:40		19:23	17:40	17:15	17:15	17:35	18:01	18:27	19:56	20:29	20:49
31	06:37		07:37		07:30		07:26	06:48		06:19		06:05
	20:39		19:21		17:15		17:36	18:01		19:57		20:49
Potential sun hours	447	378	383	334	314	288	305	331	355	405	424	456
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	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:

**Elaine Wind Farm adjusted Sep 2014**

Description:

Elaine section of the Lal Lal Wind Farm

Printed/Page

12/02/2015 1:30 PM / 28

Licensed user:

**West Wind Energy Pty Ltd**  
 Office 5, Level 1, Nexus Centre 12-14 Prince Street  
 AU-GISBORNE Victoria 3437  
 +61 3 5421 9999  
 Adam Gray / gray@w-wind.com.au  
 Calculated:  
 12/02/2015 1:30 PM/2.9.285

**SHADOW - Calendar per WTG**

**WTG: 21 - REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (72)**

**Assumptions for shadow calculations**

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	06:06	06:38	07:09	07:38	07:05	07:31	07:41	07:25	06:47	06:01	06:18	05:57
	20:50	20:39	20:06	19:20	17:39	17:14	17:16	17:37	18:02	18:28	19:58	20:30
2	06:07	06:39	07:10	07:39	07:06	07:31	07:41	07:24	06:45	05:59	06:17	05:56
	20:50	20:38	20:05	19:18	17:38	17:14	17:16	17:37	18:03	18:29	19:59	20:31
3	06:08	06:41	07:11	07:40	07:07	07:32	07:41	07:23	06:44	05:58	06:16	05:56
	20:50	20:37	20:03	19:17	17:37	17:14	17:17	17:38	18:04	18:30	20:00	20:32
4	06:09	06:42	07:12	07:41	07:08	07:33	07:40	07:22	06:42	06:56	06:15	05:56
	20:50	20:36	20:02	19:15	17:35	17:13	17:17	17:39	18:05	19:31	20:01	20:33
5	06:10	06:43	07:13	06:42	07:09	07:33	07:40	07:21	06:41	06:54	06:14	05:56
	20:50	20:35	20:00	18:14	17:34	17:13	17:18	17:40	18:06	19:31	20:02	20:34
6	06:11	06:44	07:14	06:43	07:10	07:34	07:40	07:20	06:39	06:53	06:13	05:56
	20:50	20:34	19:59	18:12	17:33	17:13	17:18	17:41	18:07	19:32	20:03	20:35
7	06:11	06:45	07:15	06:44	07:11	07:34	07:40	07:19	06:38	06:51	06:12	05:56
	20:50	20:33	19:57	18:11	17:32	17:13	17:19	17:41	18:07	19:33	20:04	20:36
8	06:12	06:46	07:16	06:45	07:12	07:35	07:40	07:18	06:36	06:50	06:11	05:56
	20:50	20:32	19:56	18:09	17:31	17:12	17:19	17:42	18:08	19:34	20:06	20:36
9	06:13	06:47	07:17	06:46	07:12	07:35	07:39	07:17	06:35	06:49	06:10	05:56
	20:50	20:31	19:54	18:08	17:30	17:12	17:20	17:43	18:09	19:35	20:07	20:37
10	06:14	06:49	07:18	06:46	07:13	07:36	07:39	07:16	06:33	06:47	06:09	05:56
	20:50	20:30	19:53	18:06	17:29	17:12	17:20	17:44	18:10	19:36	20:08	20:38
11	06:15	06:50	07:19	06:47	07:14	07:36	07:39	07:14	06:32	06:46	06:08	05:56
	20:50	20:29	19:52	18:05	17:28	17:12	17:21	17:45	18:11	19:37	20:09	20:39
12	06:16	06:51	07:20	06:48	07:15	07:37	07:38	07:13	06:30	06:44	06:07	05:56
	20:50	20:28	19:50	18:04	17:27	17:12	17:22	17:46	18:12	19:38	20:10	20:40
13	06:17	06:52	07:21	06:49	07:16	07:37	07:38	07:12	06:28	06:43	06:06	05:56
	20:49	20:26	19:49	18:02	17:26	17:12	17:22	17:47	18:12	19:39	20:11	20:41
14	06:18	06:53	07:22	06:50	07:17	07:38	07:38	07:11	06:27	06:41	06:05	05:57
	20:49	20:25	19:47	18:01	17:26	17:12	17:23	17:47	18:13	19:40	20:12	20:41
15	06:19	06:54	07:23	06:51	07:18	07:38	07:37	07:10	06:25	06:40	06:05	05:57
	20:49	20:24	19:46	17:59	17:25	17:12	17:24	17:48	18:14	19:41	20:13	20:42
16	06:20	06:55	07:24	06:52	07:18	07:39	07:37	07:08	06:24	06:38	06:04	05:57
	20:48	20:23	19:44	17:58	17:24	17:12	17:24	17:49	18:15	19:42	20:14	20:43
17	06:22	06:56	07:25	06:53	07:19	07:39	07:36	07:07	06:22	06:37	06:03	05:57
	20:48	20:22	19:43	17:57	17:23	17:12	17:25	17:50	18:16	19:43	20:15	20:43
18	06:23	06:57	07:25	06:54	07:20	07:39	07:35	07:06	06:21	06:36	06:03	05:58
	20:48	20:21	19:41	17:55	17:22	17:12	17:26	17:51	18:17	19:44	20:16	20:44
19	06:24	06:58	07:26	06:55	07:21	07:39	07:35	07:05	06:19	06:34	06:02	05:58
	20:47	20:19	19:39	17:54	17:22	17:12	17:26	17:52	18:18	19:45	20:17	20:45
20	06:25	06:59	07:27	06:55	07:22	07:40	07:34	07:03	06:18	06:33	06:01	05:59
	20:47	20:18	19:38	17:53	17:21	17:12	17:27	17:52	18:18	19:46	20:19	20:45
21	06:26	07:01	07:28	06:56	07:23	07:40	07:34	07:02	06:16	06:32	06:01	05:59
	20:46	20:17	19:36	17:51	17:20	17:12	17:28	17:53	18:19	19:47	20:20	20:46
22	06:27	07:02	07:29	06:57	07:23	07:40	07:33	07:01	06:14	06:30	06:00	06:00
	20:46	20:15	19:35	17:50	17:19	17:13	17:29	17:54	18:20	19:48	20:21	20:46
23	06:28	07:03	07:30	06:58	07:24	07:40	07:32	06:59	06:13	06:29	06:00	06:00
	20:45	20:14	19:33	17:49	17:19	17:13	17:29	17:55	18:21	19:49	20:22	20:47
24	06:29	07:04	07:31	06:59	07:25	07:40	07:32	06:58	06:11	06:28	05:59	06:01
	20:44	20:13	19:32	17:47	17:18	17:13	17:30	17:56	18:22	19:50	20:23	20:47
25	06:30	07:05	07:32	07:00	07:26	07:41	07:31	06:57	06:10	06:26	05:59	06:01
	20:44	20:11	19:30	17:46	17:18	17:13	17:31	17:57	18:23	19:51	20:24	20:48
26	06:31	07:06	07:33	07:01	07:26	07:41	07:30	06:55	06:08	06:25	05:58	06:02
	20:43	20:10	19:29	17:45	17:17	17:14	17:32	17:57	18:23	19:52	20:25	20:48
27	06:33	07:07	07:34	07:02	07:27	07:41	07:29	06:54	06:07	06:24	05:58	06:02
	20:42	20:09	19:27	17:44	17:16	17:14	17:32	17:58	18:24	19:53	20:26	20:48
28	06:34	07:08	07:35	07:03	07:28	07:41	07:28	06:52	06:05	06:23	05:57	06:03
	20:42	20:07	19:26	17:42	17:16	17:14	17:33	17:59	18:25	19:54	20:27	20:49
29	06:35		07:36	07:04	07:29	07:41	07:28	06:51	06:04	06:22	05:57	06:04
	20:41		19:24	17:41	17:15	17:15	17:34	18:00	18:26	19:55	20:28	20:49
30	06:36		07:37	07:04	07:29	07:41	07:27	06:49	06:02	06:20	05:57	06:05
	20:40		19:23	17:40	17:15	17:15	17:35	18:01	18:27	19:56	20:29	20:49
31	06:37		07:37		07:30		07:26	06:48		06:19		06:05
	20:39		19:21		17:15		17:36	18:02		19:57		20:49
Potential sun hours	447	378	383	334	313	288	305	331	355	405	424	456
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	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:

Elaine Wind Farm adjusted Sep 2014

Description:

Elaine section of the Lal Lal Wind Farm

Printed/Page

12/02/2015 1:30 PM / 29

Licensed user:

West Wind Energy Pty Ltd  
Office 5, Level 1, Nexus Centre 12-14 Prince Street  
AU-GISBORNE Victoria 3437  
+61 3 5421 9999

Adam Gray / gray@w-wind.com.au

Calculated:

12/02/2015 1:30 PM/2.9.285

### SHADOW - Calendar per WTG

WTG: 22 - REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (73)

#### Assumptions for shadow calculations

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	06:06	06:38	07:09	07:38	07:05	07:31	07:41	07:25	06:47	06:01	06:18	05:57
	20:50	20:38	20:06	19:20	17:39	17:14	17:16	17:37	18:02	18:28	19:58	20:30
2	06:07	06:39	07:10	07:39	07:06	07:31	07:41	07:24	06:45	05:59	06:17	05:56
	20:50	20:38	20:05	19:18	17:38	17:14	17:16	17:37	18:03	18:29	19:59	20:31
3	06:08	06:41	07:11	07:40	07:07	07:32	07:41	07:23	06:44	05:58	06:16	05:56
	20:50	20:37	20:03	19:17	17:37	17:14	17:17	17:38	18:04	18:30	20:00	20:32
4	06:09	06:42	07:12	07:41	07:08	07:33	07:40	07:22	06:42	06:56	06:15	05:56
	20:50	20:36	20:02	19:15	17:35	17:13	17:17	17:39	18:05	19:31	20:01	20:33
5	06:10	06:43	07:13	06:42	07:09	07:33	07:40	07:21	06:41	06:54	06:14	05:56
	20:50	20:35	20:00	18:14	17:34	17:13	17:18	17:40	18:06	19:31	20:02	20:34
6	06:11	06:44	07:14	06:43	07:10	07:34	07:40	07:20	06:39	06:53	06:13	05:56
	20:50	20:34	19:59	18:12	17:33	17:13	17:18	17:41	18:07	19:32	20:03	20:35
7	06:11	06:45	07:15	06:44	07:11	07:34	07:40	07:19	06:38	06:51	06:12	05:56
	20:50	20:33	19:57	18:11	17:32	17:13	17:19	17:41	18:07	19:33	20:04	20:36
8	06:12	06:46	07:16	06:45	07:12	07:35	07:40	07:18	06:36	06:50	06:11	05:56
	20:50	20:32	19:56	18:09	17:31	17:12	17:19	17:42	18:08	19:34	20:06	20:36
9	06:13	06:47	07:17	06:46	07:12	07:35	07:39	07:17	06:35	06:48	06:10	05:56
	20:50	20:31	19:54	18:08	17:30	17:12	17:20	17:43	18:09	19:35	20:07	20:37
10	06:14	06:49	07:18	06:46	07:13	07:36	07:39	07:16	06:33	06:47	06:09	05:56
	20:50	20:30	19:53	18:06	17:29	17:12	17:20	17:44	18:10	19:36	20:08	20:38
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	20:50	20:29	19:51	18:05	17:28	17:12	17:21	17:45	18:11	19:37	20:09	20:39
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	20:49	20:26	19:49	18:02	17:26	17:12	17:22	17:47	18:12	19:39	20:11	20:40
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	20:49	20:25	19:47	18:01	17:26	17:12	17:23	17:47	18:13	19:40	20:12	20:41
15	06:19	06:54	07:23	06:51	07:18	07:38	07:37	07:10	06:25	06:40	06:05	05:57
	20:49	20:24	19:46	17:59	17:25	17:12	17:24	17:48	18:14	19:41	20:13	20:42
16	06:20	06:55	07:24	06:52	07:18	07:38	07:37	07:08	06:24	06:38	06:04	05:57
	20:48	20:23	19:44	17:58	17:24	17:12	17:24	17:49	18:15	19:42	20:14	20:43
17	06:22	06:56	07:25	06:53	07:19	07:39	07:36	07:07	06:22	06:37	06:03	05:57
	20:48	20:22	19:42	17:57	17:23	17:12	17:25	17:50	18:16	19:43	20:15	20:43
18	06:23	06:57	07:25	06:54	07:20	07:39	07:35	07:06	06:21	06:36	06:03	05:58
	20:48	20:20	19:41	17:55	17:22	17:12	17:26	17:51	18:17	19:44	20:16	20:44
19	06:24	06:58	07:26	06:55	07:21	07:39	07:35	07:05	06:19	06:34	06:02	05:58
	20:47	20:19	19:39	17:54	17:22	17:12	17:26	17:52	18:17	19:45	20:17	20:45
20	06:25	06:59	07:27	06:55	07:22	07:40	07:34	07:03	06:18	06:33	06:01	05:59
	20:47	20:18	19:38	17:53	17:21	17:12	17:27	17:52	18:18	19:46	20:19	20:45
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	20:46	20:17	19:36	17:51	17:20	17:12	17:28	17:53	18:19	19:47	20:20	20:46
22	06:27	07:02	07:29	06:57	07:23	07:40	07:33	07:01	06:14	06:30	06:00	06:00
	20:46	20:15	19:35	17:50	17:19	17:13	17:29	17:54	18:20	19:48	20:21	20:46
23	06:28	07:03	07:30	06:58	07:24	07:40	07:32	06:59	06:13	06:29	06:00	06:00
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	20:44	20:11	19:30	17:46	17:18	17:13	17:31	17:57	18:23	19:51	20:24	20:48
26	06:31	07:06	07:33	07:01	07:26	07:41	07:30	06:55	06:08	06:25	05:58	06:02
	20:43	20:10	19:29	17:45	17:17	17:14	17:32	17:57	18:23	19:52	20:25	20:48
27	06:33	07:07	07:34	07:02	07:27	07:41	07:29	06:54	06:07	06:24	05:58	06:02
	20:42	20:09	19:27	17:44	17:16	17:14	17:32	17:58	18:24	19:53	20:26	20:48
28	06:34	07:08	07:35	07:03	07:28	07:41	07:28	06:52	06:05	06:23	05:57	06:03
	20:42	20:07	19:26	17:42	17:16	17:14	17:33	17:59	18:25	19:54	20:27	20:49
29	06:35		07:36	07:04	07:29	07:41	07:28	06:51	06:04	06:22	05:57	06:04
	20:41		19:24	17:41	17:15	17:15	17:34	18:00	18:26	19:55	20:28	20:49
30	06:36		07:36	07:04	07:29	07:41	07:27	06:49	06:02	06:20	05:57	06:05
	20:40		19:23	17:40	17:15	17:15	17:35	18:01	18:27	19:56	20:29	20:49
31	06:37		07:37		07:30		07:26	06:48		06:19		06:05
	20:39		19:21		17:15		17:36	18:02		19:57		20:49
Potential sun hours	447	378	383	334	313	288	305	331	355	405	424	456
Sum of minutes with flicker	0	0	0	0	0	0	0	0	0	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:

Elaine Wind Farm adjusted Sep 2014

Description:

Elaine section of the Lal Lal Wind Farm

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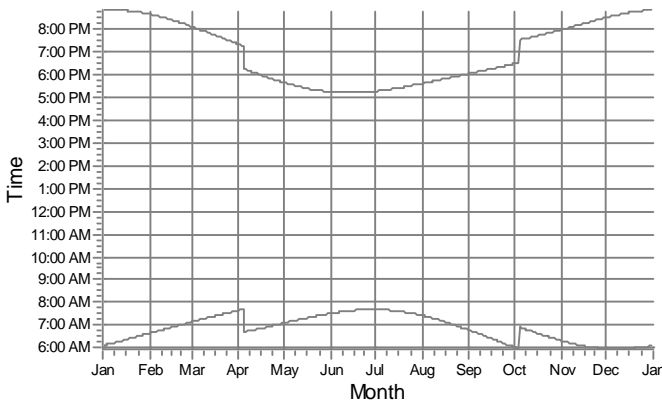
Adam Gray / gray@w-wind.com.au

Calculated:

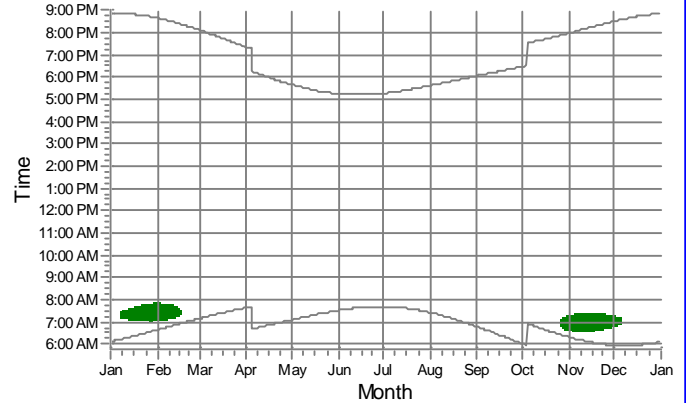
12/02/2015 1:30 PM/2.9.285

### SHADOW - Calendar per WTG, graphical

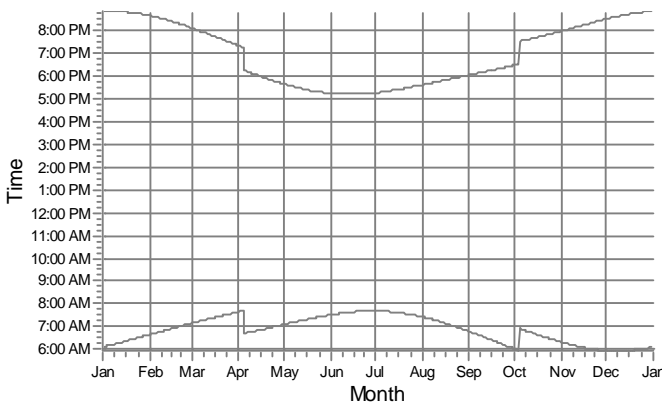
1: REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (50)



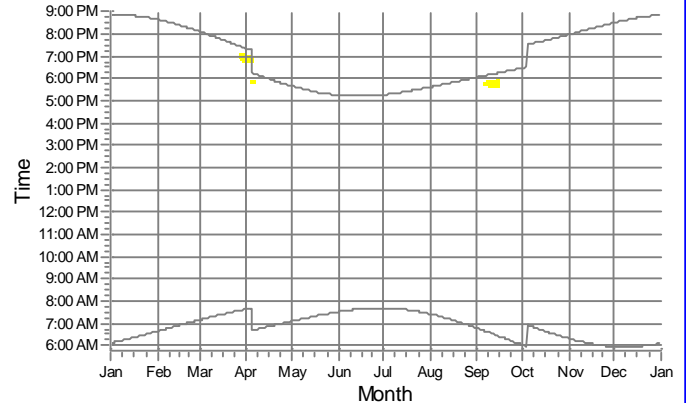
2: REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (51)



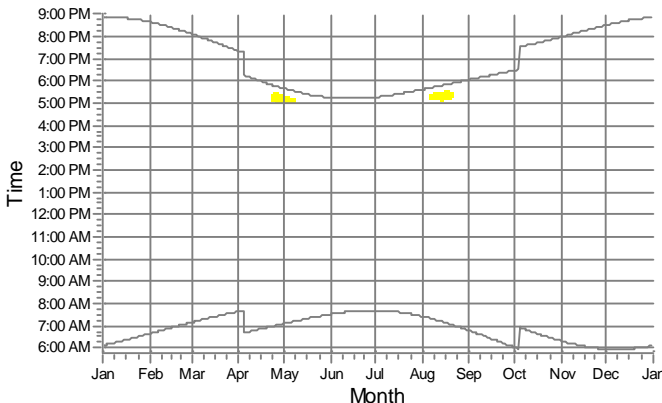
3: REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (52)



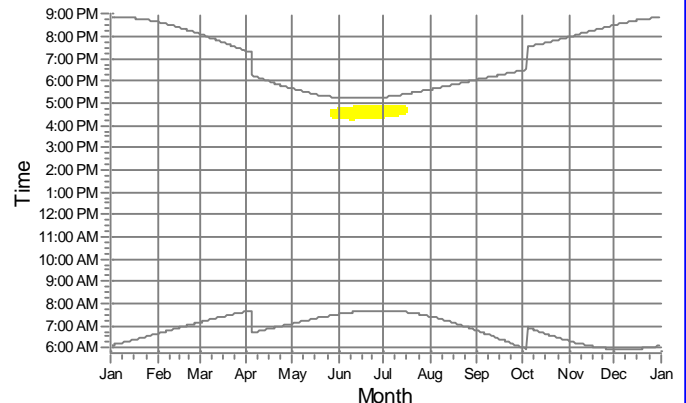
4: REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (53)



5: REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (54)



6: REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (55)



Shadow receptors

- A: Shadow Receptor: 2.0 x 2.0 Azimuth: 0.0° Slope: 90.0° (1)
- B: Shadow Receptor: 2.0 x 2.0 Azimuth: 0.0° Slope: 90.0° (2)

Project:

Elaine Wind Farm adjusted Sep 2014

Description:

Elaine section of the Lal Lal Wind Farm

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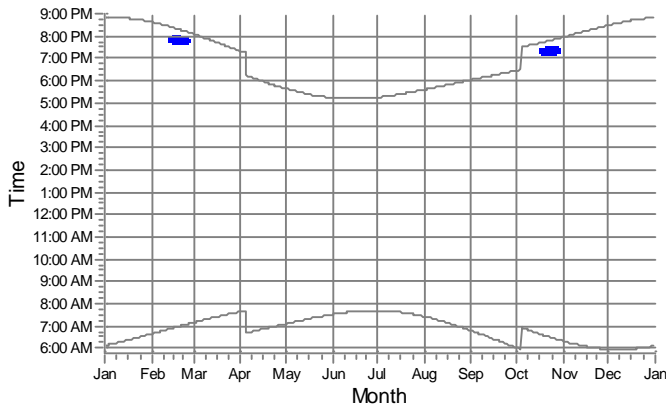
Adam Gray / gray@w-wind.com.au

Calculated:

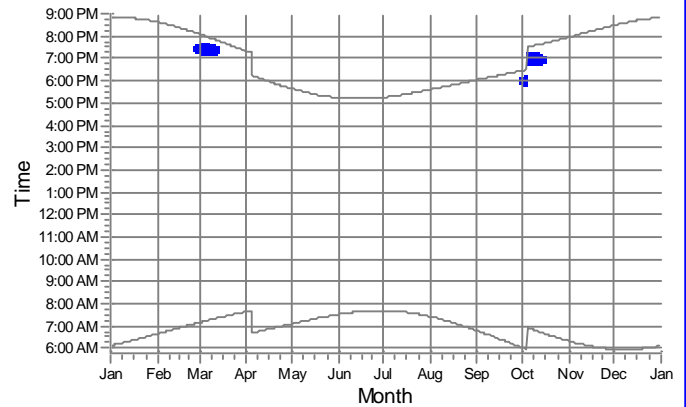
12/02/2015 1:30 PM/2.9.285

### SHADOW - Calendar per WTG, graphical

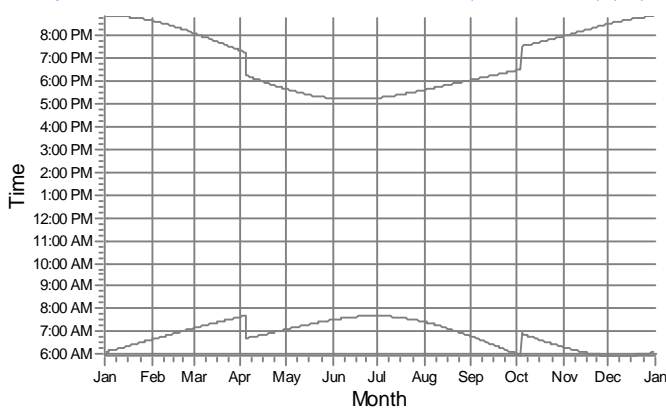
7: REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (56)



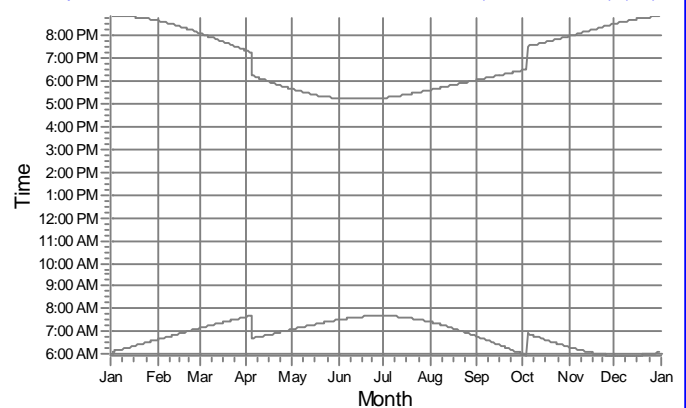
8: REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (57)



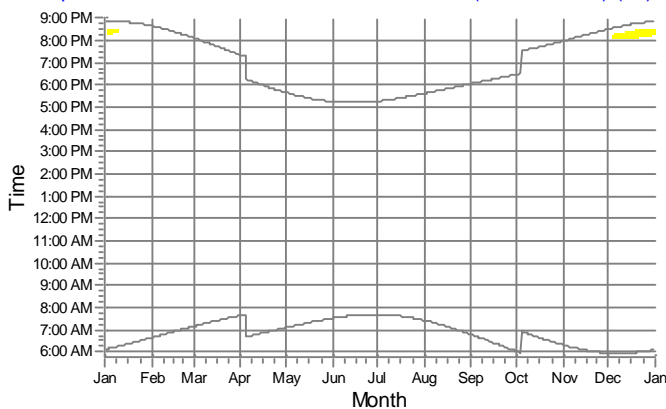
9: REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (59)



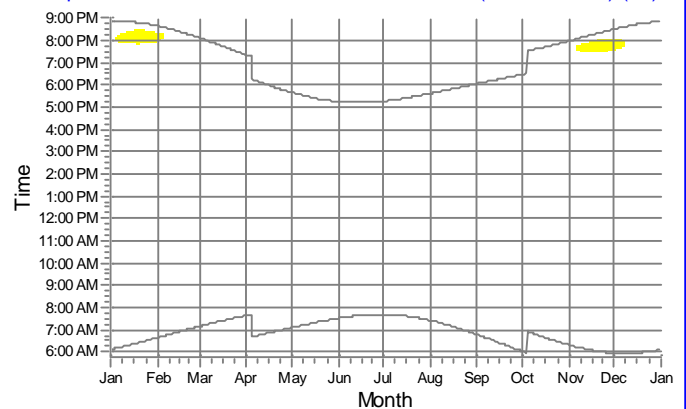
10: REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (60)



11: REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (61)



12: REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (62)



Shadow receptors

- B: Shadow Receptor: 2.0 x 2.0 Azimuth: 0.0° Slope: 90.0° (2)
- C: Shadow Receptor: 2.0 x 2.0 Azimuth: 0.0° Slope: 90.0° (3)

Project:

Elaine Wind Farm adjusted Sep 2014

Description:

Elaine section of the Lal Lal Wind Farm

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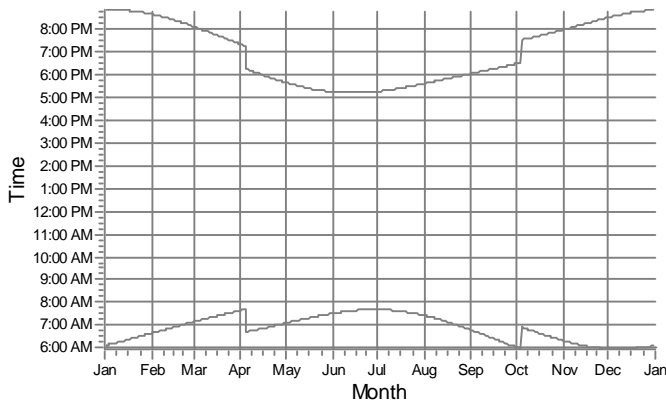
Adam Gray / gray@w-wind.com.au

Calculated:

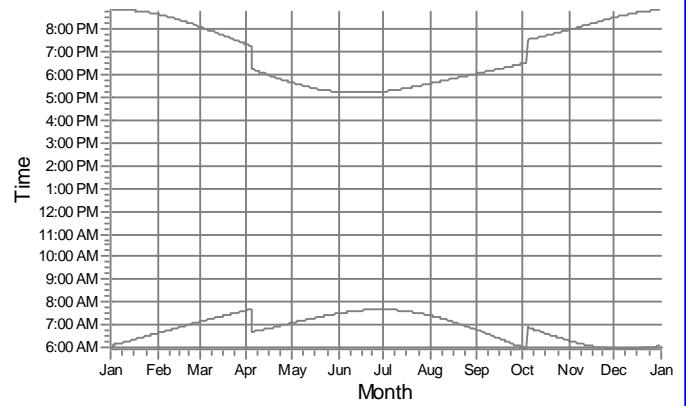
12/02/2015 1:30 PM/2.9.285

### SHADOW - Calendar per WTG, graphical

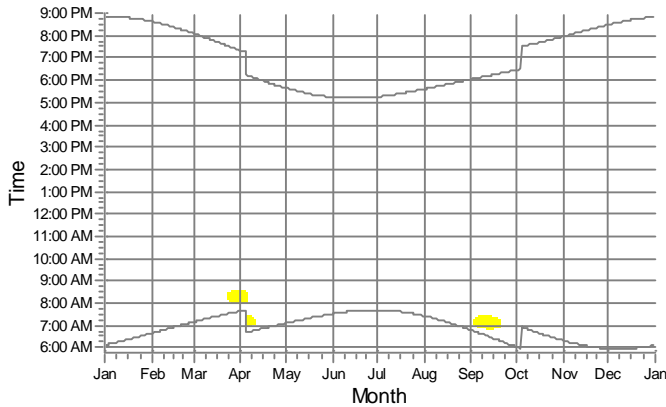
13: REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (63)



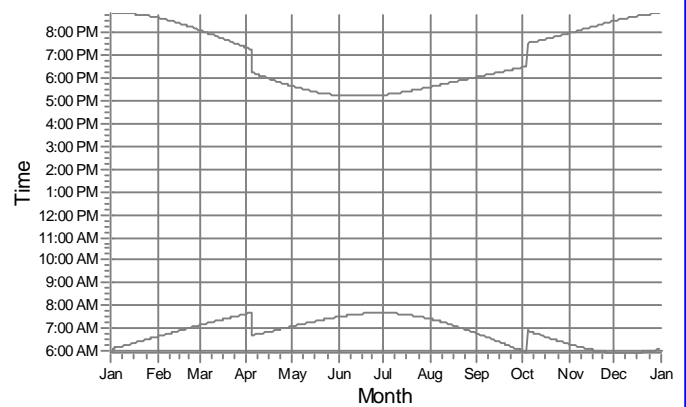
14: REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (64)



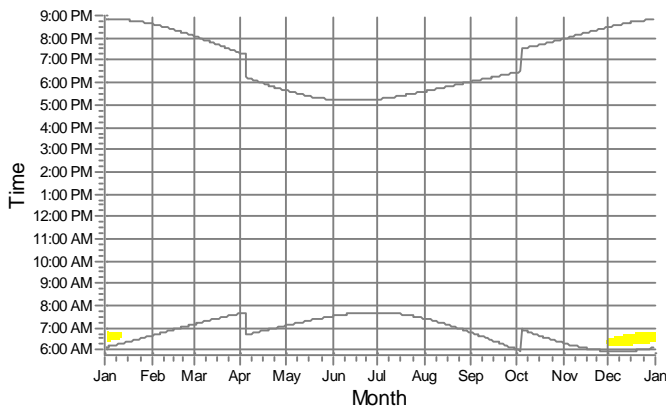
15: REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (65)



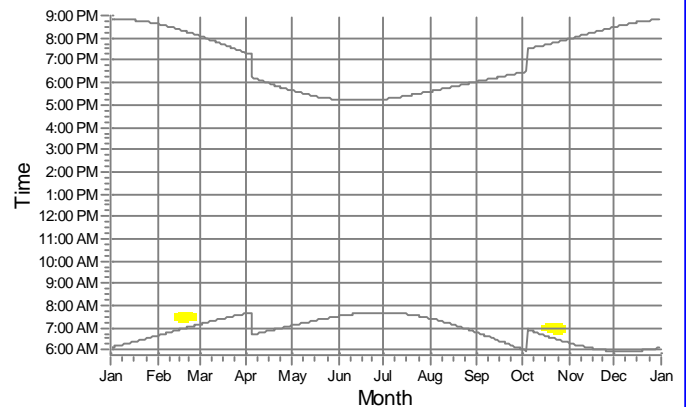
16: REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (66)



17: REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (67)



18: REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (68)



Shadow receptors



B: Shadow Receptor: 2.0 x 2.0 Azimuth: 0.0° Slope: 90.0° (2)

Project:

**Elaine Wind Farm adjusted Sep 2014**

Description:

Elaine section of the Lal Lal Wind Farm

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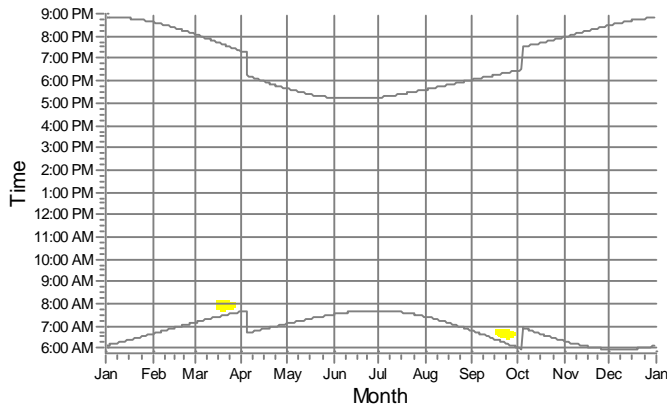
Adam Gray / gray@w-wind.com.au

Calculated:

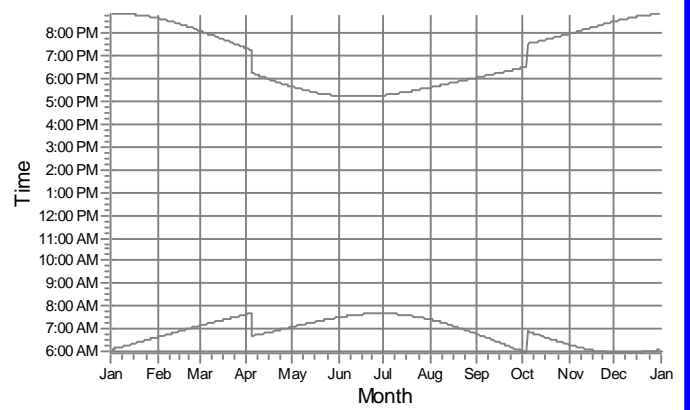
12/02/2015 1:30 PM/2.9.285

## SHADOW - Calendar per WTG, graphical

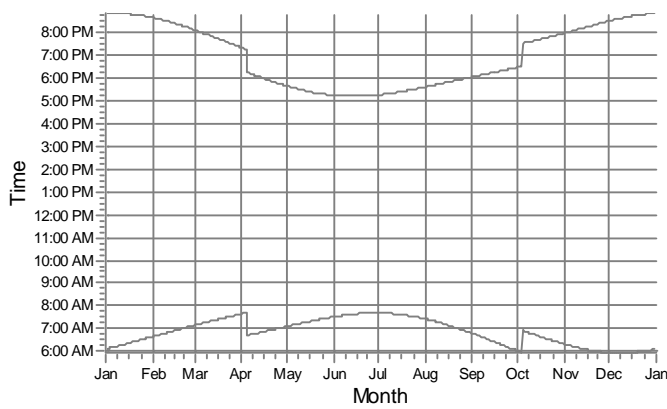
19: REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (69)



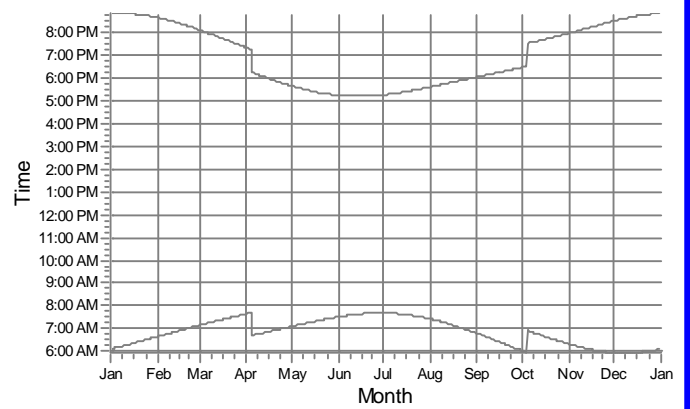
20: REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (70)



21: REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (72)



22: REpower 3.2M114 3200 114.0 !O! hub: 103.0 m (TOT: 160.0 m) (73)



Shadow receptors



B: Shadow Receptor: 2.0 x 2.0 Azimuth: 0.0° Slope: 90.0° (2)



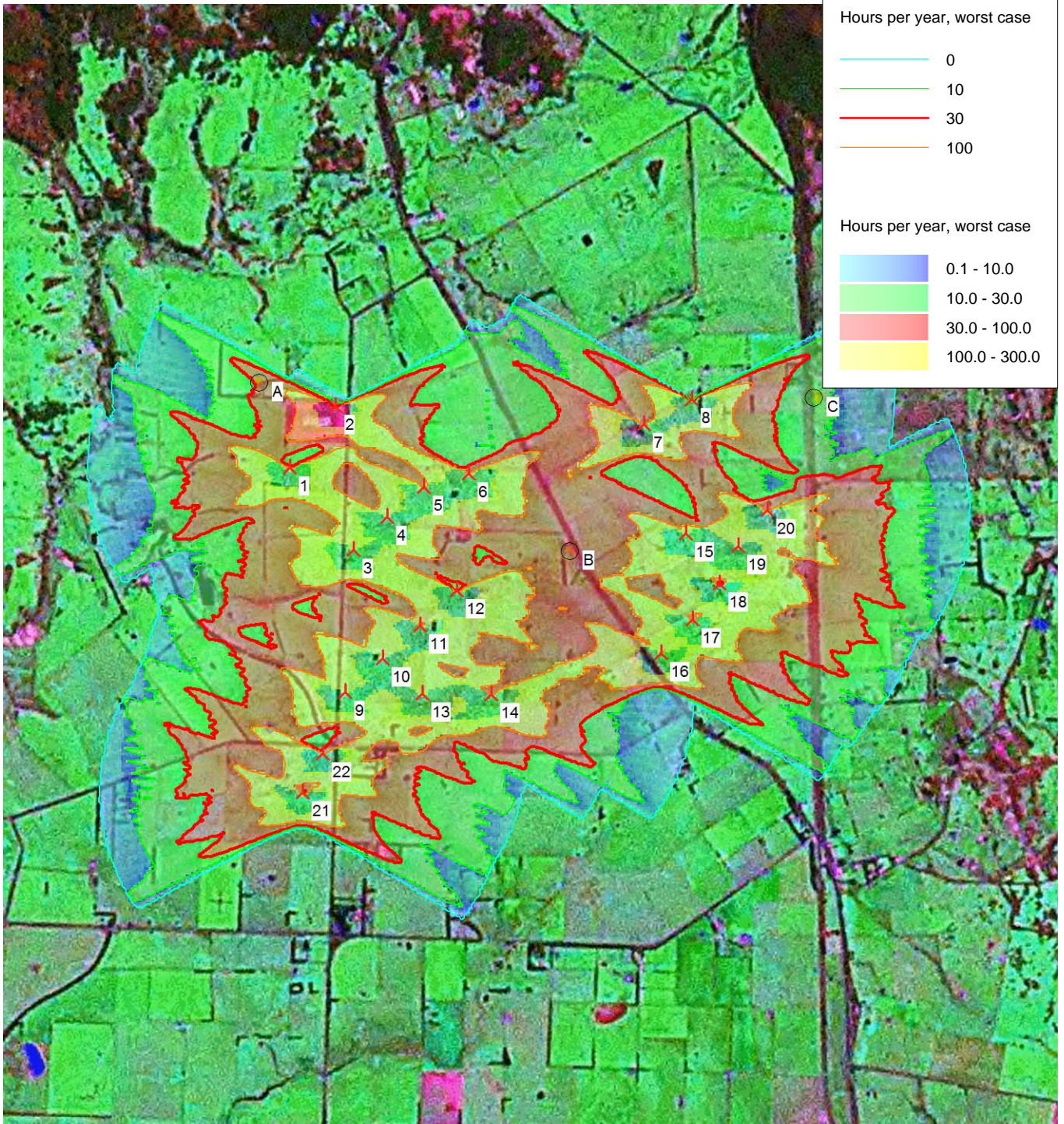
Project:  
**Elaine Wind Farm adjusted Sep 2014**

Description:  
 Elaine section of the Lal Lal Wind Farm

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**SHADOW - Map**



Hours per year, worst case

- 0
- 10
- 30
- 100

Hours per year, worst case

- 0.1 - 10.0
- 10.0 - 30.0
- 30.0 - 100.0
- 100.0 - 300.0

0 500 1000 1500 2000 m

Map: WindPRO map , Print scale 1:50,000, Map center UTM GDA94 Zone: 55 East: 235,580 North: 5,817,140

New WTG

Shadow receptor

Flicker map level: Height Contours: CONTOURLINE\_ONLINEDATA\_0.wpo (1)