

1 July 2014

HOLLOW BEARING TREE AERIAL IMAGERY ASSESSMENT METHODOLOGY

The aerial assessment of Hollow Bearing Trees was performed using imagery from the New South Wales Land & Property Information department and Microsoft Bing.

The methodology for performing the aerial assessment for Hollow Bearing Trees was developed during a site visit to the Yass Valley Wind Farm site on 17 & 18 June 2014 and confirmed during a teleconference with the Office of Environment & Heritage, the Department of Planning & Environment, nghenvironmental & Epuron on 24 June 2014. The agreed methodology is described below.

Methodology agreed for Hollow Bearing Tree assessment

- All turbine locations to be assessed
- All trees with a canopy diameter over 15m should be counted as having potential for hollows.
- All stags (standing dead trees) should be counted.
- Where the wind turbine generator (WTG) is on the top of a hill with land sloping away from the location a 50m radius from the WTG should be used as the potential impact zone within which suitable trees should be identified and counted. This method has been used if the surrounding terrain falls by 10m in altitude over a length of 50m i.e. gradient $\Rightarrow$ 20%
- Where the wind turbine generator (WTG) is located with flat land adjacent or the adjacent land slopes upwards a 100m radius from the WTG should be used as the potential impact zone within which suitable trees should be identified and counted.
- Where the wind turbine generator (WTG) is on land which slopes up on one side and down on the other (i.e. side of a hill) a 100m radius from the WTG should be used on the flat and uphill side and a 50m radius on the downward sloping side as the potential impact zone within which suitable trees should be identified and counted.
- It is proposed that where tree density is high (9 locations identified) the treed area has been outlined and 15m diameter circles applied to fill the space. This is considered conservative as in these denser areas, many canopies are likely to be less than 15m.

Epuron (Michael Kurnik) completed the counts and nghenvironmental (Brooke Marshall) checked a sample (44 of 144 turbine sites, 27/06/14) to confirm the methods and results.

RESULTS

144 turbine sites were evaluated using the methods above. In total,

- 154 stags were identified
- 367 live trees of canopy diameter greater than 15m were identified, and assumed to be hollow bearing

It is noted that 42 turbine sites had no stags or trees greater than 15m within the specified buffer zones.

A data set (shp file and spreadsheet) accompanies this summary. A sample is provided from this data set overleaf.

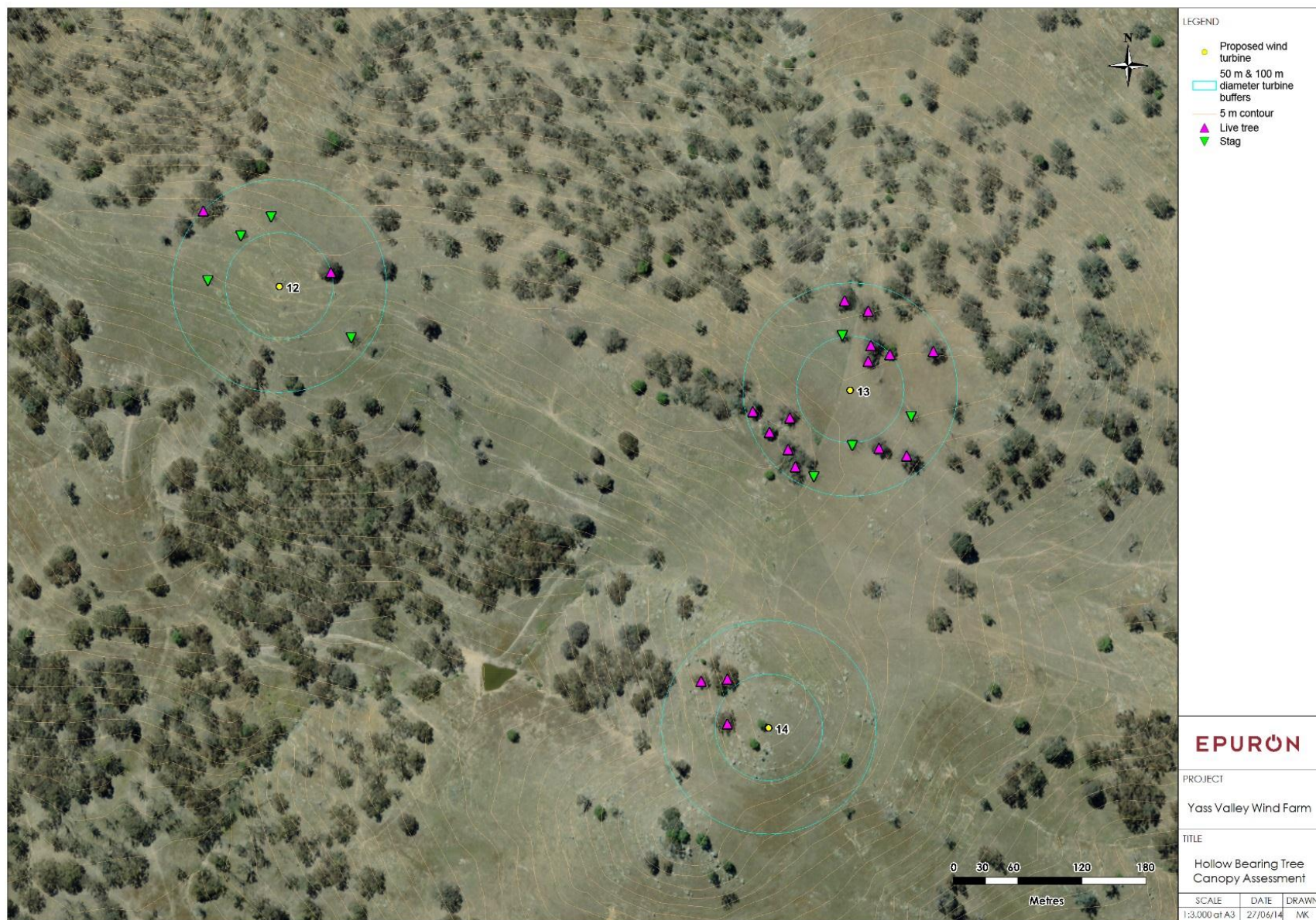
Yours sincerely,

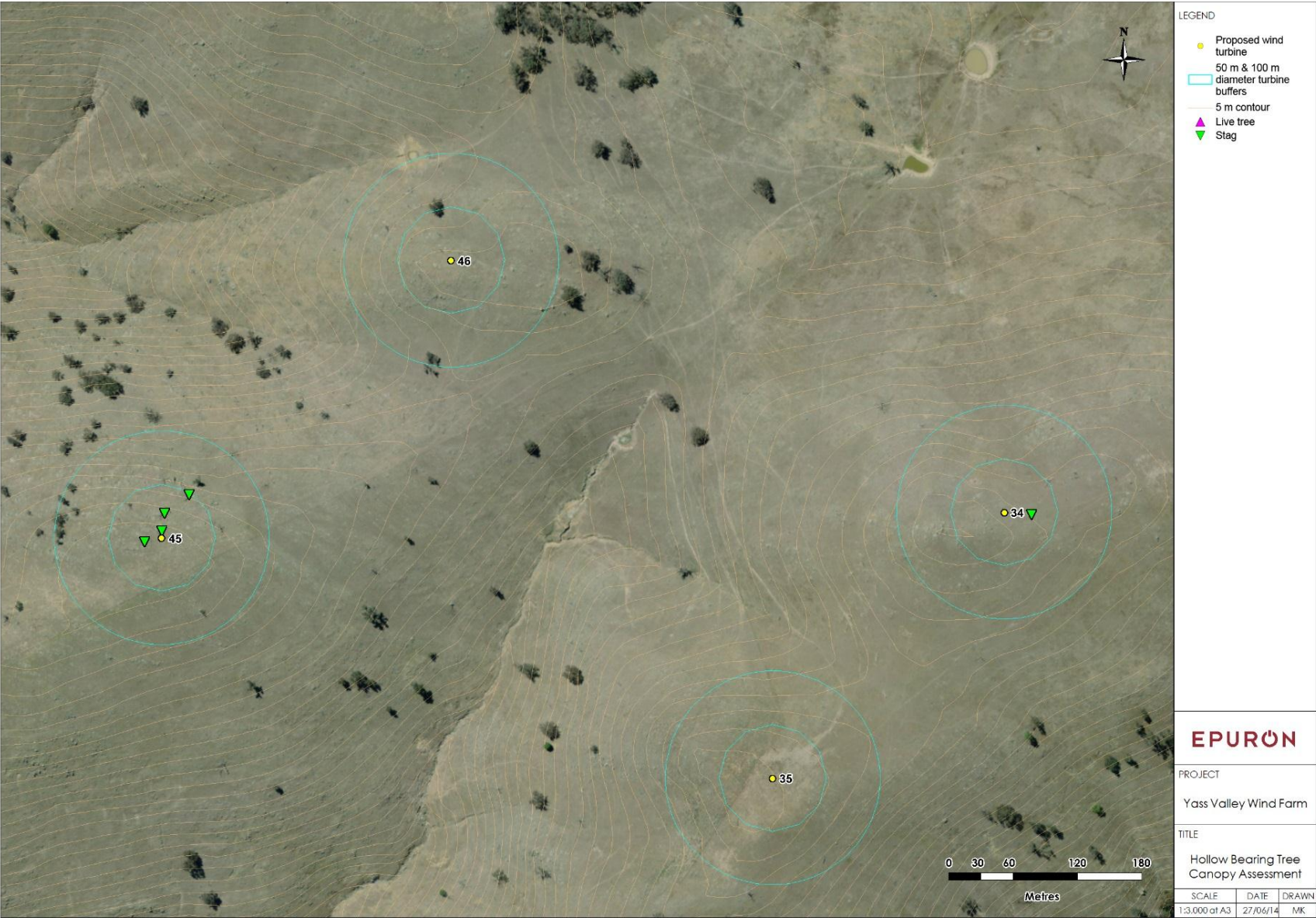


MICHAEL KURNIK

Project Manager

ph 02 8456 7401





Updated assessment for 134 turbines – August 2014

Turbine ID	Number of HBTs	Turbine ID	Number of HBTs	Turbine ID	Number of HBTs	Turbine ID	Number of HBTs	Turbine ID	Number of HBTs
1	1	28	1	55	1	82	0	123	2
2	0	29	3	56	32	83	3	124	1
3	4	30	2	57	3	84	1	125	0
4	11	31	3	58	1	85	0	126	3
5	10	32	0	59	4	86	2	127	8
6	8	33	0	60	0	87	3	128	3
7	1	34	1	61	3	88	3	129	6
8	7	35	0	62	2	92	0	130	1
9	1	36	17	63	6	100	2	131	0
10	6	37	4	64	3	101	3	132	1
11	1	38	2	65	2	102	6	133	0
12	6	39	0	66	0	103	2	134	1
13	17	40	0	67	1	104	1	135	3
14	3	41	6	68	0	105	2	136	0
15	0	42	0	69	1	106	1	137	9
16	0	43	0	70	2	110	2	138	5
17	2	44	0	71	0	111	5	139	0
18	0	45	4	72	3	112	2	140	1
19	8	46	0	73	4	114	5	141	2
20	1	47	0	74	0	115	1	142	2
21	0	48	1	75	6	116	1	143	0
22	0	49	1	76	1	117	0	144	0
23	0	50	0	77	17	118	5	145	73
24	1	51	1	78	4	119	0	146	1
25	1	52	1	79	0	120	1	147	0
26	0	53	0	80	12	121	1	148	27
27	0	54	1	81	1	122	1		