STOCKYARD HILL Wind Farm

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Subject: Stockyard Hill Wind Farm PL-SP/05/0548/B

Supporting information to assist in the review of revised Plans (Conditions 1 and 6f)

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Goldwind Australia (GWA), acting on behalf of the Stockyard Hill Wind Farm Pty Ltd, has applied for amendment of Conditions 13 and 18 of Planning Permit SP/05/0548/B to reflect the total native vegetation removed during construction of Stockyard Hill Wind Farm, and to provide appropriate offsets. The amendment application was amended on 21 December 2021 through provision of a planning application report and supporting material.

If the Permit is amended as requested, GWA requests the Minister's endorsement of the attached revised set of development plans (referenced in the attached Plan Register) as the Condition 1 Development Plans. The Plans include micrositing under Condition 2 and are consistent with the updated NVMP submitted for endorsement under Condition 6 (f).

The SMEC Native Vegetation Assessment (dated 18 December 20) provided in Appendix B of the permit amendment application (21 December 2021) considers it unlikely that the total extent, quality and location of additional native vegetation removals have resulted in additional significant impacts to Victoria's biodiversity. The following additional material is provided to assist the Minister's consideration of the above request:

- Survey details for the relocated wind turbines, including setback details from a dwelling within 1km of a turbine (Appendix A)
- The Setback Plans (part of the updated DPs) show distance to nearest non-participating dwelling;
- Maps showing the layout changes relative to the endorsed development plan (Appendix B);
- Copies of advice from appropriately qualified experts referred to in Condition 2(i) confirming that the layout modifications have not resulted in a material adverse change in landscape, vegetation, cultural heritage, visual, shadow flicker, noise, fire risk or aviation impacts compared to the endorsed plans (Appendices C to I); and
- Details of compliance in relation to Conditions1 and 4 requirements (Appendix J).

STOCKYARD HILL Wind Farm

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Should you have any questions in relation to the information provided, please do not hesitate to contact me.

Yours sincerely,

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Attachments:

Appendix A - Survey Detail

Appendix B - Relative layout changes

Appendices C - I - Specialist assessments and summary of expert advice

Appendix J - Summary of compliance in relation to Conditions1 and 4 requirements

APPENDICES A – I

APPENDICES A AND B – DETAILS OF MICRO-SITING

APPENDICES C TO I – EXPERT ADVICE IN RESPECT OF IMPACTS FROM MICRO-SITING

APPENDIX A – DETAILS OF TURBINE LOCATIONS FOR THE TWO ASSESSED LAYOUTS

	Endorsed Condition 1 Dev Plan				Post-Construction Condition 2 Microsited Layout				Micro-siting and Tip Height details for C2MS				C2MS - C1DP
Turbine no.	Approx. Coordinate X	Approx. Coordinate Y	Approx. Natural Ground Level	Tip height AHD (m)	Survey Coordinate X	Survey Coordinate Y	Survey Elevation Natural Surface (NS)	Survey Elevation Top Flange Ring (TF)	Distance moved (m)	Bearing of Turbine movement	Tip Height above Natural Ground	Tip height AHD (m)	Difference in tip height (m)
1	702961	5850946	*367.5*	*547.5*	702961	5850946	367.60	*367.895*	*0*	*0.0*	*179.245*	*546.845*	-0.70
2	704536	5850412	*401.3*	*581.3*	704536	5850412	404.50	*404.565*	*0*	*0.0*	*179.015*	*583.515*	2.20
3	701970	5851867	*393.4*	*573.4*	701970	5851867	393.10	*393.135*	*0*	*0.0*	*178.985*	*572.085*	-1.33
4	702658	5852068	*401.9*	*581.9*	702722	5852065	404.90	*404.885*	*64*	*91.0*	*178.935*	*583.835*	1.90
5	702934	5851497	*381.5*	*561.5*	702934	5851497	377.30	*377.305*	*0*	*0.0*	*178.955*	*556.255*	-5.24
6	703087	5852543	*404.1*	*584.1*	703087	5852543	407.40	*407.400*	*0*	*0.0*	*178.950*	*586.350*	2.24
7	703596	5852201	*409.6*	*589.6*	703596	5852201	410.71	*410.830*	*0*	*0.0*	*179.070*	*589.780*	0.22
8	704067	5852005	*411.6*	*591.6*	704098	5852006	415.34	*415.320*	*31*	*87.3*	*178.930*	*594.270*	2.67
9	704594	5851892	*424.0*	*604.0*	704594	5851892	425.21	*425.190*	*0*	*0.0*	*178.930*	*604.140*	0.10
10	699378	5851524	*354.3*	*534.3*	699378	5851524	355.00	*355.090*	*0*	*0.0*	*179.040*	*534.040*	-0.29
11	699594	5852033	*383.8*	*563.8*	699594	5852033	387.30	*387.295*	*0*	*0.0*	*178.945*	*566.245*	2.44
12	697994	5852375	*359.7*	*539.7*	697994	5852375	360.10	*360.138*	*0*	*0.0*	*178.988*	*539.088*	-0.57
13	696903	5852632	*353.3*	*533.3*	696903	5852632	352.32	*352.406*	*0*	*0.0*	*179.036*	*531.356*	-1.98
14	696816	5853112	*363.7*	*543.7*	696831	5853118	362.90	*363.120*	*16*	*66.8*	*179.170*	*542.070*	-1.64
15	697352	5853140	*344.4*	*524.4*	697361	5853240	341.18	*341.680*	*100*	*4.0*	*179.450*	*520.630*	-3.78
16	704666	5840919	*431.9*	*611.9*	704666	5840919	435.53	*435.560*	*0*	*0.0*	*178.980*	*614.510*	2.66
17	704144	5840637	*404.0*	*584.0*	704144	5840637	402.60	*401.200*	*0*	*0.0*	*177.550*	*580.150*	-3.83
18	703604	5840545	*396.4*	*576.4*	703604	5840545	393.88	*394.065*	*0*	*0.0*	*179.135*	*573.015*	-3.41
19	703093	5840552	*390.5*	*570.5*	703093	5840552	390.02	*390.582*	*0*	*0.0*	*179.512*	*569.532*	-0.95
20	703972	5839955	*403.2*	*583.2*	703972	5839955	402.03	*402.095*	*0*	*0.0*	*179.015*	*581.045*	-2.11
21	703575	5839465	*397.4*	*577.4*	703575	5839465	398.00	*398.152*	*0*	*0.0*	*179.102*	*577.102*	-0.25
22	703420	5841212	*390.3*	*570.3*	703420	5841212	387.89	*388.623*	*0*	*0.0*	*179.683*	*567.573*	-2.71
23	703965	5841397	*394.2*	*574.2*	703965	5841397	392.65	*392.770*	*0*	*0.0*	*179.070*	*571.720*	-2.43
24	703514	5841802	*388.3*	*568.3*	703514	5841802	386.70	*387.254*	*0*	*0.0*	*179.504*	*566.204*	-2.11
25	702900	5842225	*373.1*	*553.1*	702900	5842225	372.43	*372.992*	*0*	*0.0*	*179.512*	*551.942*	-1.17
26	703968	5842414	*388.0*	*568.0*	703968	5842414	386.20	*386.908*	*0*	*0.0*	*179.658*	*565.858*	-2.15
27	704476	5842359	*388.6*	*568.6*	704532	5842352	386.52	*387.075*	*56*	*95.2*	*179.505*	*566.025*	-2.54
28	703463	5842528	*384.3*	*564.3*	703463	5842528	381.95	*382.518*	*0*	*0.0*	*179.518*	*561.468*	-2.81
29	703127	5842919	*381.0*	*561.0*	703127	5842919	377.68	*378.244*	*0*	*0.0*	*179.514*	*557.194*	-3.79
30	702608	5842843	*366.3*	*546.3*	702608	5842843	366.07	*366.134*	*0*	*0.0*	*179.014*	*545.084*	-1.17
31	701943	5843592	*356.7*	*536.7*	701927	5843580	352.82	*353.029*	*20*	*231.0*	*179.159*	*531.979*	-4.67
32	703683	5843029	*386.7*	*566.7*	703683	5843029	387.97	*388.035*	*0*	*0.0*	*179.015*	*566.985*	0.29
33	704167	5843295	*371.2*	*551.2*	704167	5843295	369.90	*370.530*	*0*	*0.0*	*179.580*	*549.480*	-1.75
34	704968	5843893	*385.8*	*565.8*	704968	5843893	387.25	*387.669*	*0*	*291.1*	*179.369*	*566.619*	0.83
35	702793	5841323	*381.6*	*561.6*	702793	5841323	379.86	*380.193*	*0*	*0.0*	*179.283*	*559.143*	-2.47
36	702525	5841912	*373.5*	*553.5*	702525	5841912	372.91	*373.523*	*0*	*0.0*	*179.563*	*552.473*	-1.02

37	702406	5840754	*380.0*	*560.0*	702406	5840754	379.18	*379.870*	*0*	*0.0*	*179.640*	*558.820*	-1.19
38	702129	5841376	*370.7*	*550.7*	702129	5841376	368.91	*369.371*	*0*	*0.0*	*179.411*	*548.321*	-2.41
39	701795	5841798	*363.2*	*543.2*	701795	5841798	360.29	*360.976*	*0*	*0.0*	*179.636*	*539.926*	-3.32
40	701242	5841562	*361.5*	*541.5*	701242	5841562	357.99	*358.049*	*0*	*0.0*	*179.009*	*536.999*	-4.55
41	701686	5840831	*374.6*	*554.6*	701686	5840831	372.33	*372.864*	*0*	*0.0*	*179.484*	*551.814*	-2.74
42	701107	5840803	*364.4*	*544.4*	701107	5840803	361.27	*361.808*	*0*	*0.0*	*179.488*	*540.758*	-3.61
43	701345	5840315	*366.7*	*546.7*	701345	5840315	363.19	*363.715*	*0*	*0.0*	*179.475*	*542.665*	-4.04
44	700969	5839898	*366.4*	*546.4*	700969	5839898	364.00	*364.535*	*0*	*0.0*	*179.485*	*543.485*	-2.91
45	700750	5839386	*361.5*	*541.5*	700750	5839386	358.39	*358.495*	*0*	*0.0*	*179.055*	*537.445*	-4.09
46	699995	5839374	*357.4*	*537.4*	699995	5839374	353.98	*354.020*	*0*	*0.0*	*178.990*	*532.970*	-4.42
47	702091	5840217	*375.5*	*555.5*	702091	5840217	373.77	*374.298*	*0*	*0.0*	*179.478*	*553.248*	-2.25
48	702753	5839828	*383.5*	*563.5*	702753	5839828	382.68	*382.675*	*0*	*0.0*	*178.945*	*561.625*	-1.86
49	702311	5839261	*373.7*	*553.7*	702311	5839261	372.13	*372.573*	*0*	*0.0*	*179.393*	*551.523*	-2.15
50	702915	5838918	*381.0*	*561.0*	702915	5838918	379.03	*379.490*	*0*	*0.0*	*179.410*	*558.440*	-2.54
51	701501	5839692	*368.2*	*548.2*	701501	5839692	366.04	*366.404*	*0*	*0.0*	*179.314*	*545.354*	-2.89
52	701578	5839096	*365.3*	*545.3*	701578	5839096	363.50	*364.010*	*0*	*0.0*	*179.460*	*542.960*	-2.30
53	702305	5838649	*369.6*	*549.6*	702305	5838649	366.98	*367.558*	*0*	*0.0*	*179.528*	*546.508*	-3.11
54	701753	5838374	*361.2*	*541.2*	701753	5838374	359.40	*359.963*	*0*	*0.0*	*179.513*	*538.913*	-2.27
55	701099	5838869	*364.6*	*544.6*	701099	5838869	363.16	*363.725*	*0*	*0.0*	*179.515*	*542.675*	-1.97
56	700448	5838975	*366.7*	*546.7*	700448	5838975	364.63	*365.181*	*0*	*0.0*	*179.501*	*544.131*	-2.61
57	700212	5838479	*357.9*	*537.9*	700212	5838479	355.51	*355.580*	*0*	*0.0*	*179.020*	*534.530*	-3.40
58	700028	5837050	*328.8*	*508.8*	700028	5837050	326.54	*327.002*	*0*	*0.0*	*179.412*	*505.952*	-2.84
59	700797	5836663	*331.1*	*511.1*	700797	5836663	329.02	*329.587*	*0*	*0.0*	*179.517*	*508.537*	-2.52
60	699878	5838908	*357.0*	*537.0*	699878	5838908	353.25	*353.814*	*0*	*0.0*	*179.514*	*532.764*	-4.25
61	699336	5838700	*351.2*	*531.2*	699336	5838700	348.60	*349.158*	*0*	*0.0*	*179.508*	*528.108*	-3.12
62	699322	5839251	*351.8*	*531.8*	699322	5839251	350.48	*350.539*	*0*	*0.0*	*179.009*	*529.489*	-2.27
63	698765	5838888	*347.9*	*527.9*	698765	5838888	345.63	*346.195*	*0*	*0.0*	*179.515*	*525.145*	-2.78
64	698366	5839207	*343.2*	*523.2*	698366	5839207	340.56	*340.797*	*0*	*0.0*	*179.187*	*519.747*	-3.47
65	698674	5839618	*343.0*	*523.0*	698674	5839618	340.62	*341.188*	*0*	*0.0*	*179.518*	*520.138*	-2.85
66	699070	5839935	*342.5*	*522.5*	699070	5839935	339.98	*340.658*	*0*	*0.0*	*179.628*	*519.608*	-2.90
67	699605	5839811	*349.1*	*529.1*	699605	5839811	347.06	*347.520*	*0*	*0.0*	*179.410*	*526.470*	-2.60
68	698244	5840083	*336.0*	*516.0*	698244	5840083	333.81	*334.355*	*0*	*0.0*	*179.495*	*513.305*	-2.69
69	697918	5839649	*332.1*	*512.1*	697918	5839649	327.76	*328.301*	*0*	*0.0*	*179.491*	*507.251*	-4.85
70	707276	5848366	*389.3*	*569.3*	707276	5848366	391.75	*391.552*	*0*	*0.0*	*178.752*	*570.502*	1.21
71	706697	5848321	*366.7*	*546.7*	706697	5848321	368.48	*368.862*	*0*	*0.0*	*179.332*	*547.812*	1.10
72	707764	5848565	*409.9*	*589.9*	707764	5848565	413.20	*413.338*	*0*	*0.0*	*179.088*	*592.288*	2.36
73	707943	5847939	*391.3*	*571.3*	707943	5847939	393.35	*393.794*	*0*	*0.0*	*179.394*	*572.744*	1.40
74	707415	5847830	*389.4*	*569.4*	707415	5847830	393.68	*393.854*	*0*	*0.0*	*179.124*	*572.804*	3.36
75	707000	5847645	*392.6*	*572.6*	707000	5847645	393.28	*393.350*	*0*	*0.0*	*179.020*	*572.300*	-0.33
76	707322	5847285	*374.9*	*554.9*	707322	5847285	374.94	*375.185*	*0*	*0.0*	*179.195*	*554.135*	-0.76
77	706643	5847404	*397.6*	*577.6*	706643	5847404	396.40	*396.491*	*0*	*0.0*	*179.041*	*575.441*	-2.13
78	705997	5846836	*382.6*	*562.6*	705997	5846836	381.80	*382.063*	*0*	*0.0*	*179.213*	*561.013*	-1.56

79	706178	5847399	*393.7*	*573.7*	706178	5847399	398.70	*398.788*	*0*	*0.0*	*179.038*	*577.738*	4.00
80	705657	5847248	*390.0*	*570.0*	705657	5847250	390.70	*390.787*	*2*	*0.0*	*179.037*	*569.737*	-0.29
81	708266	5848584	*372.5*	*552.5*	708266	5848584	371.30	*371.447*	*0*	*0.0*	*179.097*	*550.397*	-2.12
82	708248	5849092	*385.2*	*565.2*	708248	5849092	379.98	*380.565*	*0*	*0.0*	*179.535*	*559.515*	-5.67
83	708058	5849561	*392.8*	*572.8*	708058	5849561	391.53	*391.661*	*0*	*0.0*	*179.081*	*570.611*	-2.17
84	708518	5848087	*365.7*	*545.7*	708518	5848087	365.20	*365.290*	*0*	*0.0*	*179.040*	*544.240*	-1.41
85	708456	5847582	*366.7*	*546.7*	708456	5847582	365.50	*365.661*	*0*	*0.0*	*179.111*	*544.611*	-2.09
86	709263	5847903	*365.7*	*545.7*	709272	5847951	363.35	*363.897*	*49*	*9.4*	*179.497*	*542.847*	-2.89
87	709970	5847874	*372.9*	*552.9*	710020	5847899	371.12	*371.325*	*56*	*62.0*	*179.155*	*550.275*	-2.67
88	709861	5848586	*373.7*	*553.7*	709819	5848584	369.59	*369.693*	*42*	*265.5*	*179.053*	*548.643*	-5.10
89	709736	5849070	*370.6*	*550.6*	709736	5849070	367.72	*367.834*	*0*	*0.0*	*179.064*	*546.784*	-3.83
90	710225	5849113	*387.1*	*567.1*	710225	5849113	386.10	*386.225*	*0*	*0.0*	*179.075*	*565.175*	-1.88
91	710426	5848610	*377.2*	*557.2*	710426	5848610	374.96	*375.406*	*0*	*0.0*	*179.396*	*554.356*	-2.85
92	711161	5848721	*427.1*	*607.1*	711161	5848721	427.97	*428.391*	*0*	*0.0*	*179.371*	*607.341*	0.27
93	711186	5849226	*393.0*	*573.0*	711186	5849226	391.42	*391.670*	*0*	*0.0*	*179.200*	*570.620*	-2.41
94	712257	5849143	*404.7*	*584.7*	712257	5849143	408.53	*408.701*	*0*	*0.0*	*179.121*	*587.651*	2.98
95	712356	5848444	*398.9*	*578.9*	712356	5848444	400.55	*401.051*	*0*	*0.0*	*179.451*	*580.001*	1.13
96	710101	5844908	*368.3*	*548.3*	710101	5844908	364.79	*365.206*	*0*	*0.0*	*179.366*	*544.156*	-4.12
97	709880	5844452	*363.1*	*543.1*	709880	5844452	359.84	*360.174*	*0*	*0.0*	*179.284*	*539.124*	-3.99
98	710355	5844267	*363.4*	*543.4*	710355	5844267	360.95	*361.077*	*0*	*0.0*	*179.077*	*540.027*	-3.40
99	710626	5844786	*373.5*	*553.5*	710626	5844786	371.55	*371.816*	*0*	*0.0*	*179.216*	*550.766*	-2.75
100	711390	5844715	*381.3*	*561.3*	711390	5844715	380.82	*381.054*	*0*	*0.0*	*179.184*	*560.004*	-1.26
101	711514	5843927	*374.7*	*554.7*	711514	5843927	373.00	*373.170*	*0*	*0.0*	*179.120*	*552.120*	-2.62
102	711027	5843910	*365.0*	*545.0*	711027	5843910	362.40	*362.562*	*0*	*0.0*	*179.112*	*541.512*	-3.49
103	711274	5843205	*364.9*	*544.9*	711274	5843205	363.70	*363.975*	*0*	*0.0*	*179.225*	*542.925*	-2.00
104	710958	5842681	*356.8*	*536.8*	710958	5842681	355.40	*355.777*	*0*	*0.0*	*179.327*	*534.727*	-2.10
105	711996	5844324	*382.5*	*562.5*	711996	5844324	380.32	*380.518*	*0*	*0.0*	*179.148*	*559.468*	-3.06
106	712567	5844036	*365.8*	*545.8*	712567	5844036	365.65	*365.780*	*0*	*0.0*	*179.080*	*544.730*	-1.05
107	713180	5844022	*355.4*	*535.4*	713180	5844022	354.00	*354.263*	*0*	*0.0*	*179.213*	*533.213*	-2.20
108	712086	5843715	*372.0*	*552.0*	712086	5843715	371.98	*372.294*	*0*	*0.0*	*179.264*	*551.244*	-0.76
109	711783	5843045	*357.5*	*537.5*	711783	5843045	356.05	*356.260*	*0*	*0.0*	*179.160*	*535.210*	-2.28
110	707874	5839366	*365.2*	*545.2*	707874	5839366	364.00	*364.442*	*0*	*0.0*	*179.392*	*543.392*	-1.76
111	709046	5838882	*359.4*	*539.4*	709046	5838882	358.37	*358.538*	*0*	*0.0*	*179.118*	*537.488*	-1.96
112	709676	5839607	*358.0*	*538.0*	709626	5839525	357.30	*357.667*	*96*	*209.9*	*179.317*	*536.617*	-1.37
113	709045	5832608	*335.4*	*515.4*	709069	5832651	333.98	*334.586*	*49*	*27.3*	*179.556*	*513.536*	-1.84
114	709511	5832837	*337.8*	*517.8*	709567	5832779	337.03	*337.552*	*80*	*134.5*	*179.472*	*516.502*	-1.32
115	709467	5831817	*338.0*	*518.0*	709467	5831817	336.33	*336.395*	*0*	*0.0*	*179.015*	*515.345*	-2.61
116	712358	5832215	*374.7*	*554.7*	712358	5832215	373.02	*373.578*	*0*	*0.0*	*179.508*	*552.528*	-2.19
117	712888	5832290	*379.3*	*559.3*	712888	5832290	378.52	*378.661*	*0*	*0.0*	*179.091*	*557.611*	-1.71
118	712669	5832677	*396.2*	*576.2*	712669	5832677	394.85	*395.417*	*0*	*0.0*	*179.517*	*574.367*	-1.83
119	712209	5832780	*401.6*	*581.6*	712209	5832780	401.44	*402.018*	*0*	*0.0*	*179.528*	*580.968*	-0.60
120	712291	5833286	*418.6*	*598.6*	712291	5833286	418.50	*419.040*	*0*	*0.0*	*179.490*	*597.990*	-0.59

121	712270	5833761	*394.3*	*574.3*	712270	5833761	393.18	*393.567*	*0*	*0.0*	*179.337*	*572.517*	-1.81
122	711819	5832989	*396.0*	*576.0*	711819	5832989	394.83	*395.436*	*0*	*0.0*	*179.556*	*574.386*	-1.62
123	711409	5833292	*411.0*	*591.0*	711424	5833279	412.68	*413.235*	*20*	*129.5*	*179.505*	*592.185*	1.14
124	711050	5833660	*365.6*	*545.6*	711050	5833660	364.70	*365.355*	*0*	*308.2*	*179.605*	*544.305*	-1.30
125	710612	5833401	*354.3*	*534.3*	710612	5833401	352.17	*352.601*	*0*	*0.0*	*179.381*	*531.551*	-2.75
126	713114	5833173	*397.5*	*577.5*	713114	5833173	396.34	*396.881*	*0*	*0.0*	*179.491*	*575.831*	-1.67
127	713303	5832554	*381.8*	*561.8*	713303	5832554	377.15	*377.713*	*0*	*0.0*	*179.513*	*556.663*	-5.12
128	713580	5832976	*375.9*	*555.9*	713583	5832972	373.50	*373.808*	*5*	*143.1*	*179.258*	*552.758*	-3.17
129	714056	5833144	*359.3*	*539.3*	714056	5833144	355.39	*355.956*	*0*	*0.0*	*179.516*	*534.906*	-4.41
130	712717	5834028	*389.5*	*569.5*	712717	5834028	388.69	*389.225*	*0*	*0.0*	*179.485*	*568.175*	-1.28
131	713079	5833676	*390.4*	*570.4*	713079	5833676	387.62	*388.205*	*0*	*0.0*	*179.535*	*567.155*	-3.22
132	713566	5833496	*371.9*	*551.9*	713566	5833496	371.20	*371.768*	*0*	*0.0*	*179.518*	*550.718*	-1.16
133	713443	5834084	*361.4*	*541.4*	713443	5834084	360.54	*360.904*	*0*	*0.0*	*179.314*	*539.854*	-1.51
134	713912	5833871	*358.0*	*538.0*	713912	5833871	357.27	*357.833*	*0*	*0.0*	*179.513*	*536.783*	-1.17
135	714394	5834054	*348.5*	*528.5*	714394	5834054	347.76	*348.330*	*0*	*0.0*	*179.520*	*527.280*	-1.25
136	714504	5833560	*348.3*	*528.3*	714504	5833560	346.16	*346.223*	*0*	*0.0*	*179.013*	*525.173*	-3.10
137	714973	5833364	*343.5*	*523.5*	714973	5833364	341.86	*341.877*	*0*	*0.0*	*178.967*	*520.827*	-2.67
138	715577	5832941	*351.3*	*531.3*	715577	5832941	347.89	*348.217*	*0*	*0.0*	*179.277*	*527.167*	-4.15
139	716240	5832587	*345.2*	*525.2*	716240	5832587	343.72	*344.108*	*0*	*0.0*	*179.338*	*523.058*	-2.10
140	712485	5831487	*361.1*	*541.1*	712485	5831487	360.83	*361.400*	*0*	*0.0*	*179.520*	*540.350*	-0.79
141	711392	5831086	*354.0*	*534.0*	711392	5831086	351.32	*351.880*	*0*	*0.0*	*179.510*	*530.830*	-3.16
142	712393	5830780	*349.6*	*529.6*	712393	5830780	347.64	*348.207*	*0*	*0.0*	*179.517*	*527.157*	-2.39
143	712327	5830293	*341.6*	*521.6*	712301	5830297	341.06	*341.564*	*26*	*277.8*	*179.454*	*520.514*	-1.05
144	712917	5830176	*348.4*	*528.4*	712917	5830176	346.38	*346.959*	*0*	*0.0*	*179.529*	*525.909*	-2.51
145	713076	5830672	*352.2*	*532.2*	713076	5830672	351.41	*351.987*	*0*	*0.0*	*179.527*	*530.937*	-1.21
146	713617	5830394	*352.5*	*532.5*	713617	5830394	352.23	*352.795*	*0*	*0.0*	*179.515*	*531.745*	-0.78
147	713938	5829977	*348.4*	*528.4*	713938	5829977	348.10	*348.413*	*0*	*0.0*	*179.263*	*527.363*	-1.00
148	714429	5829882	*343.0*	*523.0*	714429	5829882	341.88	*342.445*	*0*	*0.0*	*179.515*	*521.395*	-1.65
149	714523	5830369	*351.6*	*531.6*	714523	5830369	349.62	*350.181*	*0*	*0.0*	*179.511*	*529.131*	-2.44
										Min	177.55	505.95	-5.67
	Note 1 - Max Tip height above natural ground is 179.68 - Complies with Condition 4(b)									***Max***	**179.68**	**614.51**	**4.00**
	Note 2 - Maximum Tip Height is 614.51 AHD									***Average***	179.29	550.79	-1.84

APPENDIX B – RELATIVE LAYOUT CHANGES

EAST 1

STOCKYARD HILL Wind Farm

Privileged and Confidential: for the purpose of legal advice

SHWF DETAILS OF MICROSITING

Condition 1 DP layout vs as-constructed location

Map: 'East 1' - WTGs 74, 75, 76, 77, 78, 79, 80, 85

LEGEND

- Wind turbine (Endorsed layout)
- Met mast (Endorsed layout)
- Overhead powerline (Endorsed layout)
- Electrical reticulation (Endorsed layout)
- Access track (Endorsed layout)
- Site extent
- Wind turbine (As-built)
- Met mast (As-built)
- Overhead powerline (As-built)
- Electrical reticulation (As-built)
- Access track (As-built)
- Facility area (As-built)

Condition 1 DP (design) layout vs as-built micro-siting details

Windfarm infrastructure not shown in this table considered built as per design layout.

Facility area

East Site Compound / Batching Plant - Constructed up to 34m larger E-W and shifted ~6m N of design footprint.

Underground electrical reticulation

R74-1 - Constructed within 15m of design layout.
R75-1 - Constructed within 21m of design layout.
R76-1 - Constructed up to 85m north east of design layout in part.
R77-1 - Constructed within 17m of design layout.
R78-1 - Constructed within 9m of design layout.
R79-1 - Constructed within 12m of design layout.
R80-1 - Constructed within 30m of design layout.
R85-1 - Constructed up to 22m off design layout, takes more direct route.

Access tracks

A74-1 - Constructed within 10m north west of design track CL.
A74-2 - This section was designed as single track, constructed as dual tracks either side of fenceline.
A75-1 - Constructed within 12m north west of design track CL.
A76-1 - Constructed within 12m of design track CL.
A77-1 - Constructed within 7m of design track CL.
A77-2 - Constructed within 10m north west of design track CL.
A78-1 - Constructed within 16m of design track CL.
A79-1 - Constructed within 8m of design track CL.
A79-2 - Constructed within 8m of design track CL.
A80-1 - Constructed within 30m of design track CL.
A85-1 - Constructed within 15m of design track CL.

ADVERTISED PLAN

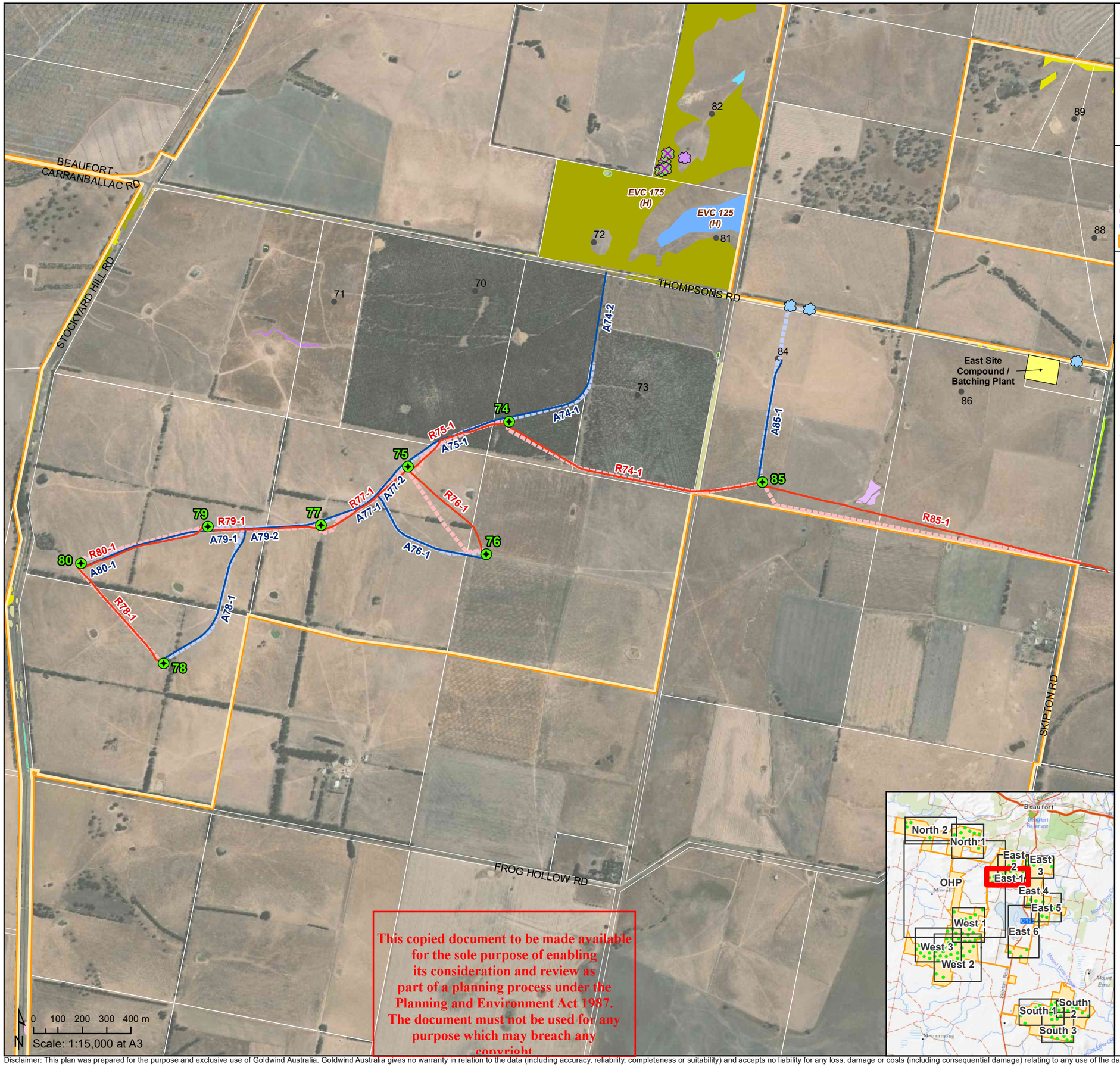
VEGETATION MAPPING

Scattered trees - Status (count)

- *Removed – SHWEF (5)*
- *Retained – Roads and Intersections (12)*
- *Retained – SHWEF (2)*

EVC - Quality

- *EVC 125 Plains Grassy Wetland - High*
- *EVC 125 Plains Grassy Wetland - Moderate*
- *EVC 132 Plains Grassland - Moderate*
- *EVC 175 Grassy Woodland - High*
- *EVC 175 Grassy Woodland - Moderate*
- *EVC 175 Grassy Woodland - Low*
- *EVC 20 Heathy Dry Forest - Moderate*
- *EVC 55 Plains Grassy Woodland - Moderate*
- *EVC 55 Plains Grassy Woodland - Low*
- *EVC 68 Creekline Grassy Woodland - Moderate*
- *EVC 68 Creekline Grassy Woodland - Low*
- *Modified Treeless Vegetation (Grassy Woodland) - Low*
- *Native vegetation on artificial substrate (Plains Grassy Wetland) - Low*



STOCKYARD HILL Wind Farm

EAST 2

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SHWF DETAILS OF MICROSITING

Condition 1 DP layout vs as-constructed location

Map: 'East 2' - WTGs 70, 71, 72, 73, 81, 82, 83, 84, 86

LEGEND

- Wind turbine (Endorsed layout)
- Met mast (Endorsed layout)
- Overhead powerline (Endorsed layout)
- Electrical reticulation (Endorsed layout)
- Access track (Endorsed layout)
- Site extent
- Wind turbine (As-built)
- Met mast (As-built)
- Overhead powerline (As-built)
- Electrical reticulation (As-built)
- Access track (As-built)
- Facility area (As-built)

Condition 1 DP (design) layout vs as-built micro-siting details

Windfarm infrastructure not shown in this table considered built as per design layout.

Wind turbines

WTG86 - Moved 48.9m, 9.4°

Facility area

East Site Compound / Batching Plant - Constructed up to 34m larger E-W and shifted ~6m N of design footprint.

Underground electrical reticulation

R70-1 - Constructed within 32m of design layout.
R71-1 - Constructed within 15m of design layout.
R72-1 - Constructed up to 115m west of design layout in part.
R73-1 - Constructed within 5m of design layout.
R81-1 - Constructed up to 69m off design layout, takes more direct route.
R82-1 - Constructed within 11m of design layout.
R83-1 - Constructed up to 97m off design layout in part.
R84-1 - Constructed up to 62m off design layout in part.
R86-1 - Constructed up to 41m off design layout in part.

Access tracks

A71-1 - Constructed within 30m of design track CL.
A72-1 - Rerouted to run SW from WTG72, extended to connect track to WTG83.
A73-1 - Constructed within 12m of design track CL.
A73-2 - This section was designed as single track, constructed as dual tracks either side of fenceline.
A81-1 - Rerouted south direct to existing road.
A82-1 - Constructed up to 100m north of design track CL.
A83-1 - Constructed up to 48m off design track CL in parts.
A84-1 - Constructed within 15m of design track CL.
A86-1 - Constructed within 25m of design track CL.

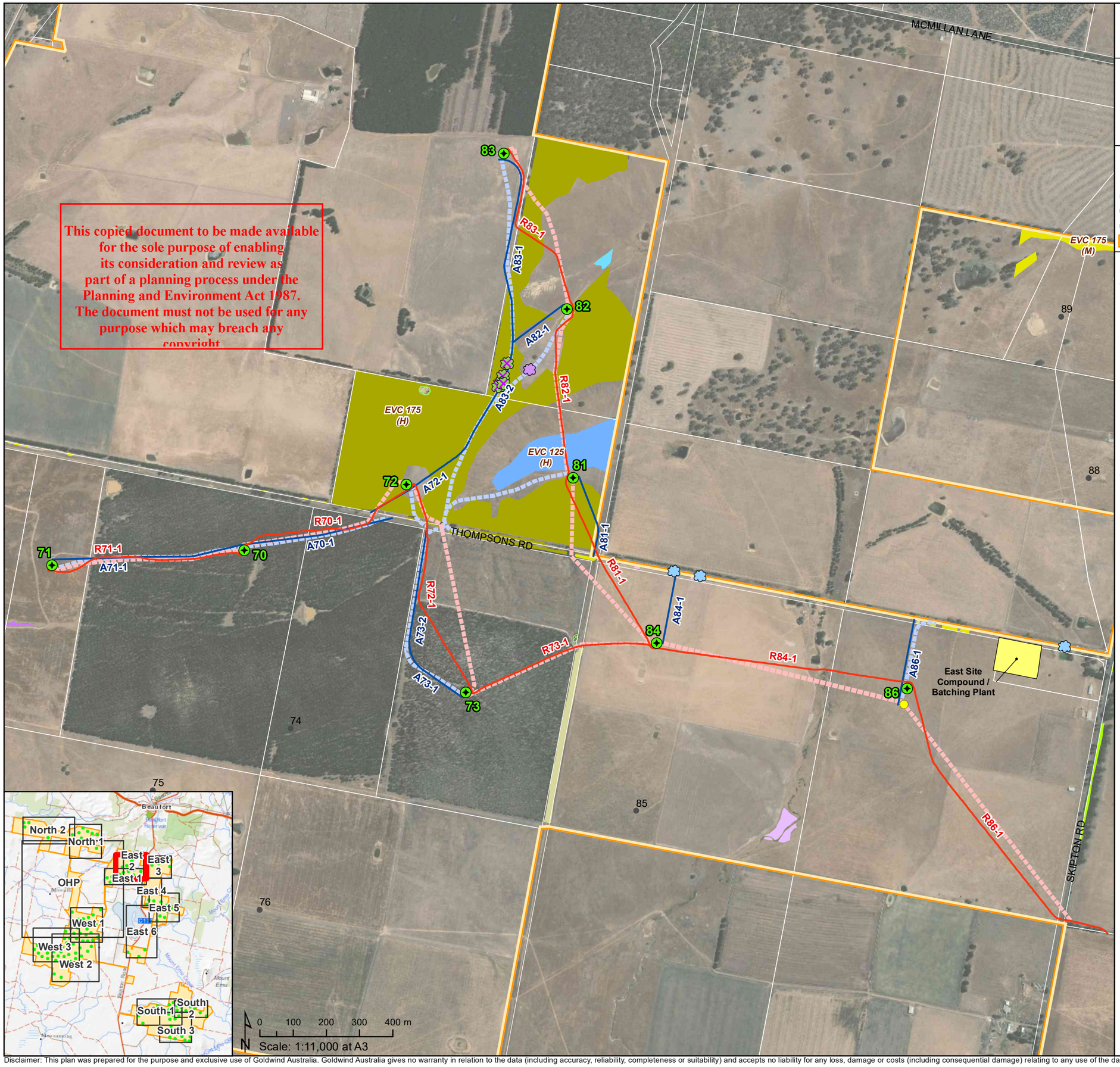
VEGETATION MAPPING

Scattered trees - Status (count)

- *Removed – SHWEF (5)*
- *Retained – Roads and Intersections (6)*
- *Retained – SHWEF (2)*

EVC - Quality

- *EVC 125 Plains Grassy Wetland - High*
- *EVC 125 Plains Grassy Wetland - Moderate*
- *EVC 132 Plains Grassland - Moderate*
- *EVC 175 Grassy Woodland - High*
- *EVC 175 Grassy Woodland - Moderate*
- *EVC 175 Grassy Woodland - Low*
- *EVC 55 Plains Grassy Woodland - Moderate*
- *EVC 55 Plains Grassy Woodland - Low*
- *EVC 68 Creekline Grassy Woodland - Moderate*
- *EVC 68 Creekline Grassy Woodland - Low*
- *Native vegetation on artificial substrate (Plains Grassy Wetland) - Low*



EAST 3

STOCKYARD HILL Wind Farm

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SHWF DETAILS OF MICROSITING

Condition 1 DP layout vs as-constructed location

Map: 'East 3' - WTGs 87, 88, 89, 90, 91, 92, 93, 94, 95

LEGEND

- Wind turbine (Endorsed layout)
- Met mast (Endorsed layout)
- Overhead powerline (Endorsed layout)
- Electrical reticulation (Endorsed layout)
- Access track (Endorsed layout)
- Site extent
- Wind turbine (As-built)
- Met mast (As-built)
- Overhead powerline (As-built)
- Electrical reticulation (As-built)
- Access track (As-built)
- Facility area (As-built)

Condition 1 DP (design) layout vs as-built micro-siting details

Windfarm infrastructure not shown in this table considered built as per design layout.

Wind turbines

WTG87 - Moved 55.9m, 62°
WTG88 - Moved 42.3m, 265.5°

Facility area

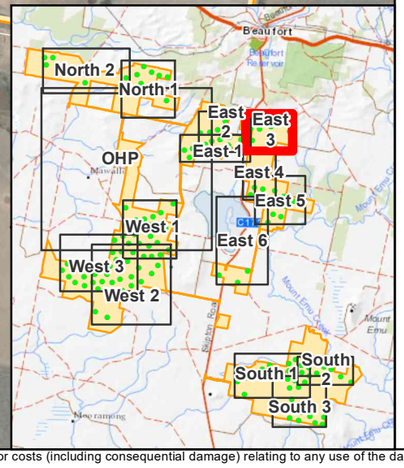
East Site Compound / Batching Plant - Constructed up to 34m larger E-W and shifted ~6m N of design footprint.

Underground electrical reticulation

R87-1 - Constructed up to 120m east of design layout in part.
R88-1 - Constructed up to 47m off design layout in part.
R89-1 - Constructed up to 56m off design layout in part.
R90-1 - Constructed within 18m of design layout.
R91-1 - Reroute. Was designed to run SW from WTG91 to 87, constructed to run E from WTG91 to 88.
R92-1 - Constructed up to 50m off design layout in part, takes more direct route.
R93-1 - Constructed within 26m of design layout.
R94-1 - Constructed within 12m of design layout.
R95-1 - Constructed within 15m of design layout.

Access tracks

A87-1 - Constructed up to 51m east of design track CL.
A88-1 - Constructed up to 105m off design track CL at intersection
A89-1 - Constructed within 30m of design track CL.
A90-1 - Constructed up to 73m off design track CL at intersection.
A91-1 - Constructed up to 36m off design track CL.
A91-2 - Constructed within 20m of design track CL.
A91-3 - Constructed within 15m of design track CL.
A91-3 - Constructed within 20m of design track CL.
A91-4 - This section not in design layout.
A92-1 - Rerouted and constructed up to 175m off design. Part of design track eliminated between WTG91 and 92.
A93-1 - Constructed up to 64m off design track CL.
A94-1 - Constructed up to 102m off design track CL at intersection
A94-2 - Constructed up to 40m off design track CL at intersection
A95-1 - Constructed up to 124m off design track CL in parts.



VEGETATION MAPPING

Scattered trees - Status (count)

- *Retained – Roads and Intersections (8)*

EVC - Quality

- *EVC 125 Plains Grassy Wetland - Moderate*
- *EVC 132 Plains Grassland - Moderate*
- *EVC 175 Grassy Woodland - Moderate*
- *EVC 175 Grassy Woodland - Low*
- *EVC 55 Plains Grassy Woodland - Moderate*
- *EVC 55 Plains Grassy Woodland - Low*
- *EVC 68 Creekline Grassy Woodland - Moderate*
- *Modified Treeless Vegetation (Grassy Woodland) - Low*

0 100 200 300 400 m

Scale: 1:10,000 at A3

EAST 4

STOCKYARD HILL Wind Farm

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SHWF DETAILS OF MICROSITING

Condition 1 DP layout vs as-constructed location

Map: 'East 4' - WTGs 96, 97, 98, 99

LEGEND

- Wind turbine (Endorsed layout)
- Met mast (Endorsed layout)
- Overhead powerline (Endorsed layout)
- Electrical reticulation (Endorsed layout)
- Access track (Endorsed layout)
- Site extent
- Wind turbine (As-built)
- Met mast (As-built)
- Overhead powerline (As-built)
- Electrical reticulation (As-built)
- Access track (As-built)
- Facility area (As-built)

Condition 1 DP (design) layout vs as-built micro-siting details

Windfarm infrastructure not shown in this table considered built as per design layout.

Facility area

East Substation - Constructed within design footprint.

Underground electrical reticulation

R85-2 - Constructed up to 440m east of design layout in part, takes more direct route.
R86-2 - Constructed up to 440m east of design layout in part, takes more direct route.
R87-2 - Constructed up to 440m east of design layout in part, takes more direct route.
R96-1 - Constructed up to 67m off design layout in part.
R97-1 - Constructed within 23m of design layout.
R98-1 - Constructed up to 75m west of design layout in part.
R99-1 - Constructed within 22m of design layout.

Access tracks

A97-1 - Constructed within 8m of design track CL.
A98-1 - Constructed within 30m of design track CL.
A99-1 - Constructed up to 33m off design track CL at intersection
SUB-E-1 - Constructed within 11m of design track CL.

VEGETATION MAPPING

EVC - Quality

- *EVC 132 Plains Grassland - Moderate*
- *EVC 55 Plains Grassy Woodland - Moderate*
- *EVC 55 Plains Grassy Woodland - Low*

STOCKYARD HILL Wind Farm

EAST 5

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SHWF DETAILS OF MICROSITING

Condition 1 DP layout vs as-constructed location

Map: 'East 5' - WTGs 100, 101, 102, 103, 104, 105, 106, 107, 108, 109

LEGEND

- Wind turbine (Endorsed layout)
- Met mast (Endorsed layout)
- Overhead powerline (Endorsed layout)
- Electrical reticulation (Endorsed layout)
- Access track (Endorsed layout)
- Site extent
- Wind turbine (As-built)
- Met mast (As-built)
- Overhead powerline (As-built)
- Electrical reticulation (As-built)
- Access track (As-built)
- Facility area (As-built)

Condition 1 DP (design) layout vs as-built micro-siting details

Windfarm infrastructure not shown in this table considered built as per design layout.

Facility area

East Substation - Constructed within design footprint.

Underground electrical reticulation

R100-1 - Constructed within 18m of design layout.
R101-1 - Reroute. Was designed to run W from WTG101 to 102, constructed to run N from WTG101 to 100.
R102-1 - Reroute. Was designed to run N from WTG102 direct to sub, constructed NW from WTG102 to 98.
R103-1 - Constructed within 22m of design layout.
R104-1 - Constructed within 13m of design layout.
R105-1 - Constructed within 15m of design layout.
R106-1 - Constructed up to 95m off design layout, takes more direct route.
R107-1 - Constructed up to 60m off design layout, takes more direct route.
R108-1 - Constructed up to 60m north of design layout in part.
R109-1 - Constructed up to 47m west of design layout in part, takes more direct route.

Access tracks

A100-1 - Constructed up to 45m off design at track intersection end.
A101-1 - Constructed up to 40m off design track CL at intersection
A102-1 - Constructed up to 85m off design track CL in part.
A103-1 - Constructed up to 40m off design track CL at intersection.
A104-2 - Constructed within 9m of design track CL.
A104-3 - Constructed within 10m of design track CL.
A104-3 - Constructed within 8m of design track CL.
A104-4 - Constructed within 8m of design track CL.
A104-5 - Constructed within 12m of design track CL.
A104-7 - Constructed within 15m of design track CL.
A105-1 - Constructed within 25m of design track CL.
A106-1 - This section not tin design layout.
A107-1 - Constructed approx. 250m north of design track CL.
A107-2 - Constructed approx. 250m north of design track CL.
A108-1 - Constructed within 21m of design track CL.
A108-2 - Constructed within 18m of design track CL.
A108-3 - Constructed within 12m of design track CL.
A109-1 - Rerouted. Designed to run N from WTG109 to 108, constructed SW from WTG109 to meet track A104-2.

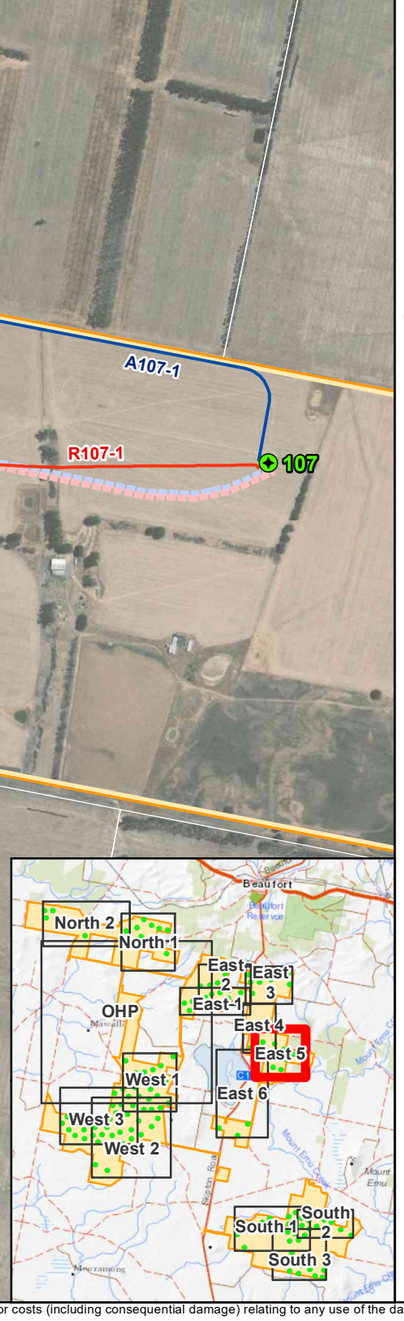
VEGETATION MAPPING

Scattered trees - Status (count)

- *Removed – SHWEF (2)*

EVC - Quality

- *EVC 132 Plains Grassland - Moderate*
- *EVC 55 Plains Grassy Woodland - Low*



STOCKYARD HILL Wind Farm

EAST 6

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SHWF DETAILS OF MICROSITING

Condition 1 DP layout vs as-constructed location

Map: 'East 6' - WTGs 110, 111, 112

LEGEND

- Wind turbine (Endorsed layout)
- Met mast (Endorsed layout)
- Overhead powerline (Endorsed layout)
- Electrical reticulation (Endorsed layout)
- Access track (Endorsed layout)
- Site extent
- Wind turbine (As-built)
- Met mast (As-built)
- Overhead powerline (As-built)
- Electrical reticulation (As-built)
- Access track (As-built)

Condition 1 DP (design) layout vs as-built micro-siting details

Windfarm infrastructure not shown in this table considered built as per design layout.

Wind turbines

WTG112 - Moved 96.1m, 209.9°

Underground electrical reticulation

R110-1 - Constructed up to 52m off design layout in part.

R111-1 - Constructed up to 46m off design layout in part.

R112-1 - Reroute. Designed to run from WTG112 to 98, constructed from WTG112 to 102. Generally very close to design.

Access tracks

A110-1 - Constructed within 8m of design track CL.

A111-1 - Constructed up to 35m from design track CL.

VEGETATION MAPPING

Scattered trees - Status (count)

Removed – SHWEF (2)

EVC - Quality

EVC 132 Plains Grassland - Moderate

EVC 55 Plains Grassy Woodland - Low

STOCKYARD HILL Wind Farm

NORTH 1

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SHWF DETAILS OF MICROSITING

Condition 1 DP layout vs as-constructed location

Map: 'North 1' - WTGs 1, 2, 3, 4, 5, 6, 7, 8, 9

LEGEND

- Wind turbine (Endorsed layout)
- Met mast (Endorsed layout)
- Overhead powerline (Endorsed layout)
- Electrical reticulation (Endorsed layout)
- Access track (Endorsed layout)
- Site extent
- Wind turbine (As-built)
- Met mast (As-built)
- Overhead powerline (As-built)
- Electrical reticulation (As-built)
- Access track (As-built)
- Facility area (As-built)

Condition 1 DP (design) layout vs as-built micro-siting details

Windfarm infrastructure not shown in this table considered built as per design layout.

Wind turbines

WTG4 - Moved 64.5m, 91°
WTG8 - Moved 30.7m, 87.3°

Facility area

North Switchyard/Compound - Constructed within design footprint.

Overhead powerline 33kV

Constructed within 20m of design layout.

Underground electrical reticulation

R1-1 - Constructed up to 44m north of design layout in part.
R2-1 - Constructed up to 110m off design layout in part.
R3-1 - Constructed within 10m of design layout.
R4-1 - Constructed up to 110m off design layout in part.
R5-1 - Intersection constructed ~100m east of design. Constructed close to design for approx. 500m however northern 250m shifts east to intersection location.
R6-1 - Constructed up to 39m off design layout in part.
R7-1 - Constructed up to 50m off design layout in part.
R8-1 - Constructed up to 34m off design layout in part.
R9-1 - Constructed within 30m of design layout.

Access tracks

A1-1 - Constructed within 32m of design track CL.
A1-2 - Constructed within 33m of design track CL.
A2-1 - Entirely rerouted. Constructed up to 450m of design track CL.
A3-1 - Constructed up to 70m south of design track CL. (Intersection relocated ~125m SW of design).
A4-1 - Constructed up to 90m off design track CL. (Intersection relocated ~125m SW of design).
A4-2 - Constructed within 37m of design track CL. (Intersection relocated ~125m SW of design).
A5-1 - Constructed up to 110m east of design track CL. Follows track to shifted intersection location.
A6-1 - Constructed within 33m of design track CL.
A7-1 - Constructed up to 46m off design track CL.
A7-2 - Constructed up to 47m off design track CL.
A7-3 - Constructed within 16m of design track CL.
A8-1 - Constructed within 30m of design track CL.
A9-1 - Constructed within 33m of design track CL.

VEGETATION MAPPING

Scattered trees - Status (count)

- *Removed – SHWEF (18)*
- *Retained – Roads and Intersections (2)*
- *Retained – SHWEF (4)*

EVC - Quality

- *EVC 125 Plains Grassy Wetland - Moderate*
- *EVC 125 Plains Grassy Wetland - Low*
- *EVC 175 Grassy Woodland - High*
- *EVC 175 Grassy Woodland - Moderate*
- *EVC 175 Grassy Woodland - Low*
- *EVC 20 Heathy Dry Forest - Moderate*
- *EVC 22 Grassy Dry Forest - High*
- *Native vegetation on artificial substrate (Plains Grassy Wetland) - Low*

NORTH 2

STOCKYARD HILL Wind Farm

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SHWF DETAILS OF MICROSITING

Condition 1 DP layout vs as-constructed location

Map: 'North 2' - WTGs 10, 11, 12, 13, 14, 15

LEGEND

Wind turbine (Endorsed layout)	Wind turbine (As-built)
Met mast (Endorsed layout)	Met mast (As-built)
Overhead powerline (Endorsed layout)	Overhead powerline (As-built)
Electrical reticulation (Endorsed layout)	Electrical reticulation (As-built)
Access track (Endorsed layout)	Access track (As-built)
Site extent	Facility area (As-built)

Condition 1 DP (design) layout vs as-built micro-siting details

Windfarm infrastructure not shown in this table considered built as per design layout.

Wind turbines

WTG14 - Moved 16.2m, 66.8°

WTG15 - Moved 100m, 4°

Facility area

North Switchyard/Compound - Constructed within design footprint.

Overhead powerline 33kV

Constructed within 20m of design layout.

Underground electrical reticulation

R10-1 - Constructed within 25m of design layout.

R11-1 - Constructed up to 68m off design layout in part.

R12-1 - Constructed up to 38m off design layout in part.

R13-1 - Constructed up to 40m south of design layout in part.

R14-1 - Constructed within 22m of design layout.

R15-1 - Constructed up to 112m north of design layout in part.

Access tracks

A10-1 - Constructed within 12m of design track CL.

A11-1 - Constructed within 12m of design track CL.

A12-2 - Constructed with little to no change from design track CL. Most of this was existing track.

A13-1 - Constructed within 41m of design track CL.

A14-1 - Constructed within 18m of design track CL.

A15-3 - Generally constructed with little change from design except on bends where sections up to 20m south of design layout.

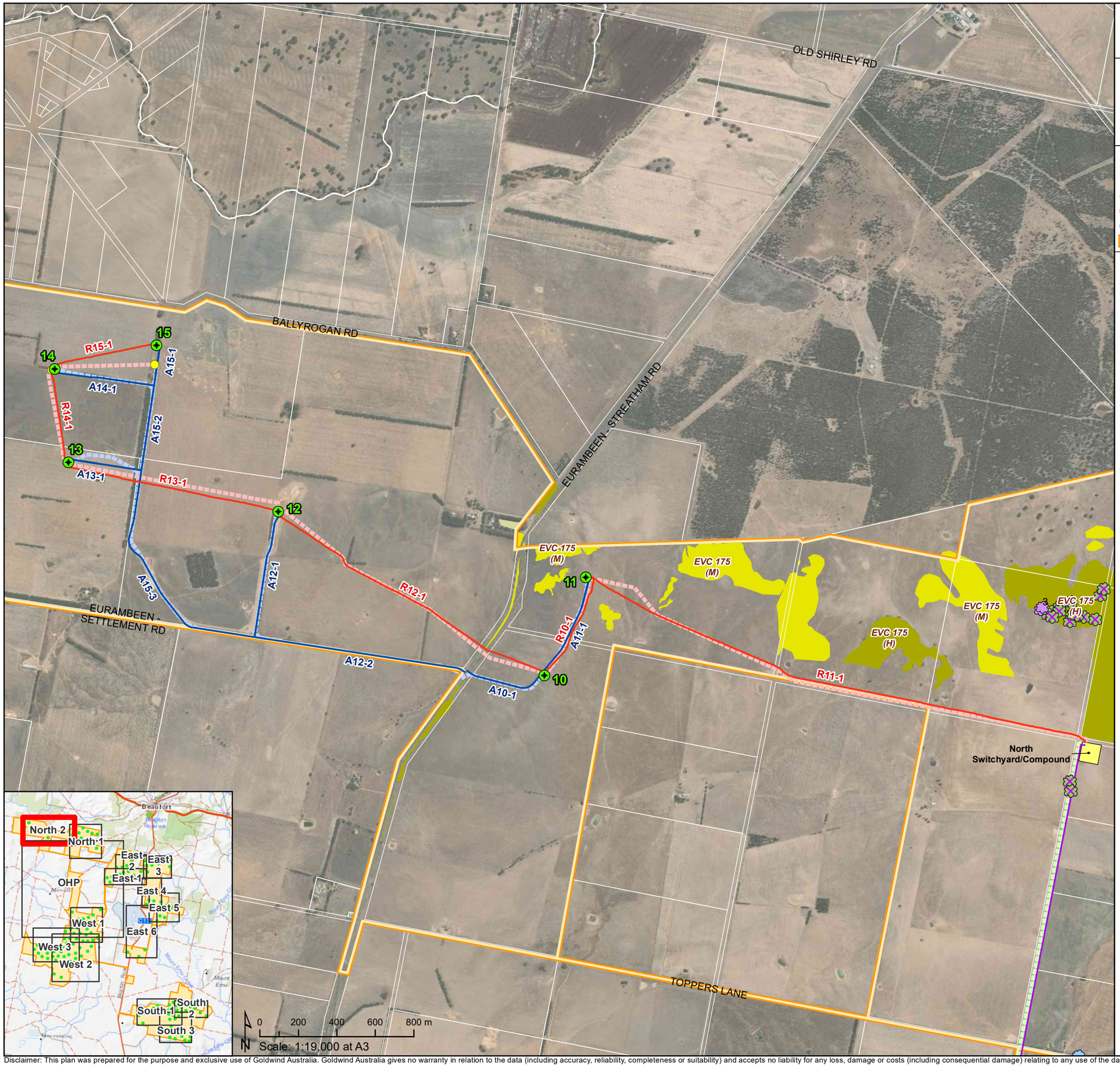
VEGETATION MAPPING

Scattered trees - Status (count)

- *Removed – SHWEF (18)*
- *Retained – Roads and Intersections (2)*
- *Retained – SHWEF (4)*

EVC - Quality

- *EVC 175 Grassy Woodland - High*
- *EVC 175 Grassy Woodland - Moderate*
- *EVC 175 Grassy Woodland - Low*
- *Native vegetation on artificial substrate (Plains Grassy Wetland) - Low*



STOCKYARD HILL Wind Farm

OHP

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SHWF DETAILS OF MICROSITING

Condition 1 DP layout vs as-constructed location

Map: 'OHP' -

LEGEND

- Wind turbine (Endorsed layout)
- Met mast (Endorsed layout)
- Overhead powerline (Endorsed layout)
- Electrical reticulation (Endorsed layout)
- Access track (Endorsed layout)
- Site extent
- Wind turbine (As-built)
- Met mast (As-built)
- Overhead powerline (As-built)
- Electrical reticulation (As-built)
- Access track (As-built)
- Facility area (As-built)

Condition 1 DP (design) layout vs as-built micro-siting details

Windfarm infrastructure not shown in this table considered built as per design layout.

Facility area

North Switchyard/Compound - Constructed within design footprint.

West O&M Facility & Site Compound / Batching Plant - Constructed up to 35m larger southern end than design footprint.

West Site Compound / Batching Plant - Constructed ~21m W of design footprint.

West Substation - Constructed ~22m SW of design footprint.

Met masts

M1 - NOT CONSTRUCTED

Overhead powerline 33kV

Constructed within 20m of design layout.

VEGETATION MAPPING

Scattered trees - Status (count)

- *Removed – SHWEF (4)*
- *Retained - NVMP (29)*
- *Retained – Roads and Intersections (4)*
- *Retained – SHWEF (1)*

EVC - Quality

- *EVC 125 Plains Grassy Wetland - High*
- *EVC 125 Plains Grassy Wetland - Moderate*
- *EVC 125 Plains Grassy Wetland - Low*
- *EVC 132 Plains Grassland - High*
- *EVC 132 Plains Grassland - Moderate*
- *EVC 132 Plains Grassland - Low*
- *EVC 132 Plains Grassland / EVC 203 Stony Rises Woodland - Moderate*
- *EVC 175 Grassy Woodland - High*
- *EVC 175 Grassy Woodland - Moderate*
- *EVC 175 Grassy Woodland - Low*
- *EVC 20 Heathy Dry Forest - Moderate*
- *EVC 203 Stony Rises Woodland - Moderate*
- *EVC 55 Plains Grassy Woodland - Moderate*
- *EVC 55 Plains Grassy Woodland - Low*
- *EVC 649 Stony Knoll Shrubland - Moderate*
- *EVC 68 Creekline Grassy Woodland - Moderate*
- *Modified Treeless Vegetation (Grassy Woodland) - Low*
- *Native vegetation on artificial substrate (Plains Grassy Wetland) - Low*

North Switchyard/Compound

EVC 175 (H)

EVC 175 (M)

EVC 175 (H)

EVC 125 (H)

EVC 203 (M)

EVC 132 (M)

EVC 55 (M)

EVC 132 (M)

M1

West Substation

West Site Compound / Batching Plant

West O&M Facility & Site Compound / Batching Plant

LONG GULLY RD

MCMILLAN LANE

TOPPERS LANE

STOCKYARD HILL RD

THOMPSONS RD

FROG HOLLOW RD

LAKE GOLDSMITH - STOCKYARD HILL RD

STOCKYARD HILL - WANGATTA RD

BEAUFORT - CARRANBALLAC RD

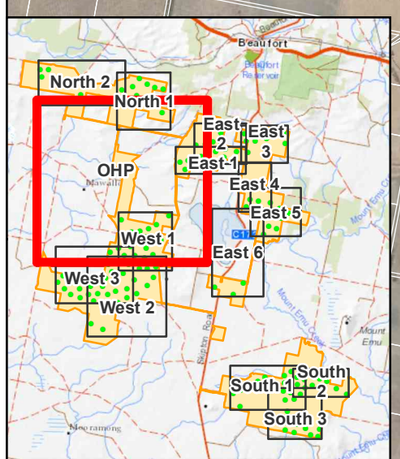
MAWALLOK ENTRANCE RD

MAWALLOK RD

EURAMBEEN - STREATHAM RD

GEELONG RD

1 2 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 70 71 74 75 76 77 78 79 80



0 300 600 900 1,200 m

Scale: 1:37,000 at A3

SOUTH 1

STOCKYARD HILL Wind Farm

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SHWF DETAILS OF MICROSITING

Condition 1 DP layout vs as-constructed location

Map: 'South 1' - WTG 113, 114, 115, 119, 120, 121, 122, 123, 124, 125, 130, 133

LEGEND

- Wind turbine (Endorsed layout)
- Met mast (Endorsed layout)
- Overhead powerline (Endorsed layout)
- Electrical reticulation (Endorsed layout)
- Access track (Endorsed layout)
- Site extent
- Wind turbine (As-built)
- Met mast (As-built)
- Overhead powerline (As-built)
- Electrical reticulation (As-built)
- Access track (As-built)
- Facility area (As-built)

Condition 1 DP (design) layout vs as-built micro-siting details

Windfarm infrastructure not shown in this table considered built as per design layout.

Wind turbines

WTG113 - Moved 49.3m, 27.3°
WTG114 - Moved 80.2m, 134.5°
WTG123 - Moved 20m, 129.5°

Facility area

South Laydown - Constructed ~23m E of design footprint.
South Site Compound / Batching Plant - Constructed within design footprint.
South Substation - Constructed within design footprint.

Underground electrical reticulation

R113-1 - Constructed up to 70m south of design layout in part.
R114-1 - Constructed up to 70m south of design layout in part.
R115-1 - Constructed within 22m of design layout.
R119-1 - Constructed within 25m of design layout.
R120-1 - Constructed within 12m of design layout.
R121-1 - Constructed within 36m of design layout.
R122-1 - Constructed up to 30m off design layout in part.
R123-1 - Constructed up to 44m off design layout in part.
R124-1 - Constructed up to 41m off design layout in part.
R125-1 - Constructed within 30m of design layout.
R130-1 - Constructed within 27m of design layout.
R133-1 - Constructed within 9m of design layout.

Access tracks

A113-1 - Constructed within 33m of design track CL.
A114-1 - Constructed within 30m of design track CL.
A119-1 - Constructed up to 50m west of design track CL in part.
A120-1 - Constructed within 26m of design track CL.
A121-2 - Constructed within 15m of design track CL.
A122-1 - Constructed up to 51m off design track CL in part.
A123-1 - Constructed within 15m of design track CL.
A124-1 - Constructed within 15m of design track CL.
A124-4 - Constructed within 14m of design track CL.
A124-6 - Constructed within 12m of design track CL.
A125-1 - Constructed up to 155m off design track CL in part.
A130-1 - Rerouted. Designed to run S from WTG130 to track A135-6, constructed to run SW from WTG130 to track A121-2.

VEGETATION MAPPING

Scattered trees - Status (count)

- *Removed – SHWEF (3)*
- *Removed – Roads and Intersections (2)*
- *Retained – SHWEF (4)*

EVC - Quality

- *EVC 125 Plains Grassy Wetland - Moderate*
- *EVC 132 Plains Grassland - Moderate*
- *EVC 175 Grassy Woodland - Moderate*
- *EVC 175 Grassy Woodland - Low*
- *EVC 55 Plains Grassy Woodland - Moderate*
- *EVC 55 Plains Grassy Woodland - Low*
- *Native vegetation on artificial substrate (Plains Grassy Wetland) - Low*

0 100 200 300 400 m
Scale: 1:16,000 at A3

STOCKYARD HILL Wind Farm

SOUTH 2

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SHWF DETAILS OF MICROSITING

Condition 1 DP layout vs as-constructed location

Map: 'South 2' - WTG 126, 127, 128, 129, 131, 132, 134, 135, 136, 137, 138, 139

LEGEND

- Wind turbine (Endorsed layout)
- Met mast (Endorsed layout)
- Overhead powerline (Endorsed layout)
- Electrical reticulation (Endorsed layout)
- Access track (Endorsed layout)
- Site extent
- Wind turbine (As-built)
- Met mast (As-built)
- Overhead powerline (As-built)
- Electrical reticulation (As-built)
- Access track (As-built)
- Facility area (As-built)

Condition 1 DP (design) layout vs as-built micro-siting details

Windfarm infrastructure not shown in this table considered built as per design layout.

Facility area

South Site Compound / Batching Plant - Constructed within design footprint.

South Substation - Constructed within design footprint.

Met masts

M14 - NOT CONSTRUCTED

M6 - Moved 291m, 72.8°

Underground electrical reticulation

R126-1 - Constructed up to 50m south of design layout in part. Generally follows access design route.

R127-1 - Reroute. Design ran from WTG127 north to the access then followed access to sub, constructed to run direct from WTG to sub ~250m location difference in part.

R128-1 - Constructed up to 67m west of design layout in part.

R129-1 - Constructed within 15m of design layout.

R131-1 - Constructed up to 58m east of design layout in part.

R132-1 - Constructed within 17m of design layout.

R134-1 - Constructed within 22m of design layout.

R135-1 - Constructed up to 70m north of design layout in part.

R136-1 - Constructed within 18m of design layout.

R137-1 - Constructed up to 70m south of design layout in part.

R138-1 - Constructed up to 74m south of design layout in part.

R139-1 - Constructed within 14m of design layout.

Access tracks

A1219-2 - Constructed within 8m of design track CL.

A126-1 - Rerouted. Designed to run SW from WTG126 to track A129-3, constructed to run W from WTG126 to track A135-6.

A127-1 - Constructed up to ~100m off design track CL at intersection.

A128-1 - Constructed up to ~65m off design track CL at intersection.

A129-1 - Constructed within 29m of design track CL.

A131-1 - Constructed within 30m of design track CL.

A132-1 - Constructed up to ~40m off design track CL at intersection.

A133-1 - Constructed up to ~165m east of design track CL at intersection.

A134-1 - Constructed within 13m of design track CL.

A135-1 - Constructed within 34m of design track CL.

A135-2 - Constructed within 11m of design track CL.

A135-4 - Constructed within 11m of design track CL.

A135-5 - Constructed within 15m of design track CL.

A135-6 - Constructed up to 55m north of design track CL in part.

A136-1 - Constructed up to 86m off design track CL in part, rerouted east side of WTG.

A137-1 - Constructed up to 160m off design track CL in part, rerouted east side of WTG136.

A137-2 - Constructed up to 90m off design track CL in part, rerouted east side of WTG136.

A138-1 - Constructed up to ~75m off design track CL at intersection.

A139-1 - Constructed within 20m of design track CL.

A139-2 - Constructed within 18m of design track CL.

ADVERTISED PLAN

VEGETATION MAPPING

Scattered trees - Status (count)

Retained – SHWEF (2)

EVC - Quality

EVC 125 Plains Grassy Wetland - Moderate

EVC 132 Plains Grassland - Moderate

EVC 55 Plains Grassy Woodland - Low

0 100 200 300 400 m

Scale: 1:12,000 at A3

STOCKYARD HILL Wind Farm

SOUTH 3

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SHWF DETAILS OF MICROSITING

Condition 1 DP layout vs as-constructed location

Map: 'South 3' - WTG 116, 117, 118, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149

LEGEND

- Wind turbine (Endorsed layout)
- Wind turbine (As-built)
- Met mast (Endorsed layout)
- Met mast (As-built)
- Overhead powerline (Endorsed layout)
- Overhead powerline (As-built)
- Electrical reticulation (Endorsed layout)
- Electrical reticulation (As-built)
- Access track (Endorsed layout)
- Access track (As-built)
- Site extent
- Facility area (As-built)

Condition 1 DP (design) layout vs as-built micro-siting details

Windfarm infrastructure not shown in this table considered built as per design layout.

Wind turbines

WTG143 - Moved 25.9m, 277.8°

Facility area

South Site Compound / Batching Plant - Constructed within design footprint.

South Substation - Constructed within design footprint.

Underground electrical reticulation

R116-1 - Constructed up to 119m west of design layout in part.

R117-1 - Reroute. Designed to run direct to sub, now runs WTG117 to 116.

R118-1 - Constructed up to 78m west of design layout in part.

R140-1 - Constructed within 10m of design layout.

R141-1 - Constructed within 27m of design layout.

R142-1 - Reroute. Designed to run from WTG142-140, now runs direct to sub mainly paralleling other cables via WTG116. This is a result of removing cable R145-1 designed to run between WTG145-117.

R143-1 - Constructed within 19m of design layout.

R143-2 - Reroute. New, much shorter line, replaces line designed to run from WTG145 to WTG117. Instead links network between WTG143-144.

R144-1 - Constructed up to 46m off design layout. More closely follows access design and access built closer to reticulation design.

R146-1 - Constructed within 17m of design layout.

R147-1 - Constructed within 18m of design layout.

R148-1 - Constructed within 31m of design layout.

R149-1 - Constructed within 27m of design layout.

Access tracks

A116-1 - Constructed up to ~100m off design track CL at intersection.

A117-1 - Constructed up to ~100m off design track CL at intersection.

A118-1 - Constructed within 45m of design track CL.

A140-1 - Constructed within 30m of design track CL.

A143-1 - Constructed within 20m south of design track CL.

A143-3 - Constructed up to 60m off design track CL in part.

A144-1 - Constructed up to ~70m east of design track CL at intersection.

A145-1 - Constructed up to 50m off design track CL in parts.

A146-1 - Constructed within 30m of design track CL.

A147-1 - Constructed up to 52m off design track CL in part.

A148-1 - Constructed within 22m south of design track CL.

A148-2 - Constructed within 23m south of design track CL.

A148-3 - Constructed within 23m south of design track CL.

A148-4 - Constructed within 22m of design track CL.

A149-1 - Constructed up to 112m west of design track CL.

VEGETATION MAPPING

Scattered trees - Status (count)

- *Removed – Roads and Intersections (2)*
- *Retained – SHWEF (2)*

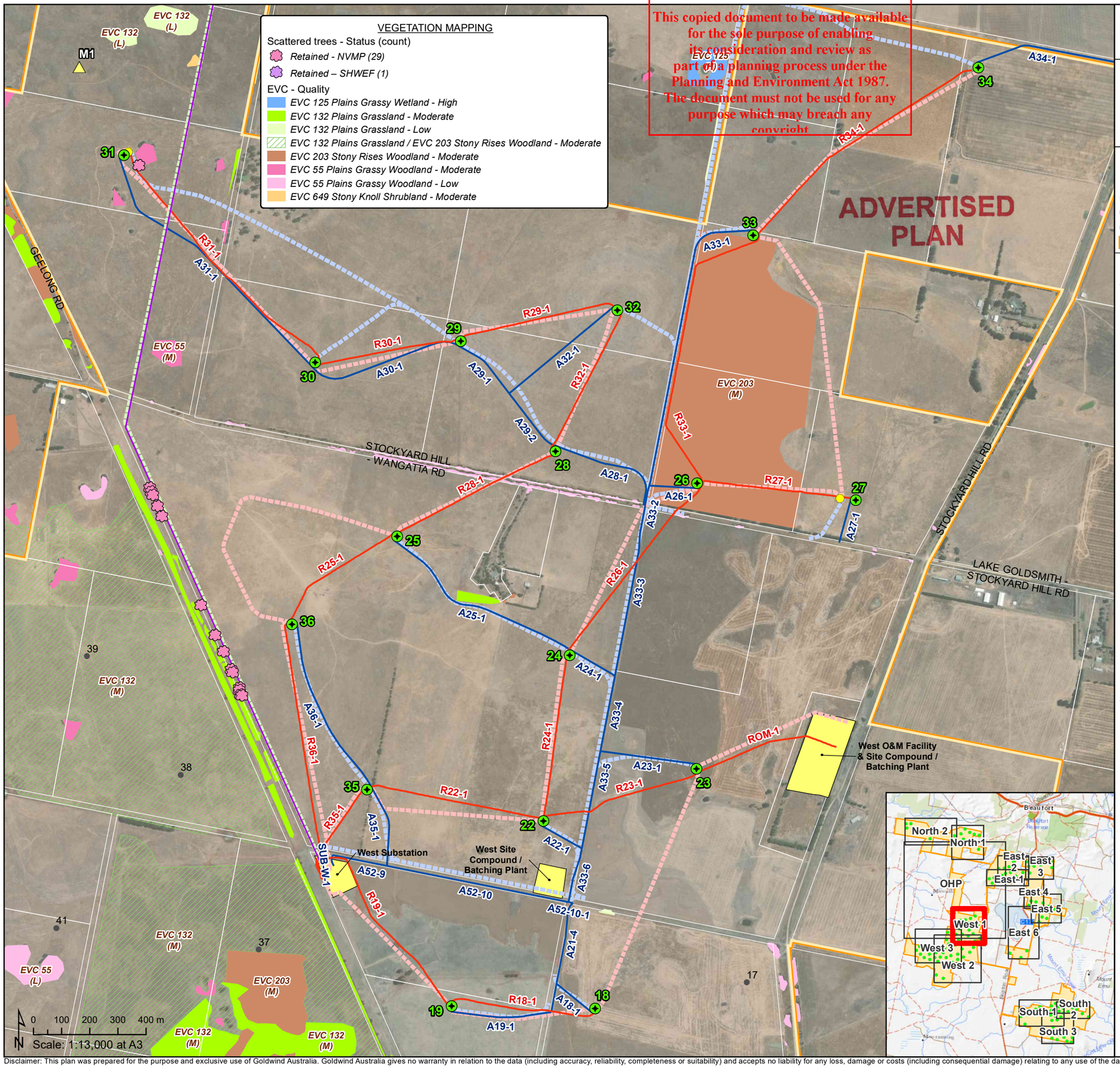
EVC - Quality

- *EVC 132 Plains Grassland - Moderate*
- *EVC 55 Plains Grassy Woodland - Moderate*
- *EVC 55 Plains Grassy Woodland - Low*
- *Native vegetation on artificial substrate (Plains Grassy Wetland) - Low*

VEGETATION MAPPING

Scattered trees - Status (count)
- Retained - NVMP (29)
- Retained – SHWEF (1)

EVC - Quality
- EVC 125 Plains Grassy Wetland - High
- EVC 132 Plains Grassland - Moderate
- EVC 132 Plains Grassland - Low
- EVC 132 Plains Grassland / EVC 203 Stony Rises Woodland - Moderate
- EVC 203 Stony Rises Woodland - Moderate
- EVC 55 Plains Grassy Woodland - Moderate
- EVC 55 Plains Grassy Woodland - Low
- EVC 649 Stony Knoll Shrubland - Moderate



STOCKYARD HILL Wind Farm

WEST 1

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SHWF DETAILS OF MICROSITING

Condition 1 DP layout vs as-constructed location

Map: 'West 1' - WTG 18, 19, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36

LEGEND

Wind turbine (Endorsed layout)	Wind turbine (As-built)
Met mast (Endorsed layout)	Met mast (As-built)
Overhead powerline (Endorsed layout)	Overhead powerline (As-built)
Electrical reticulation (Endorsed layout)	Electrical reticulation (As-built)
Access track (Endorsed layout)	Access track (As-built)
Site extent	Facility area (As-built)

Condition 1 DP (design) layout vs as-built micro-siting details

Windfarm infrastructure not shown in this table considered built as per design layout.

Wind turbines

WTG27 - Moved 56.2m, 95.2°
WTG31 - Moved 20m, 231°

Facility area

West O&M Facility & Site Compound / Batching Plant - Constructed up to 35m larger southern end than design footprint.
West Site Compound / Batching Plant - Constructed ~21m W of design footprint.
West Substation - Constructed ~22m SW of design footprint.

Met masts

M1 - NOT CONSTRUCTED

Overhead powerline 33kV

Constructed within 20m of design layout.

Underground electrical reticulation

R18-1 - Constructed up to 50m off design layout, takes more direct route.
R19-1 - Constructed up to 104m off design layout. Rerouted around sub and enters from opposite direction.
R22-1 - Constructed up to 75m north of design layout in part.
R23-1 - Reroute. Was designed to run SW from WTG23 to 18, constructed W from WTG23 to 22.
R24-1 - Constructed within 13m of design layout.
R25-1 - Constructed up to 390m off design layout in part, takes much more direct route.
R26-1 - Constructed up to 95m off design layout in part, takes more direct route.
R27-1 - Generally constructed within 15m of design layout, extends further ~50m east to new WTG location.
R28-1 - Constructed within 13m of design layout.
R29-1 - Constructed within 27m of design layout.
R30-1 - Constructed within 25m of design layout.
R31-1 - Constructed up to 39m off design layout in part.
R32-1 - Constructed within 30m of design layout.
R33-1 - Reroute. Was designed to run between WTG33 to 27, constructed from WTG33 to 26 along designed access route ~ 600m west.
R34-1 - Constructed within 25m of design layout.
R35-1 - Generally within 10m of design, slight reroute to enter sub from west instead of north ~40m difference, within design footprint.
R36-1 - Constructed within 30m of design layout.
ROM-1 - Constructed up to 97m south of design layout at O&M facility.

Access tracks

A19-1 - Constructed within 14m of design track CL.
A21-3 - Constructed within 14m of design track CL.
A21-4 - Constructed within 14m of design track CL.
A22-1 - Constructed within 10m of design track CL.
A23-1 - Constructed up to 40m off design track CL in part.
A24-1 - Constructed within 30m of design track CL.
A25-1 - Constructed within 11m of design track CL.
A26-1 - Constructed up to 40m off design track CL in part.
A27-1 - Constructed up to 68m east of design track CL.
A28-1 - Constructed within 20m of design track CL.
A29-1 - Constructed within 35m of design track CL.
A29-2 - Constructed within 36m of design track CL.
A30-1 - Constructed up to 170m south of design track CL in part.
A31-1 - Constructed up to 350m SW of design track CL in part.
A32-1 - Rerouted. Designed to run SE from WTG32 to track from WTG33, constructed SW from WTG32 to meet track A29-2.
A33-3 - Constructed within 8m of design track CL.
A33-4 - Constructed within 9m of design track CL.
A33-5 - Constructed within 9m of design track CL.
A33-6 - Constructed within 10m of design track CL.
A34-1 - Rerouted. Designed to run SW from WTG34 to 33, constructed to run E from WTG34 to Stockyard Hill Rd.
A35-1 - Constructed within 17m of design track CL.
A36-1 - Constructed within 14m of design track CL.
A52-10 - Constructed within 26m south of design track CL.
A52-10-1 - Constructed within 17m of design track CL.
A52-9 - Constructed within 26m south of design track CL.

STOCKYARD HILL Wind Farm

WEST 2

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SHWF DETAILS OF MICROSITING

Condition 1 DP layout vs as-constructed location

Map: 'West 2' - WTG 16, 17, 20, 21, 48, 49, 50, 53, 54, 58, 59

LEGEND

- Wind turbine (Endorsed layout)
- Met mast (Endorsed layout)
- Overhead powerline (Endorsed layout)
- Electrical reticulation (Endorsed layout)
- Access track (Endorsed layout)
- Site extent
- Wind turbine (As-built)
- Met mast (As-built)
- Overhead powerline (As-built)
- Electrical reticulation (As-built)
- Access track (As-built)
- Facility area (As-built)

Condition 1 DP (design) layout vs as-built micro-siting details

Windfarm infrastructure not shown in this table considered built as per design layout.

Facility area

West O&M Facility & Site Compound / Batching Plant - Constructed up to 35m larger southern end than design footprint.

West Site Compound / Batching Plant - Constructed ~21m W of design footprint.

West Substation - Constructed ~22m SW of design footprint.

Overhead powerline 33kV

Constructed within 20m of design layout.

Underground electrical reticulation

R16-1 - Constructed up to 40m off design layout in part.
R17-1 - Constructed within 13m of design layout.
R20-1 - Constructed within 17m of design layout.
R21-1 - Constructed within 29m of design layout.
R48-1 - Constructed within 17m of design layout.
R49-1 - Constructed up to 46m north of design layout in part.
R50-1 - Constructed within 17m of design layout.
R53-1 - Constructed up to 43m east of design layout in part,takes more direct route.
R54-1 - Constructed up to 133m south of design layout in part.
R58-1 - Constructed within 26m of design layout.
R59-14 - Constructed within 37m of design layout.

Access tracks

A20-1 - Constructed up to 50m off design track CL at intersection.
A21-1 - Constructed within 12m of design track CL.
A21-2 - Constructed within 14m of design track CL.
A40-9 - Constructed within 26m south of design track CL.
A48-1 - Constructed within 26m of design track CL.
A49-1 - Rerouted. Designed to run N from WTG49 to track A48-1, constructed W from WTG49 to meet track A52-2.
A50-1 - Constructed up to 106m off design track CL, takes more direct route.
A52-11 - Constructed within 26m south of design track CL.
A53-1 - Constructed up to 60m east of design track CL.
A55-2 - Constructed within 13m of design track CL.
A55-3 - Constructed within 30m of design track CL.
A58-1 - Constructed within 13m of design track CL.
A59-1 - Constructed up to 237m south of design track CL in parts.

VEGETATION MAPPING

EVC - Quality

- *EVC 132 Plains Grassland - Moderate*
- *EVC 132 Plains Grassland - Low*
- *EVC 132 Plains Grassland / EVC 203 Stony Rises Woodland - Moderate*
- *EVC 203 Stony Rises Woodland - Moderate*
- *EVC 203 Stony Rises Woodland - Low*
- *EVC 55 Plains Grassy Woodland - Moderate*
- *EVC 55 Plains Grassy Woodland - Low*
- *EVC 649 Stony Knoll Shrubland - Moderate*

0 100 200 300 400 m

Scale: 1:18,000 at A3

VEGETATION MAPPING

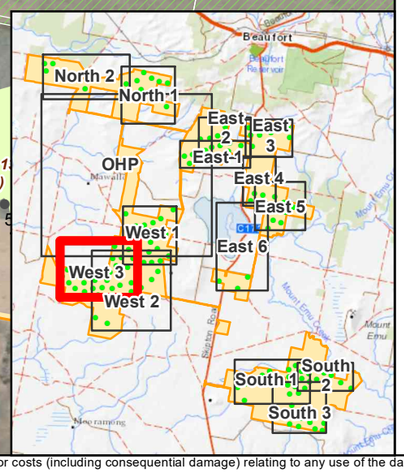
Scattered trees - Status (count)
- *Retained - NVMP (27)*
- *Retained – SHWEF (1)*

EVC - Quality
- *EVC 125 Plains Grassy Wetland - Moderate*
- *EVC 132 Plains Grassland - Moderate*
- *EVC 132 Plains Grassland - Low*
- *EVC 132 Plains Grassland / EVC 203 Stony Rises Woodland - Moderate*
- *EVC 203 Stony Rises Woodland - Moderate*
- *EVC 203 Stony Rises Woodland - Low*
- *EVC 55 Plains Grassy Woodland - Moderate*
- *EVC 55 Plains Grassy Woodland - Low*
- *EVC 649 Stony Knoll Shrubland - Moderate*

STONELEIGH SETTLEMENT RD

0 100 200 300 400 m

Scale: 1:17,000 at A3



STOCKYARD HILL Wind Farm

WEST 3

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SHWF DETAILS OF MICROSITING

Condition 1 DP layout vs as-constructed location

Map: 'West 3' - WTG 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 51, 52, 55, 56, 57, 60, 61, 63, 64, 65, 66, 67, 68, 69

LEGEND

Wind turbine (Endorsed layout)	Wind turbine (As-built)
Met mast (Endorsed layout)	Met mast (As-built)
Overhead powerline (Endorsed layout)	Overhead powerline (As-built)
Electrical reticulation (Endorsed layout)	Electrical reticulation (As-built)
Access track (Endorsed layout)	Access track (As-built)
Site extent	Facility area (As-built)

Condition 1 DP (design) layout vs as-built micro-siting details

Windfarm infrastructure not shown in this table considered built as per design layout.

Facility area

West Substation - Constructed ~22m SW of design footprint.

Overhead powerline 33kV

Constructed within 20m of design layout.

Underground electrical reticulation

R37-1 - Constructed within 26m of design layout (at sub).
R38-1 - Constructed up to ~120m off design layout. Rerouted approaching sub to enter from west.
R39-1 - Constructed up to 70m off design layout in part.
R40-1 - Constructed up to 40m off design layout in part.
R41-1 - Constructed up to 120m south of design layout in part.
R42-1 - Reroute. This cable was designed to run from WTG42 NE direct to sub. Constructed to run E from WTG42 to 41.
R43-1 - Reroute. Designed to run from WTG43 to 42, constructed to run from WTG43 direct to sub. Up to ~115m off designed layout for R56-1, R42-1 (also rerouted).
R44-1 - Constructed up to 51m west of design layout in part.
R45-1 - Constructed up to 92m east of design layout in part.
R46-1 - Constructed within 20m of design layout.
R47-1 - Constructed up to 110m east of design layout in part.
R51-1 - Constructed within 27m of design layout.
R52-1 - Constructed up to 126m east of design layout in part.
R55-1 - Constructed within 28m of design layout.
R56-1 - Reroute. Was designed to run from WTG56 to 45, constructed from WTG56 to 55, close to designed access route.
R57-1 - Constructed up to 44m south of design layout in part.
R60-1 - Constructed up to 50m off design layout in part, takes more direct route.
R61-1 - Constructed up to 35m off design layout in part.
R62-1 - Constructed within 27m of design layout.
R63-1 - Constructed within 26m of design layout.
R64-1 - Constructed up to 46m west of design layout in part, takes more direct route.
R65-1 - Constructed within 14m of design layout.
R66-1 - Constructed within 18m of design layout.
R67-1 - Reroute. Designed to run NE direct from WTG67 to the sub, constructed to run SE from WTG67 to 46.
R68-1 - Constructed up to 50m south of design layout in part.
R69-1 - Constructed within 28m of design layout.

Access tracks

A38-1 - Constructed between 50m to 206m off design track CL.
A39-1 - Constructed up to 400m from design track CL.
A40-1 - Constructed up to 560m from design track CL.
A41-1 - Reroute. Constructed to run north, more direct route to access.
A42-1 - Constructed within 50m of design track CL.
A42-2 - Constructed within 26m of design track CL.
A43-1 - Constructed up to 45m off design track CL at intersection.
A44-1 - Constructed within 8m of design track CL.
A45-1 - Constructed up to 95m east of design track CL in part.
A46-1 - Constructed within 30m of design track CL.
A51-1 - Constructed within 28m of design track CL.
A52-1 - Constructed within 8m of design track CL.
A52-2 - Constructed within 27m of design track CL.
A52-3 - Constructed up to 41m east of design track CL.
A52-4 - Constructed within 34m east of design track CL.
A52-5 - Constructed within 30m of design track CL.
A52-6 - Constructed up to 45m SE of design track CL in part.
A52-8 - Constructed within 26m south of design track CL.
A55-1 - Constructed within 8m of design track CL.
A59-3 - Constructed within 20m of design track CL.
A60-1 - Constructed within 19m of design track CL.
A62-1 - Constructed within 12m of design track CL.
A63-1 - Constructed within 11m of design track CL.
A65-1 - Constructed up to 120m off design track CL at intersection.
A66-1 - Constructed within 8m of design track CL.
A67-1 - Constructed up to 108m south of design track CL.
A68-1 - Constructed within 9m of design track CL.
A69-1 - Constructed within 17m of design track CL.

APPENDIX C- I- SPECIALIST ASSESSMENTS AND SUMMARY OF EXPERT ADVICE

Appendix C- I- Specialist assessments and summary of expert advice

Condition 2 requirements

Condition 2	Condition 2 requirement	Consistency with requirement
2(i)	The written advice from appropriately qualified experts that the alteration or modification will not result in material adverse change in landscape, vegetation, cultural heritage, visual, shadow flicker, noise fire risk or aviation impacts compared to endorsed plans.	The SMEC (18 December 2020) report accompanying the permit amendment application has assesses the overall impact on native vegetation and concludes that there is no additional significant adverse impact to biodiversity as a result of additional removals. Appendices C-I contain additional assessments from appropriately qualified experts stating that micrositing has not resulted in a material adverse change on the environment or its surrounds.
2 (ii)	details showing that no turbine located more than a kilometre from a dwelling is moved to within 1 km of a dwelling that existed on 12 May 2016 which was not the subject of written consent of the owner at the date, unless evidence has been provided to the satisfaction of the Minister for Planning that the owner of the dwelling has consented in writing to the location of the turbine	Setbacks are provided in the updated DPs. There are no turbines that have moved closer to a non-associated dwelling from more than 1km to within 1km.
2 (iii)	The micro-siting does not result in the removal of any additional native vegetation, unless that removal has been authorized by a planning permit	Appendices D.2 and D.3 provide comments on native vegetation impacts compared to the endorsed Plans. An updated NVMP is provided with the Permit Amendment Application for consideration. This revised NVMP is consistent with the permit amendment application.

STOCKYARD HILL WIND FARM PTY LTD
ACN 118 119 501
Level 4, 485 La Trobe Street MELBOURNE VIC 3000

Summary of Expert Assessments in Appendices C to I (for matters required under Condition 2(i)

Matters required under Condition 2(i)	Expert	Appendix	**Summary of assessments in Appendices C - I**
Landscape and Visual	XURBAN (Allan Wyatt)	C	The assessment by Allan Wyatt concluded that: • *The changes to turbine locations make no discernible difference when viewed from non-participating dwellings;* • *The relatively small siting changes to the distances of the micro-sited turbines within a cluster of wind turbines makes no discernible difference from the public domain; and* • *The changes in siting make no difference to the level of visual impact that was assessed previously (for the permit amendment application).*
Native vegetation	SMEC	D-1	SMEC Native Vegetation Impact Assessment December 2020 (See Permit Amendment Application December 2020, Appendix B)
Cultural Heritage	Archaeology At Tardis	E	The cultural heritage assessment by Archaeology at Tardis concluded that: • All salvage works associated with the cultural heritage places has been completed and the works are • not inconsistent with CHMPs 10530, 12177, 14279, 14281 and 16119; • The spatial review found the micro-siting of the layout was minimal and all layout changes complied with relevant CHMP conditions; and • The layout changes will not have a material adverse impact on cultural heritage.
Shadow Flicker	DNV-GL	F	DNV-GL's assessment demonstrates no change to predicted impacts at non-associated dwellings.

Noise impacts	Marshall Day and Associates	G	The MDA assessment concluded that the *as-built turbine layout for the Stockyard Hill Wind Farm is predicted to achieve the noise criteria defined by the planning permit, and the cumulative effect of the turbine layout changes from the endorsed to the as-built layout are inconsequential and of no adverse material effect with respect to noise.*
Fire Risk	FireTac (Australia) Pty Ltd	H	*Firetac assessment concluded that no increase in fire risk potential will result provided that adherence to the provision requirements of all aspects of Condition 4(l) of the Planning Permit (as prescribed) under the Heading of Country Fire Authority are met, including the provision and maintenance (as prescribed) of effective emergency vehicle access.*
Aviation impacts	Landrum and Brown Worldwide (Aust) Pty Ltd	I	*The Landrum and Brown assessment concluded that Of the micro-sited turbines that experienced a layout change greater than 1m from the centre of the turbine, WTG #04 has experienced the greatest elevation difference of 2.98m, however, the increased ground elevation at this location, is still lower than the highest endorsed location pertaining to WTG #16 of 614.51 m AHD*

APPENDIX C – ASSESSMENT OF CHANGES IN LANDSCAPE & VISUAL IMPACTS, XURBAN

XURBAN

28 July 2020

Stockyard Hill Wind Farm Pty Ltd

Level 25, Tower 1, International Towers

100 Barangaroo Avenue,

BARANGAROO NSW 2000

Attention Elizabeth Zorondo, Senior Environmental Planner
elizabethzorondo@goldwindaustralia.com

Reference No: 15023 / L9b

Stockyard Hill Wind Farm – Visual impacts of layout amendments

Dear Elizabeth,

Further to your email dated 29th June 2020, I have reviewed the attachment (*SHWF_WF_Layout_Asbuilt_WTG_Pt_V3*) which shows the as-built layout and the pre-construction Condition 1 Development Plan layout which has been endorsed by the Minister for Planning. Accompanying these layouts was a spreadsheet which showed the distances between the nearest dwelling and the closest wind turbine on the endorsed layout and the as-built layout.

The purpose of this assessment is to compare the visual impact of the wind turbines on the endorsed layout with the wind turbines on the as-built layout. My assessment has been based on both the kmz files of the layouts and the accompanying spreadsheet which gave distances to the nearest wind turbine from dwellings surrounding the wind farm.

My assessment and conclusions are set out below.

Impact on residential properties

A spreadsheet is attached to this letter (Appendix A) which shows the distance to the nearest wind turbine from residential dwellings surrounding the wind farm.

In the Appendix the cells highlighted in yellow are those which are non-involved neighbours to the wind farm. In the Appendix the cells highlighted in light blue are those residences which have a wind turbine relocated, but the distance moved is less than 10 m, and for most of the residences highlighted in light blue the movement is only 0.1 m.

Table 1 shows those properties which have a wind turbine moved more than ten metres. The majority of dwellings are either host properties or houses owned by the proponent and are designated as “Host”. Houses owned by non-participatory land-owners are designated as “Neighbour”.

Table 1 shows those that there are only three Neighbour residences within 2.5 km of the nearest wind turbine where the nearest wind turbine has been moved more than ten metres.

Urban Design
Landscape Architecture
Visual assessment

Suite 1103 / 408 Lonsdale Street
Melbourne 3000
Victoria Australia
Telephone: +61 3 9642 8040
Web: xurban.com.au

ABN: 18831715013

Table 1 – Adjoining residential properties

Turbine no.	Nearest dwelling ID	Distance to closest point of a dwelling - **Endorsed layout**	Distance to closest point of a dwelling - **As built layout**	**Distance Change (m) Negative = closer Positive = further**	Host or Neighbour
4	B421	2291.1	2261.9	-29.2	**Neighbour**
8	B421	1181.6	1165.1	-16.5	**Neighbour**
14	B124	859.5	873.8	14.3	Host
15	B127	1238.6	1337.2	98.6	Host
27	B145	926.1	895.2	-30.9	Host
31	B149	972.0	952.9	-19.1	Host
86	B058	1043.6	1085.8	42.2	Host
87	B058	1011.8	1053.1	41.3	Host
88	B318	1510.7	1534.7	24.0	**Neighbour**
112	B097	1279.1	1241.2	-37.9	Host
113	B104	1992.5	1979.2	-13.3	Host
114	B104	1619.5	1545.4	-74.1	Host
143	B103	2175.5	2194.0	18.5	Host

There are only three wind turbines which are being re-located and which change the distance between the closest wind turbine and a dwelling of a non-associated landowner (designated as “Neighbour”).

Dwelling B421 has a slightly decreased distance from two wind turbines (WT4 & WT8) and this 29 m and 16m decrease in distance over more than 2,200 m would make no perceptual difference to the level of visual impact.

Dwelling B318 has a slightly increased distance from the nearest wind turbine (WT88) and this 24 m increase in distance over more than 1,500 m would make no perceptual difference to the level of visual impact.

The distance from other non-participatory residential dwellings to the nearest wind turbine remains unchanged or the movement in less than 10m.

Therefore, the proposed changes would make no discernible visual difference when viewed from non-participating residential dwellings.

Impact on the public domain

Many of the re-located wind turbines are being re-located far less than the 100m allowed for in the permit (refer Appendix A). The relatively small siting changes to the distances of these wind turbines within a cluster of existing wind turbines would make no discernible visual difference from the public domain.

Overall change

Generally, turbine movements are within clusters and may differ slightly however, the overall visual impact would be imperceptible from non-participating dwellings. The proposed changes in siting would make no difference to the level of visual impact that was assessed previously.

If you have any queries, please do not hesitate to contact me.

Yours sincerely,

for XURBAN

Allan Wyatt – *Landscape Architect*

Attached: Appendix A – Turbine location and dwelling proximity table

APPENDIX A – TURBINE LOCATION AND DWELLING PROXIMITY TABLE

Turbine no.	Nearest dwelling ID	Distance to closest point of a dwelling - Endorsed layout	Distance to closest point of a dwelling - As built layout	Distance Change (m) Negative = closer Positive = further	Nearest dwelling type	Nearest dwelling - Host or Neighbour
1	B114	1494.7	1494.7	0.0	House	Neighbour
2	B421	647.7	647.7	0.0	House	Neighbour
3	B123	1996.1	1996.1	0.0	House	Neighbour
4	B421	2291.1	2261.9	-29.2	House	Neighbour
5	B421	1858.9	1858.9	0.0	House	Neighbour
6	B041	2020.2	2020.2	0.0	House	Neighbour
7	B421	1632.9	1632.9	0.0	House	Neighbour
8	B421	1181.6	1165.1	-16.5	House	Neighbour
9	B421	874.1	874.1	0.0	House	Neighbour
10	B120	842.2	842.2	0.0	House	Host
11	B120	569.7	569.8	0.1	House	Host
12	B127	1080.7	1080.7	0.0	House	Host
13	B127	686.1	686.1	0.0	House	Host
14	B124	859.5	873.8	14.3	House	Host
15	B127	1238.6	1337.2	98.6	House	Host
16	B345	1144.0	1144.0	0.0	House	Host
17	B345	1708.3	1708.2	-0.1	House	Host
18	B148	1588.5	1588.5	0.0	House	Host
19	B148	1547.3	1547.3	0.0	House	Host
20	B148	2257.9	2257.9	0.0	House	Host
21	B091	2584.0	2584.0	0.0	House	Neighbour
22	B148	897.6	897.6	0.0	House	Host
23	B148	1002.1	1002.1	0.0	House	Host
24	B148	396.8	396.8	0.0	House	Host
25	B148	368.0	368.0	0.0	House	Host
26	B148	793.2	793.2	0.0	House	Host
27	B145	926.1	895.2	-30.9	House	Host
28	B148	488.3	488.3	0.0	House	Host
29	B148	835.1	835.1	0.0	House	Host
30	B148	983.6	983.6	0.0	House	Host
31	B149	972.0	952.9	-19.1	House	Host
32	B148	1035.1	1035.1	0.0	House	Host
33	B145	955.4	955.4	0.0	House	Host
34	B145	850.4	850.4	0.0	House	Host
35	B148	891.0	891.1	0.1	House	Host
36	B148	740.3	740.3	0.0	House	Host
37	B148	1578.3	1578.3	0.0	House	Host
38	B148	1324.3	1324.3	0.0	House	Host
39	B149	1083.9	1083.9	0.0	House	Host
40	B149	1245.1	1245.1	0.0	House	Host
41	B149	1992.0	1992.0	0.0	House	Host

Turbine no.	Nearest dwelling ID	Distance to closest point of a dwelling - Endorsed layout	Distance to closest point of a dwelling - As built layout	Distance Change (m) Negative = closer Positive = further	Nearest dwelling type	Nearest dwelling - Host or Neighbour
42	B149	2015.0	2015.0	0.0	House	Host
43	B149	2484.7	2484.7	0.0	House	Host
44	B168	2353.1	2353.1	0.0	House	Host
45	B168	1877.8	1877.8	0.0	House	Host
46	B170	1784.3	1784.3	0.0	House	Host
47	B148	2200.7	2200.7	0.0	House	Host
48	B148	2316.4	2316.4	0.0	House	Host
49	B168	2063.8	2063.8	0.0	House	Host
50	B245	2094.9	2094.9	0.0	House	Host
51	B168	2167.8	2167.8	0.0	House	Host
52	B168	1601.1	1601.1	0.0	House	Host
53	B245	1582.7	1582.7	0.0	House	Host
54	B168	1017.1	1017.1	0.0	House	Host
55	B168	1318.0	1318.0	0.0	House	Host
56	B168	1588.3	1588.3	0.0	House	Host
57	B168	1321.3	1321.4	0.1	House	Host
58	B168	1232.7	1232.7	0.0	House	Host
59	B203	887.6	887.6	0.0	House	Host
60	B170	1341.5	1341.5	0.0	House	Host
61	B170	875.3	875.3	0.0	House	Host
62	B170	1397.6	1397.6	0.0	House	Host
63	B170	1026.3	1026.3	0.0	House	Host
64	B343	1253.6	1253.6	0.0	House	Host
65	B343	1746.3	1746.3	0.0	House	Host
66	B170	2046.1	2046.1	0.0	House	Host
67	B170	2012.8	2012.8	0.0	House	Host
68	B151	1515.6	1515.6	0.0	House	Host
69	B151	1547.8	1547.8	0.0	House	Host
70	B140	2099.2	2099.2	0.0	House	Host
71	B112	1928.5	1928.5	0.0	House	Host
72	B111	2243.9	2243.9	0.0	House	Neighbour
73	B058	1963.2	1963.3	0.1	House	Host
74	B140	1645.2	1645.2	0.0	House	Host
75	B140	1332.1	1332.1	0.0	House	Host
76	B140	1123.7	1123.7	0.0	House	Host
77	B140	1059.8	1059.8	0.0	House	Host
78	B140	860.9	860.9	0.0	House	Host
79	B140	1177.4	1177.4	0.0	House	Host
80	B140	1382.6	1383.9	1.3	House	Host
81	B058	2144.6	2144.6	0.0	House	Host
82	B111	2185.8	2185.8	0.0	House	Neighbour
83	B111	1766.0	1766.0	0.0	House	Neighbour

Turbine no.	Nearest dwelling ID	Distance to closest point of a dwelling - Endorsed layout	Distance to closest point of a dwelling - As built layout	Distance Change (m) Negative = closer Positive = further	Nearest dwelling type	Nearest dwelling - Host or Neighbour
84	B058	1604.7	1604.8	0.1	House	Host
85	B058	1340.1	1340.2	0.1	House	Host
86	B058	1043.6	1085.8	42.2	House	Host
87	B058	1011.8	1053.1	41.3	House	Host
88	B318	1510.7	1534.7	24.0	House	Neighbour
89	B318	1212.3	1212.3	0.0	House	Neighbour
90	B318	872.7	872.7	0.0	House	Neighbour
91	B318	1290.5	1290.5	0.0	House	Neighbour
92	B053	1150.0	1150.0	0.0	House	Neighbour
93	B318	858.0	858.0	0.0	House	Neighbour
94	B029	1177.6	1177.6	0.0	House	Neighbour
95	B053	1034.4	1034.4	0.0	House	Neighbour
96	B058	2071.4	2071.4	0.0	House	Host
97	B064	2262.2	2262.2	0.0	House	Neighbour
98	B064	2080.6	2080.7	0.1	House	Neighbour
99	B060	2012.7	2012.7	0.0	House	Neighbour
100	B060	1958.9	1959.0	0.1	House	Neighbour
101	B064	2226.6	2226.6	0.0	House	Neighbour
102	B064	1940.7	1940.7	0.0	House	Neighbour
103	B064	1539.2	1539.2	0.0	House	Neighbour
104	B064	976.9	976.9	0.0	House	Neighbour
105	B060	2442.4	2442.5	0.1	House	Neighbour
106	B060	2914.1	2914.1	0.0	House	Neighbour
107	B060	3234.6	3234.6	0.0	House	Neighbour
108	B064	2491.5	2491.5	0.0	House	Neighbour
109	B064	1876.3	1876.3	0.0	House	Neighbour
110	B097	652.2	652.2	0.0	House	Host
111	B097	1075.7	1075.7	0.0	House	Host
112	B097	1279.1	1241.2	-37.9	House	Host
113	B104	1992.5	1979.2	-13.3	House	Host
114	B104	1619.5	1545.4	-74.1	House	Host
115	B104	1566.0	1566.0	0.0	House	Host
116	B104	1367.8	1367.8	0.0	House	Host
117	B103	1428.3	1428.3	0.0	House	Host
118	B104	1750.7	1750.7	0.0	House	Host
119	B104	1358.6	1358.6	0.0	House	Host
120	B104	1707.9	1707.9	0.0	House	Host
121	B083	1901.8	1901.8	0.0	House	Neighbour
122	B104	1158.7	1158.7	0.0	House	Host
123	B104	1189.3	1182.5	-6.8	House	Host
124	B104	1482.5	1482.5	0.0	House	Host
125	B104	1279.6	1279.6	0.0	House	Host

Turbine no.	Nearest dwelling ID	Distance to closest point of a dwelling - Endorsed layout	Distance to closest point of a dwelling - As built layout	Distance Change (m) Negative = closer Positive = further	Nearest dwelling type	Nearest dwelling - Host or Neighbour
126	B103	1907.0	1907.0	0.0	House	Host
127	B103	1290.1	1290.1	0.0	House	Host
128	B103	1525.1	1520.1	-5.0	House	Host
129	B103	1600.2	1600.2	0.0	House	Host
130	B083	1756.8	1756.9	0.1	House	Neighbour
131	B080	1718.1	1718.1	0.0	House	Host
132	B080	1568.3	1568.3	0.0	House	Host
133	B080	1173.1	1173.1	0.0	House	Host
134	B080	1082.1	1082.1	0.0	House	Host
135	B080	829.7	829.7	0.0	House	Host
136	B080	1333.8	1333.8	0.0	House	Host
137	B080	1655.5	1655.5	0.0	House	Host
138	B102	1616.6	1616.6	0.0	House	Neighbour
139	B322	1518.5	1518.5	0.0	House	Neighbour
140	B103	1622.4	1622.4	0.0	House	Host
141	B104	1164.1	1164.1	0.0	House	Host
142	B103	1876.2	1876.2	0.0	House	Host
143	B103	2175.5	2194.0	18.5	House	Host
144	B103	1813.2	1813.2	0.0	House	Host
145	B103	1350.2	1350.2	0.0	House	Host
146	B103	1250.4	1250.4	0.0	House	Host
147	B103	1576.6	1576.6	0.0	House	Host
148	B102	1683.6	1683.6	0.0	House	Neighbour
149	B102	1219.9	1219.9	0.0	House	Neighbour

APPENDIX D.1 – NATIVE VEGETATION ASSESSMENT, SMEC (DEC 2020)

PROVIDED IN APPENDIX B OF THE PERMIT AMENDMENT APPLICATION

APPENDIX D.2 - ASSESSMENT OF SPATIAL CHANGES IN VEGETATION IMPACTS, MVC

MVC Services
Level 7, 575 Bourke Street
Melbourne, VIC 3000

10 July 2020

Investment Delivery Manager
Stockyard Hill Wind Farm Pty Ltd
Level 4, 485 La Trobe Street
Melbourne VIC 3000

Attention Jeff Bembrick,

Privileged and Confidential: for the purpose of legal advice

Via email: jeffbembrick@goldwindaustralia.com , elizabethzorondo@goldwindaustralia.com

Dear Jeff,

RE: Stockyard Hill Wind Energy Facility – Planning Permit PL-SP/05/0548/B

Micro-Siting Geospatial analysis - Vegetation impact comparison for Native Vegetation Management Plan, Condition 1 Development Plan, and Post Construction layouts.

Scope

MVC Services was asked to undertake a comparison assessment between the pre-construction wind farm layouts (used in the Condition 1 Development Plans (C1DP) and the Native Vegetation Management Plan (NVMP)) and the As-built layout for the Stockyard Hill Wind Energy Facility. This assessment investigated whether any micrositing of project infrastructure has directly resulted in an increased impact on native vegetation.

Methodology

The infrastructure that was subject to change included the alignments of access tracks and underground cabling route and, the footprint of wind turbine footings and hardstands.

To assess the consequence of the modified linear alignments for tracks and cables, a comparison of native vegetation impacted by pre-construction and post-construction alignments was undertaken based on a standard (same) width of disturbance used for both the pre and post construction alignments. The assessment used the same footprint parameters used for the pre-construction layout (C1DP & NVMP) for the access tracks and cables. The objective of the

analysis was to isolate and assess the contribution of the different alignments, independent of variation in width of the layouts. The applied endorsed footprints were:

- a 12.5m wide impact area for the access tracks, and
- a 3m wide impact for the underground cable routes.

The Ecological Vegetation Class (EVC) data was intersected with the footprint to provide like for like area impacts for each EVC using ArcGIS. For comparative purposes, pre-construction widths, rather than post-construction widths were used during this assessment, in order to ascertain which of the layouts has a lesser native vegetation impact.

Results

The results of the GIS analysis showed that there was a reduction in impact to EVC's for the post construction alignments (when applying the same pre-construction widths to infrastructure for the pre-construction and post-construction alignments). In addition to the total EVC impact, a breakdown of the surveyed EVC quality was also reviewed. The calculated results were as follows:

NVMP v As-built Layout:

- reduction of 0.81 ha of total EVC impact (-3.4%)
- reduction of 1.06 ha of high quality EVC impact (-4.47%)
- reduction of 0.08 ha of moderate quality EVC impact (-0.32%)
- increase of 0.33 ha of low quality EVC impact (+1.39%)

See Appendix 1 for the results of the change in EVC impacts for the As-built layout relative to the NVMP layout.

Condition 1 Development Plan v As-built Layout:

- reduction of 0.15 ha of total EVC impact (-0.63%)
- reduction of 0.84 ha of high quality EVC impact (-3.62%)
- increase of 0.29 ha of moderate quality EVC impact (+1.26%)
- increase of 0.40 ha of low quality EVC impact (+1.73%)

See Appendix 2 for the results of the change in EVC impacts for the As-built layout relative to the Development Plan layout.

Wind turbine locations and hardstands:

During detailed design and project construction turbines have been micro-sited mostly to minor extent but up to 100 m. None of these micro-sited turbines moved into higher quality EVC's. In most cases, the pre-construction location and As-built location remain generally the same, with 21 turbines being located within mapped areas of native vegetation as shown in Table 1 together with the applicable EVC for each site. Micro-siting of wind turbines is mostly less than one metre, but two wind turbines have been relocated 30.7 and 64.5 metres.

Table 1: Turbines located within an EVC

As-built WTG ID	Applicable EVC	QUALITY
95	EVC 175 Grassy Woodland	Low
68	EVC 132 Plains Grassland	Moderate
64	EVC 132 Plains Grassland	Moderate
50	EVC 132 Plains Grassland	Moderate
49	EVC 132 Plains Grassland	Moderate
48	EVC 132 Plains Grassland	Moderate
47	EVC 132 Plains Grassland	Moderate
46	EVC 132 Plains Grassland	Moderate
45	EVC 132 Plains Grassland	Moderate
44	EVC 132 Plains Grassland	Moderate
40	EVC 132 Plains Grassland	Moderate
39	EVC 132 Plains Grassland	Moderate
38	EVC 132 Plains Grassland	Moderate
37	EVC 132 Plains Grassland	Moderate
26	EVC 203 Stony Rises Woodland	Moderate
9	EVC 22 Grassy Dry Forest	High
8	EVC 175 Grassy Woodland	High
7	EVC 175 Grassy Woodland	High
6	EVC 175 Grassy Woodland	High
5	EVC 175 Grassy Woodland	High
4	EVC 175 Grassy Woodland	High

The pre-construction hardstand and foundation design consisted of an area of 3500m^2 (50m x 70m) but the detailed As-built design was a much smaller footprint of approximately 2,275m^2 (65m x 35m). These dimensions relate only to the permanent area made up of the foundation and hardstand.

If the orientation of hardstands did not vary, this change in hardstand design would see a reduction in impact to EVC for the permanent wind farm area for the turbine hardstand and foundation. If the hardstands sat wholly within an EVC the reduction would be 2.57 ha.

Exclusions

This assessment has not taken into account the following;

- Scattered trees – It is understood that the post construction layout has reduced the impact on scattered trees, indicated (SMEC, 2020) as 26 trees impacted for the post-construction layout, compared to a pre-construction estimated impact of 43 trees, a reduction of 17 scattered trees (equivalent to approximately 1.2 ha remnant patch) and regarded as an outcome of micro-siting.
- Post-construction cleared area has been assessed by SMEC 2020 – As indicated above, this assessment considered impact changes due to the changed alignments, independent of variation in disturbance widths. For this analysis, the same construction methods and disturbance widths

were applied to the same type of infrastructure for each of the three layouts considered (NVMP, DP and As-Built layout). Therefore, the resulting hectare assessment is not representative of the actual cleared vegetation reported in SMEC 2020. The percentage change in this analysis (based on the change in hectares based on the analysis) is the appropriate indicator of the change in impact of micro-siting from the NVMP or DP layout to the As-built layout.

- Variant to the post-construction permanent hardstand footprint. It is noted that impact minimisation, such as replacement of blade laydown areas with two smaller pads (blade fingers used to place the blade carriers), was applied at various turbine sites and had potential to reduce the post-construction hardstand footprint by approximately 700m^2 per wind turbine site.
- On the advice of SMEC, areas previously mapped by EHP as mixed EVC 132 Plains Grassland / EVC 203 Stony Rises Woodland have been reclassified solely as EVC 132 Plains Grassland as this is the predominant EVC where these mapping layers were mixed.

Yours sincerely,

Iain Mackey
Geospatial Manager
MVC Services Pty Ltd
M | 0424 898 649
E | Iain.Mackey@mvcservices.com.au

APPENDIX 1 - NVMP and As-Built Layouts

Comparison table of EVC impacts between the Pre-Construction NVMP Layout and As-Built Layout - Focused on changes from micro-sited alignments of tracks and cables

EVC Details		Infrastructure	Layouts		Difference - All EVC and Classes H, M & L			
EVC Number and Name	EVC Quality		Pre-Construction NVMP (Ha)	As-Built (Ha)	High, Mod & Low	HIGH	MOD	LOW
EVC 125 Plains Grassy Wetland	High	Cable	0.00	0.03	0.03	0.03		
EVC 125 Plains Grassy Wetland	Moderate	Cable	0.00	0.00	0.00		0.00	
EVC 132 Plains Grassland	Low	Cable	0.00	0.00	0.00			0.00
EVC 132 Plains Grassland	Low	Track	0.01	0.03	0.02			0.02
EVC 132 Plains Grassland	Moderate	Cable	2.86	2.75	-0.11		-0.11	
EVC 132 Plains Grassland	Moderate	Track	10.19	10.12	-0.07		-0.07	
EVC 132 Plains Grassland	Moderate	Track & Cable	0.02	0.11	0.09		0.09	
EVC 175 Grassy Woodland	High	Cable	1.26	0.14	-1.12	-1.12		
EVC 175 Grassy Woodland	High	Track	5.63	4.47	-1.16	-1.16		
EVC 175 Grassy Woodland	High	Track & Cable	0.02	1.10	1.07	1.07		
EVC 175 Grassy Woodland	Low	Cable	0.32	0.34	0.02			0.02
EVC 175 Grassy Woodland	Low	Track	0.98	1.32	0.34			0.34
EVC 175 Grassy Woodland	Low	Track & Cable	0.00	0.00	0.00			0.00
EVC 175 Grassy Woodland	Moderate	Cable	0.02	0.01	0.00		0.00	
EVC 175 Grassy Woodland	Moderate	Track	0.07	0.04	-0.03		-0.03	
EVC 175 Grassy Woodland	Moderate	Track & Cable	0	0.00	0.00		0.00	
EVC 203 Stony Rises Woodland	Low	Track	0.00	0.00	0.00			0.00
EVC 203 Stony Rises Woodland	Moderate	Cable	0.23	0.52	0.30		0.30	
EVC 203 Stony Rises Woodland	Moderate	Track	1.44	1.60	0.16		0.16	
EVC 203 Stony Rises Woodland	Moderate	Track & Cable	0.00	0.00	0.00		0.00	
EVC 22 Grassy Dry Forest	High	Cable	0.06	0.00	-0.06	-0.06		
EVC 22 Grassy Dry Forest	High	Track	0.24	0.36	0.11	0.11		
EVC 22 Grassy Dry Forest	High	Track & Cable	0.00	0.06	0.06	0.06		
EVC 55 Plains Grassy Woodland	Low	Cable	0.03	0.00	-0.03			-0.03
EVC 55 Plains Grassy Woodland	Low	Track	0.04	0.03	-0.01			-0.01
EVC 55 Plains Grassy Woodland	Moderate	Cable	0.06	0.00	-0.06		-0.06	
EVC 55 Plains Grassy Woodland	Moderate	Track	0.34	0.00	-0.34		-0.34	
		TOTAL	**23.83**	**23.02**	-0.81	-1.06	-0.08	0.33
					-3.40%	-4.47%	-0.32%	1.39%
					Percentage Change in impact on EVCs			

NV Change DP to As-Built	No Change	Decrease	Increase

APPENDIX 2 - Condition 1 Development Plan Layout and As-Built Layout

Comparison table of EVC impacts between the Pre-Construction Cond 1 Dev Plan layout and the As-built layout - Focused on micro-sited alignments of tracks and cables

EVC Details		Infrastructure	Layouts		Difference - All EVC and Classes, H, M & L			
EVC Number and Name	EVC Quality		Pre-Construction Dev Plan (Ha)	As-Built (Ha)	High, Mod & Low	HIGH	MOD	LOW
EVC 125 Plains Grassy Wetland	High	Cable	0.03	0.03	0.00	0.00		
EVC 125 Plains Grassy Wetland	Moderate	Cable	0.00	0.00	0.00		0.00	
EVC 132 Plains Grassland	Low	Cable	0.00	0.00	0.00			0.00
EVC 132 Plains Grassland	Low	Track	0.00	0.03	0.03			0.03
EVC 132 Plains Grassland	Moderate	Cable	2.93	2.75	-0.18		-0.18	
EVC 132 Plains Grassland	Moderate	Track	9.76	10.12	0.36		0.36	
EVC 132 Plains Grassland	Moderate	Track & Cable	0.02	0.11	0.09		0.09	
EVC 175 Grassy Woodland	High	Cable	1.30	0.14	-1.16	-1.16		
EVC 175 Grassy Woodland	High	Track	5.33	4.47	-0.85	-0.85		
EVC 175 Grassy Woodland	High	Track & Cable	0.02	1.10	1.08	1.08		
EVC 175 Grassy Woodland	Low	Cable	0.31	0.34	0.03			0.03
EVC 175 Grassy Woodland	Low	Track	0.98	1.32	0.34			0.34
EVC 175 Grassy Woodland	Low	Track & Cable	0.00	0.00	0.00			0.00
EVC 175 Grassy Woodland	Moderate	Cable	0.01	0.01	0.00		0.00	
EVC 175 Grassy Woodland	Moderate	Track	0.08	0.04	-0.04		-0.04	
EVC 175 Grassy Woodland	Moderate	Track & Cable	0	0.00	0.00		0.00	
EVC 203 Stony Rises Woodland	Low	Track	0	0.00	0.00			0.00
EVC 203 Stony Rises Woodland	Moderate	Cable	0.22	0.52	0.31		0.31	
EVC 203 Stony Rises Woodland	Moderate	Track	1.54	1.60	0.06		0.06	
EVC 203 Stony Rises Woodland	Moderate	Track & Cable	0.00	0.00	0.00		0.00	
EVC 22 Grassy Dry Forest	High	Cable	0.07	0.00	-0.07	-0.07		
EVC 22 Grassy Dry Forest	High	Track	0.24	0.36	0.12	0.12		
EVC 22 Grassy Dry Forest	High	Track & Cable	0.00	0.06	0.05	0.05		
EVC 55 Plains Grassy Woodland	Low	Cable	0	0.00	0.00			0.00
EVC 55 Plains Grassy Woodland	Low	Track	0.02	0.03	0.00			0.00
EVC 55 Plains Grassy Woodland	Moderate	Cable	0.00	0.00	0.00		0.00	
EVC 55 Plains Grassy Woodland	Moderate	Track	0.30	0.00	-0.30		-0.30	
		TOTAL	**23.17**	**23.02**	-0.15	-0.84	0.29	0.40
					-0.63%	-3.62%	1.26%	1.73%
					Percentage Change in impact on EVCs			

NV Change DP to As-Built	No Change	Decrease	Increase

APPENDIX D.3 – ASSESSMENT OF MVC'S ANALYSIS, SMEC

Member of the Surbana Jurong Group

local people
global experience

18 December 2020
SMEC No. 30042868N

Elizabeth Zorondo
Senior Environmental Planner
Goldwind Australia Pty Ltd
Level 4, North Tower Building
485 La Trobe Street
MELBOURNE VIC 3000

Dear Elizabeth,

Re: Ecological advice on Planning Permit P/05/0548/B – Condition 2(i) micro-siting – vegetation

SMEC Australia Pty Ltd (SMEC) were engaged by Stockyard Hill Wind Farm Pty Ltd (SHWFPL) to provide a response to the micro-siting geospatial analysis undertaken by MVC Services (2020). The assessment made comparison between the pre-construction wind farm layouts (used in the Condition 1 Development Plans [C1DP] and the Native Vegetation Management Plan [NVMP]) and the post-construction layout for the Stockyard Hill Wind Energy Facility (SHWEF) and associated infrastructure.

This letter is specific to assessment on *vegetation only* in response to Condition 2(i) of Planning Permit P/05/0548/B, which states:

> "*the developer of the wind energy facility has written advice from appropriately qualified experts that the alteration of modification will not result in material adverse change in landscape,* ***vegetation****, cultural heritage, visual, shadow flicker, noise, fire risk or aviation impacts compared to the endorsed plans;"*

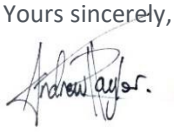
As noted, MVC Services completed a desktop geo-spatial analysis between the pre-construction and post-construction layouts using the same width of disturbance parameters for both alignments (MVC Services 2020). That is, using the same access track and underground cabling impact parameters for the pre-construction layout. This information was used to compare impacts to native vegetation (in the form of Ecological Vegetation Classes [EVCs]) identified during previous assessments for each layout (independent of variation in widths of the layout) (MVC Services 2020, EHP 2014a, 2014b, 2016a, 2016b).

It was confirmed by MVC Services geo-spatial analysis that, there was a reduction in the overall impact to EVCs associated with the post-construction (micro-sited) layout (MVC Services 2020). Importantly, an overall reduction to impacts of high quality EVCs was achieved for the post-construction layout when compared with each of the pre-construction layouts (C1DP and NVMP) (MVC Services 2020).

It is therefore my opinion that micro-siting associated with the post-construction layout has not resulted in a material adverse change to vegetation at the SHWEF in accordance with Condition 2(i) of Planning Permit P/05/0548/B.

If you have any questions, please feel free to contact me.

Yours sincerely,



Andrew Taylor
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References

EHP 2014a. Preliminary Ecological Assessments for the Stockyard Hill Wind Farm, Victoria. Prepared for Stockyard Hill Wind Farm Pty Ltd.

EHP 2014b. Detailed flora investigations for the Stockyard Hill Wind Farm, Victoria. Prepared for Stockyard Hill Wind Farm Pty Ltd.

EHP 2016a. Biodiversity Assessments to Accompany an Application to Amend Planning Permit No PL-SP/05/0548, Stockyard Hill Wind Farm, Victoria. Prepared for Stockyard Hill Wind Farm Pty Ltd.

EHP 2016b. Biodiversity Assessment of the Roadside and Intersection Upgrades, Stockyard Hill Wind Farm, Victoria. Prepared for Stockyard Hill Wind Farm Pty Ltd.

MVC 2020. Micro-siting Geospatial Analysis for Stockyard Hill Wind Energy Facility – Planning Permit PL-SP/05/0548/B. Prepared for Stockyard Hill Wind Farm Pty Ltd.

APPENDIX E - ASSESSMENT OF CHANGES IN IMPACTS TO CULTURAL HERITAGE, TARDIS

Archaeology At TARDIS
heritage advisors

ABN 12 151 540 662

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Our Ref: 3720.1000

14 July 2020

Mr Justin Howes
Stockyard Hill Wind Farm Pty Ltd
Suite 2, Level 25, Tower 1, 100 Barangaroo Ave
Barangaroo NSW 2000

Re: SHWF Planning Permit PL-SP/05/0548/B –
Review of Micrositing Cultural Heritage Statutory Obligations

Dear Justin,

I am writing in response to your request for an assessment of how detailed layout changes made to Stockyard Hill Wind Farm's (SHWF) endorsed layout plans respond to *Condition 2 of the SHWF Planning Permit PL-SP/05/0548/B* in regard to cultural heritage. Condition 2 allows for micrositing changes to be considered generally in accordance with the endorsed plans without consent from the Minister of Planning, subject to layout changes fulfilling requirements specified in Condition 2. In relation to cultural heritage, changes to micro-siting of wind turbines, overhead powerlines, access tracks and underground cabling does not require consent if alterations or modifications to the endorsed plans will not result in material adverse changes in cultural heritage impacts.

To determine the impact of the micrositing changes on cultural heritage and assess if the changes comply with Condition 2, a review of compliance obligations in CHMPs 10530, 12177, 14279, 14281 and 16119, and a spatial review of the impact of modification of the endorsed plans on impacted Aboriginal cultural heritage places has been undertaken (Table 1; Map 1-5).

Impact of Layout Changes to Aboriginal Cultural Heritage

The alteration of the endorsed plans will not have an adverse impact on previously identified Aboriginal cultural heritage. The proposed layout changes, in general, do not deviate from the endorsed plans in areas near Aboriginal cultural heritage (Map 1, 2 & 3). There are only two notable areas where modification to the endorsed plans have a potential impact on Aboriginal cultural heritage, with the associated Aboriginal places

comprising of VAHR 7522-0021 and VAHR 7522-0120 (**Map 4 & 5**). For both these places, archaeological salvage has been conducted prior to the activity commencing to mitigate harm to each place.

Overall Assessment

This assessment has determined that all salvage works associated with Aboriginal cultural heritage places impacted by the endorsed plans has been completed, and the works are not inconsistent with CHMPs 10530, 12177, 14279, 14281 and 16119 (**Table 1**). The spatial review indicates the impacts of layout changes to the endorsed layout plans will be minimal and all layout changes comply with relevant CHMP conditions. Overall, the layout changes will not have a material adverse impact on cultural heritage compared to the endorsed plan, and they comply with *Condition 2 of the SHWF Planning Permit PL-SP/05/0548/B.*

Yours sincerely,

[redacted]

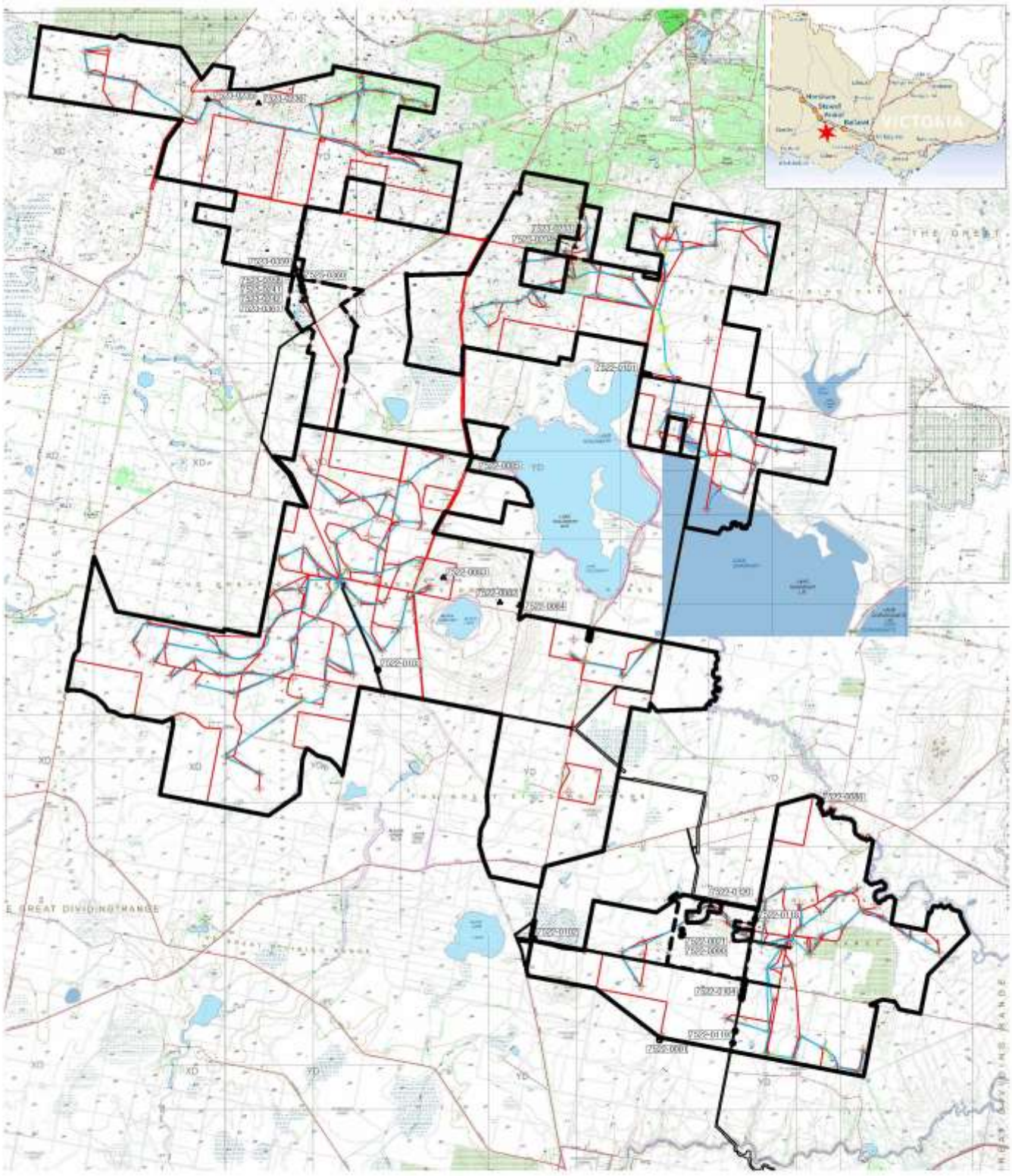
Table 1 CHMP Compliance for Stockyard Hill Wind Farm's (SHWF)

VAHR NUMBER	CHMP NO.	CONDITION	AVOID HARM	SALVAGE COMPLETED	IMPACT OF ALTERATION/ MODIFICATION	CONDITION COMPLIANCE
7522-0021	10530; 14281; 16119	CHMP 10530 Rec. 1; CHMP 14281 Rec. 10.1; CHMP 16119 Rec. 11.1: Salvage along access track. Fencing, signage, information in work plans & induction, ongoing management to avoid harm to the remainder of the place. Management measures are required to manage harm by conducting archaeological salvage excavations.	Yes	Yes	No material adverse impact	Yes
7522-0082	10530	CHMP 10530 Rec. 2: Fencing, signage, information in work plans & induction, ongoing management to avoid harm.	Yes	N/a	No material adverse impact	Yes
7522-0083	10530	CHMP 10530 Rec. 3: Fencing, signage, information in work plans & induction, ongoing management to avoid harm.	Yes	N/a	No material adverse impact	Yes
7522-0084	10530	CHMP 10530 Rec. 4: Fencing, signage, information in work plans & induction, ongoing management to avoid harm.	Yes	N/a	No material adverse impact	Yes
7522-0085	10530	CHMP 10530 Rec. 5: Cultural material removed, research questions answered, no additional research potential. No management required.	No	Yes	No material adverse impact	Yes
7522-0086	10530	CHMP 10530 Rec. 6: Fencing, signage, information in work plans & induction, ongoing management to avoid harm.	Yes	N/a	No material adverse impact	Yes
7522-0090	12177; 14281	CHMP 12177 Rec. 10.1; CHMP 14281 Rec. 10.2: All cultural material collected during the field assessment, salvage (if any) and the activity (if any) must be repatriated to the Wadawurrung and securely stored at the offices of the Wadawurrung and the Wadawurrung may rebury the cultural material within the activity area.	No	Yes	No material adverse impact	Yes

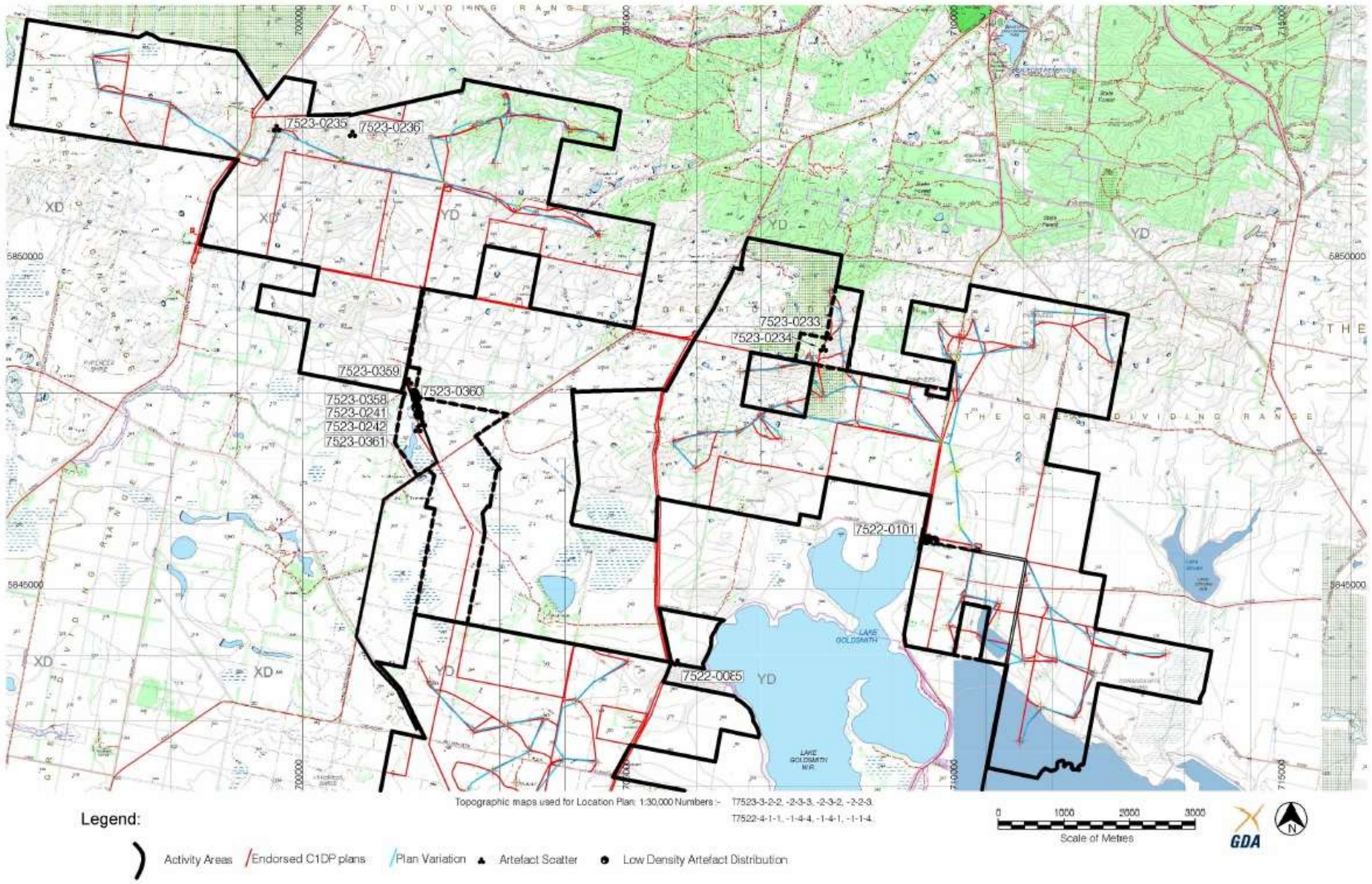
VAHR NUMBER	CHMP NO.	CONDITION	AVOID HARM	SALVAGE COMPLETED	IMPACT OF ALTERATION/ MODIFICATION	CONDITION COMPLIANCE
7522-0091	12177	CHMP 12177 Rec. 10.2: All cultural material collected during the field assessment, salvage (if any) and the activity (if any) must be repatriated to the Wadawurrung and securely stored at the offices of the Wadawurrung and the Wadawurrung may rebury the cultural material within the activity area.	No	Yes	No material adverse impact	Yes
7522-0101	14279	CHMP 14279 Rec. 10.1: The place is in the road reserve within the footprint of the activity. The surface artefact must be salvaged prior to the conduct of the activity.	No	Yes	No material adverse impact	Yes
7522-0102	14279	CHMP 14279 Rec. 10.2: The place is in the road reserve within the footprint of the activity. The surface artefact must be salvaged prior to the conduct of the activity.	No	Yes	No material adverse impact	Yes
7522-0103	12177	CHMP 12177 Rec. 10.12: Archaeological salvage is required to manage harm to the place at the pole location. The entire area to be disturbed must be subject to a surface artefact collection.	No	Yes	No material adverse impact	Yes
7522-0104	12177	CHMP 12177 Rec. 10.13: Archaeological salvage is required to manage harm to the place at the pole location and, if required, also at the pole hardstand area.	No	Yes	No material adverse impact	Yes
7522-0118	12177	CHMP 12177 Rec. 10.35: Archaeological salvage is required to manage harm to the place at the pole location and, if required, also at the pole hardstand area.	No	Yes	No material adverse impact	Yes
7522-0119	12177	CHMP 12177 Rec. 10.36: Harm must be minimised along the access track as follows: Geofabric must be securely placed over the contemporary land surface along the access track; No grass or topsoil removal is permitted in this area; Gravel must be placed over the geofabric. After the activity has been completed on the relevant land parcel, the geofabric and gravel	No	Yes	No material adverse impact	Yes

VAHR NUMBER	CHMP NO.	CONDITION	AVOID HARM	SALVAGE COMPLETED	IMPACT OF ALTERATION/ MODIFICATION	CONDITION COMPLIANCE
		can be removed				
7523-0233	10530; 14281	**CHMP 10530 Rec. 7; CHMP 14281 Rec. 10.9:** Fencing, signage, information in work plans & induction, ongoing management to avoid harm. In CHMP 10530, no harm was to occur to the place. Due to engineering and construction constraints on the crest of the ridgeline, harm cannot be avoided. Harm will now be required.	No	Yes	No material adverse impact	Yes
7523-0234	10530; 14281	**CHMP 10530 Rec. 8; CHMP 14281 Rec. 10.10:** Fencing, signage, information in work plans & induction, ongoing management to avoid harm. No harm will occur to the place; therefore, no harm minimisation is required.	Yes	N/a	No material adverse impact	Yes
7523-0235	10530	**CHMP 10530 Rec. 9**: Cultural material removed, research questions answered, no additional research potential. No management required.	No	Yes	No material adverse impact	Yes
7523-0236	10530	**CHMP 10530 Rec. 10**: Cultural material removed, research questions answered, no additional research potential. No management required.	No	Yes	No material adverse impact	Yes
7523-0359	14281	**CHMP 14281 Rec. 10.3:** Harm can be avoided by ensuring that any pole location avoids the site extent. Management measures are required to avoid harm to the place.	Yes	N/a	No material adverse impact	Yes
7523-0361	14281	**CHMP 14281 Rec. 10.4:** Harm to part of the place cannot be avoided. Management measures are required to conduct archaeological salvage excavation at pole locations and to minimise harm to the ground surface during construction by vehicles.	No	Yes	No material adverse impact	Yes

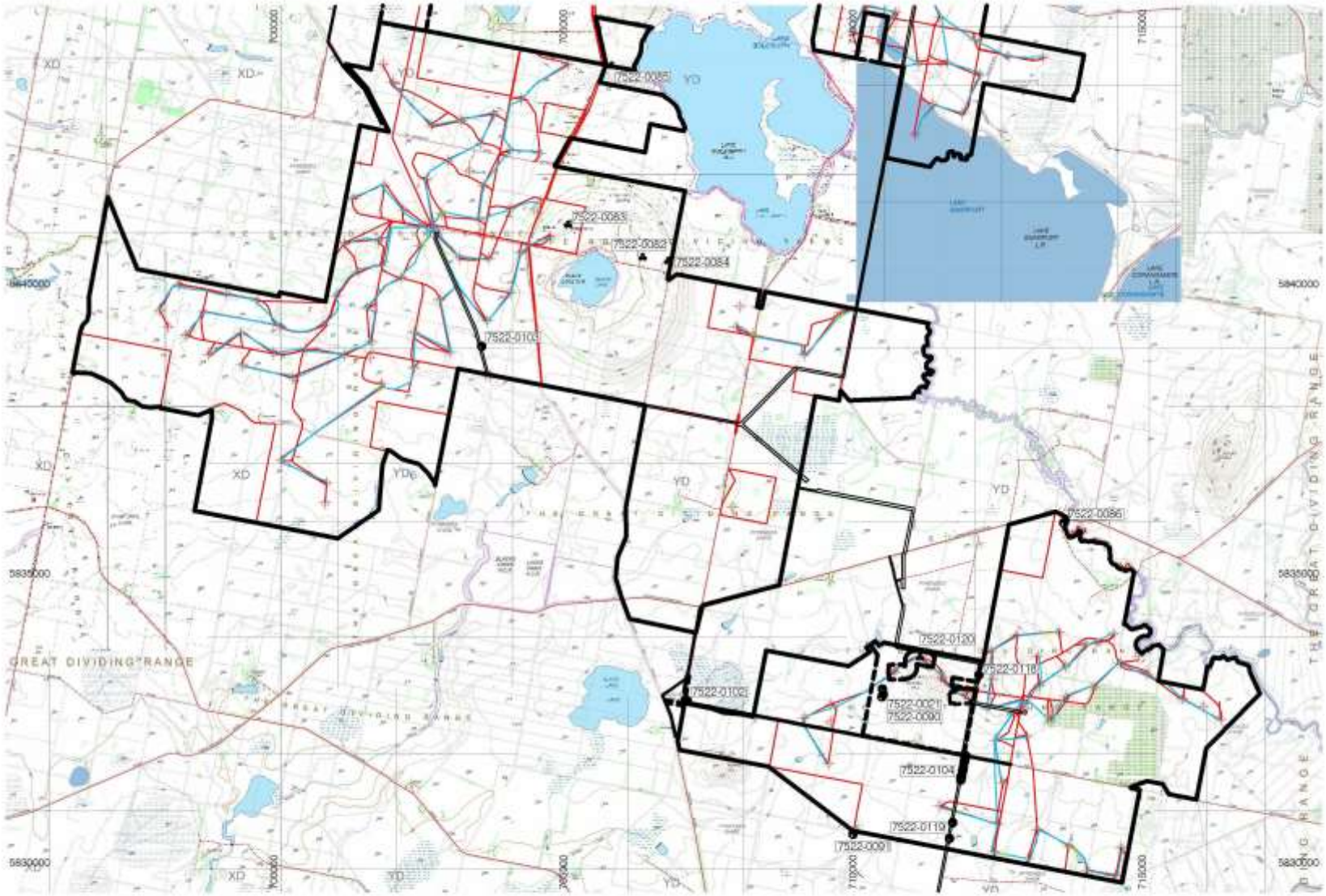
VAHR NUMBER	CHMP NO.	CONDITION	AVOID HARM	SALVAGE COMPLETED	IMPACT OF ALTERATION/ MODIFICATION	CONDITION COMPLIANCE
7523-0360	14281	CHMP 14281 Rec. 10.5: Harm to part of the site is permitted for the purposes of fixing a pole into the ground. Harm at the pole location must be subject to archaeological salvage.	Yes and No	Yes	No material adverse impact	Yes
7523-0358	14281	CHMP 14281 Rec. 10.6: No harm will occur to the site. Some of the artefact findspot locations are not within the alignment of the northwest internal powerline; however, some artefacts are within the alignment. Detailed design will ensure that the findspot locations within the alignment will not be harmed by the activity.	Yes	N/a	No material adverse impact	Yes
7423-0241	14281	CHMP 14281 Rec. 10.7: No harm will occur to the place; therefore, no harm minimisation is required.	Yes	N/a	No material adverse impact	Yes
7523-0242	14281	CHMP 14281 Rec. 10.8: No harm will occur to the place; therefore, no harm minimisation is required.	Yes	N/a	No material adverse impact	Yes
7522-0120	14281; 16119	CHMP 14281 Rec. 10.11; CHMP 16119 Rec. 11.2: Harm cannot be minimised. Management measures are required to salvage the archaeological values to be harmed by the activity. Specific management measures are required to manage harm by conducting archaeological salvage excavation. The artefacts collected during the assessment must be managed.	No	Yes	No material adverse impact	Yes



Map 1 Activity Area Location and VAHR Registered Places



Map 2 Extent of Activity Area (North)



Topographic maps used for Location Plan 1:50,000 Numbers :- T7522-4-1-1, -1-4-4, -1-4-1, -1-1-4, -4-1-2, -1-4-3, -1-4-2, -1-1-3, -1-1-2, -1-3-1, -1-2-4, -1-2-1

Legend:

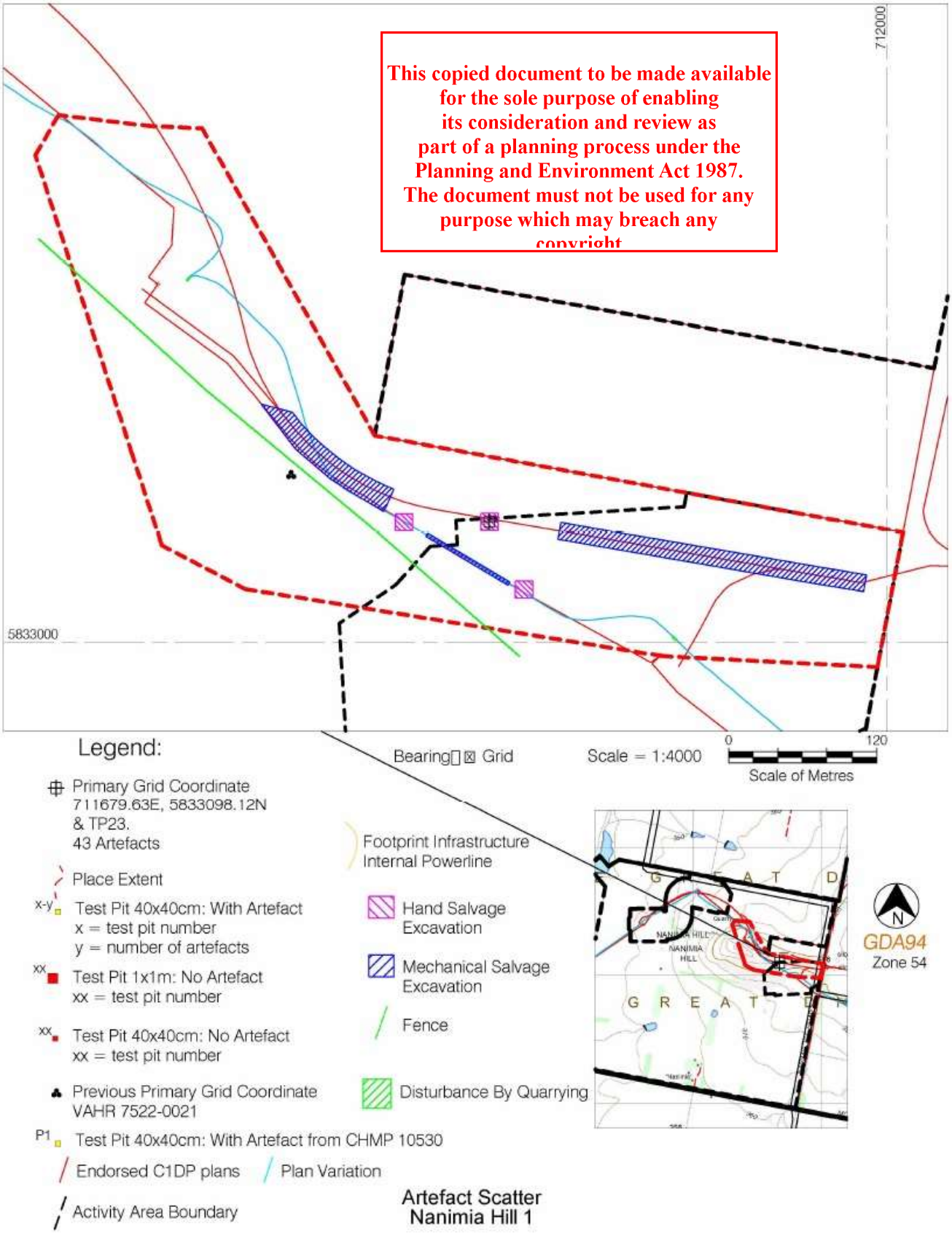
Activity Areas | Endorsed C1DP plans | Plan Variation | Artefact Scatter | Low Density Artefact Distribution

0 1000 2000 3000 4000
Scale of Metres

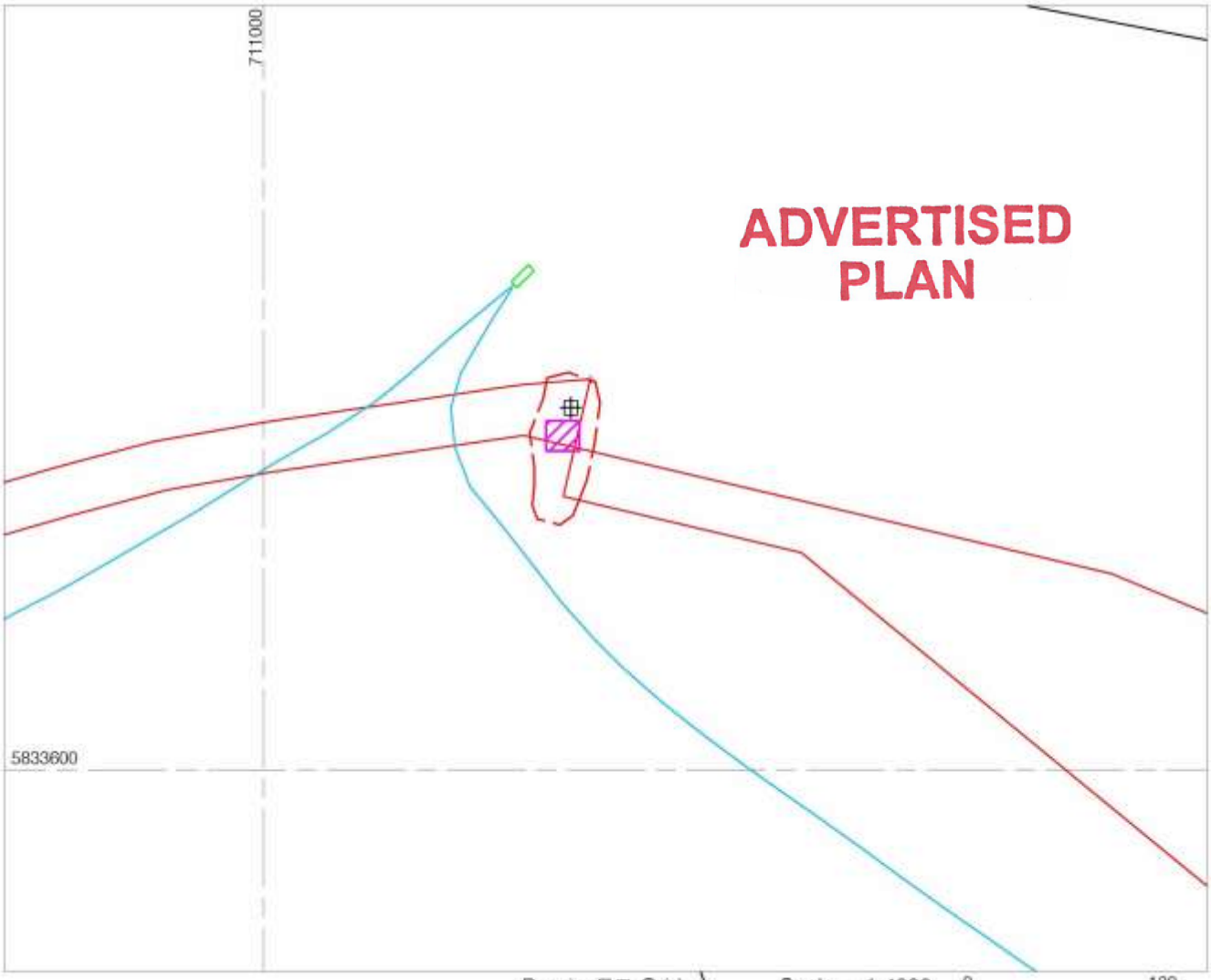
GDA

Map 3 Extent of Activity Area (South)

ADVERTISED PLAN



Map 4 VAHR 7522-0021



Bearing ⊠ Grid Scale = 1:4000 0 120 Scale of Metres

Legend:

- Primary Grid Coordinate 711047E, 5833655.6N & TP100 1x1m 16 Artefacts
- Place Extent
- x-y Test Pit 50x50cm: With Artefact x = test pit number y = number of artefacts
- x-y Test Pit 1x1m: With Artefact x = test pit number y = number of artefacts
- xx Test Pit 50x50cm: No Artefact
- Hand Salvage Excavation 3mx3m Excavation
- Endorsed C1DP plans
- Plan Variation

N

GDA94 Zone 54

Artefact Scatter
Nanimia Hill 2

Map 5 **VAHR 7522-0120**

APPENDIX F - ASSESSMENT OF CHANGES IN SHADOW FLICKER IMPACTS, DNVGL

DNV·GL

Investment Delivery Manager
Stockyard Hill Wind Farm Pty Ltd
Level 7, 31 Queen Street
Melbourne, Vic 3000
Australia

DNV GL Energy
Renewables Advisory
Level 12, 350 Queen Street
Melbourne, Vic 3000
Australia
ABN 14 154 635 319
+61 3 8615 1515

Date:	**Our reference**:	**Your reference**:
05 August 2020	PP327154-AUME-L-01-D	N/A

RE: Shadow flicker modelling at Stockyard Hill Wind Farm – endorsed vs as-built layout

Justin Howes,

DNV GL have been instructed by Stockyard Hill Wind Farm Pty Ltd (SHWFPL) to estimate the potential annual shadow flicker (SF) duration resulting from the operation of the Stockyard Hill Wind Farm (the "Project"). The analysis is based on comparative modelling of the "endorsed" wind turbine layout and the final "as-built" layout, both of which are presented in Table 1. DNV GL note that a correction to the turbine coordinates was provided by SHWFPL after the modelling process had been started. After reviewing these changes, it is noted that the modelled locations for Turbine 80 and 128 differed from the actual "as-built" locations. However, considering the magnitude of the position changes (up to 5 m), and the location of these turbines in relation to nearby dwellings, this is not expected to have a material impact on the results presented in this document.

Information regarding dwelling location and status were provided by SHWFPL in various emails received by DNV GL between 25 June 2020 and 27 July 2020. Buildings identified as derelict, demolished, SHWFPL-owned or flagged as not a dwelling were not considered in the SF model.

The main results of the analysis are summarised in this document, which has been prepared pursuant to DNV GL proposal L2C-201536-AUME-P-01-B, dated 02 July 2020.

Is should also be noted that DNV GL has previously conducted SF modelling for the Project. The results of this study are reported in DNV GL documents 170809-AUME-R-01-G and 170809-AUME-L-01-B, dated 26 April 2016 and 29 August 2016, respectively. Although DNV GL note that the Project's configuration was different at that time, the methodology adopted for the results presented in this letter is substantially the same.

In relation to SF and turbine micro-siting, DNV GL note the following extract from Condition 2 of the Project's Planning Permit (PL-SP/05/0548/B) as relevant to this assessment:

> *2 (i) the developer of the wind energy facility has written advice from appropriately qualified experts that the alteration or modification will not result in material adverse change in landscape, vegetation, cultural heritage, visual, shadow flicker, noise, fire risk or aviation impacts compared to the endorsed plan;*

Further to Condition 2, Condition 20 of the Permit sets a SF limit of 30 hours per annum at any dwelling existing at the date of the Permit except where a landowner has entered into an agreement with the proponent to exceed the 30 hours per annum.

As part of the shadow flicker assessment, it is necessary to make an assumption regarding the maximum length of a shadow cast by a wind turbine that is likely to cause annoyance due to shadow

flicker. This length has been defined as 10 turbine rotor diameters (10D), corresponding to 1404 m. A summary of other settings relevant to the shadow flicker model are presented in Table 2.

The modelled annual shadow flicker durations for the "as-built" layout are listed in Table 3 and shown as maps in Figure 1 and Figure 2. Similarly, the modelled annual shadow flicker durations for the endorsed layout listed in Table 4. The change in modelled shadow flicker durations, up to a 10D distance limit, from the "endorsed" layout to the "as-built" layout are also presented in Table 5 and Figure 3.

Based on the distance limits outlined above, the shadow flicker duration limits understood to be in place between the Project and nearby landowners are expected to be exceeded at, or within 50 m of, five dwellings for both the "endorsed" and "as-built" layouts. One of these dwellings, B125, is understood to be owned by non-participating landowners.

Beyond the 10D distance limit, it is assumed that any shadow flicker experienced will be below a "moderate level of intensity" and unlikely to cause annoyance. However, it is recognised that different people have different levels of sensitivity to shadow flicker and may therefore be affected by shadow flicker intensities below the "moderate level of intensity" assumed by this distance limit. Although not required under the conditions outlined in the Permit, to account for this possibility, DNV GL has also assessed the shadow flicker impacts for the Project for an increased distance limit of 15D that is intended to include shadow flicker below a "moderate level of intensity". The results of this additional assessment, based on the "as-built" layout, are illustrated in Figure 1. These additional results indicate that a further 21 dwellings have the potential to be exposed to shadow flicker below a "moderate level of intensity".

In response to Condition 2(i), and as a result of the changes from the "endorsed" layout to the "as-built" layout, DNV GL note that:

- The layout changes are expected to result in some cases in an increase or a reduction of shadow flicker duration at some of the surrounding dwellings;
- Increases in theoretical shadow flicker duration may be up to 24% at some dwellings;
- The changes in expected shadow flicker durations do not alter conclusions regarding exceedances of prescribed shadow flicker limits at any given dwellings when compared to the endorsed layout;
- Dwellings where shadow flicker duration are expected to increase are all understood to be participating landowners exempt from complying with the Permitted shadow flicker limit.
- All non-participating landowner dwellings experienced either no change or a decrease in theoretical shadow flicker duration.

Yours sincerely,

for DNV GL Australia Pty Ltd

[redacted]

Table 1. Stockyard Hill Wind Farm endorsed and as-built layouts

Turbine ID [1]	Endorsed X	Endorsed Y	As-built X	As-built Y
1	702961	5850946	702961	5850946
2	704536	5850412	704536	5850412
3	701970	5851867	701970	5851867
4	702658	5852068	702722	5852065
5	702934	5851497	702934	5851497
6	703087	5852543	703087	5852543
7	703596	5852201	703596	5852201
8	704067	5852005	704098	5852006
9	704594	5851892	704594	5851892
10	699378	5851524	699378	5851524
11	699594	5852033	699594	5852033
12	697994	5852375	697994	5852375
13	696903	5852632	696903	5852632
14	696816	5853112	696831	5853118
15	697352	5853140	697361	5853240
16	704666	5840919	704666	5840919
17	704144	5840637	704144	5840637
18	703604	5840545	703604	5840545
19	703093	5840552	703093	5840552
20	703972	5839955	703972	5839955
21	703575	5839465	703575	5839465
22	703420	5841212	703420	5841212
23	703965	5841397	703965	5841397
24	703514	5841802	703514	5841802
25	702900	5842225	702900	5842225
26	703968	5842414	703968	5842414
27	704476	5842359	704532	5842352
28	703463	5842528	703463	5842528
29	703127	5842919	703127	5842919
30	702608	5842843	702608	5842843
31	701943	5843592	701927	5843580
32	703683	5843029	703683	5843029
33	704167	5843295	704167	5843295
34	704968	5843893	704968	5843893
35	702793	5841323	702793	5841323
36	702525	5841912	702525	5841912
37	702406	5840754	702406	5840754
51	701501	5839692	701501	5839692
52	701578	5839096	701578	5839096
53	702305	5838649	702305	5838649
54	701753	5838374	701753	5838374
55	701099	5838869	701099	5838869
56	700448	5838975	700448	5838975
57	700212	5838479	700212	5838479
58	700028	5837050	700028	5837050
59	700797	5836663	700797	5836663
60	699878	5838908	699878	5838908
61	699336	5838700	699336	5838700
62	699322	5839251	699322	5839251
63	698765	5838888	698765	5838888
64	698366	5839207	698366	5839207
65	698674	5839618	698674	5839618
66	699070	5839935	699070	5839935
67	699605	5839811	699605	5839811
68	698244	5840083	698244	5840083
69	697918	5839649	697918	5839649
70	707276	5848366	707276	5848366
71	706697	5848321	706697	5848321
72	707764	5848565	707764	5848565
73	707943	5847939	707943	5847939
74	707415	5847830	707415	5847830
75	707000	5847645	707000	5847645
76	707322	5847285	707322	5847285
77	706643	5847404	706643	5847404
78	705997	5846836	705997	5846836
79	706178	5847399	706178	5847399
80 [2]	705657	5847248	705657	5847250
81	708266	5848584	708266	5848584
82	708248	5849092	708248	5849092
83	708058	5849561	708058	5849561
84	708518	5848087	708518	5848087
85	708456	5847582	708456	5847582
86	709263	5847903	709272	5847951
87	709970	5847874	710020	5847899
101	711514	5843927	711514	5843927
102	711027	5843910	711027	5843910
103	711274	5843205	711274	5843205
104	710958	5842681	710958	5842681
105	711996	5844324	711996	5844324
106	712567	5844036	712567	5844036
107	713180	5844022	713180	5844022
108	712086	5843715	712086	5843715
109	711783	5843045	711783	5843045
110	707874	5839366	707874	5839366
111	709046	5838882	709046	5838882
112	709676	5839607	709626	5839525
113	709045	5832608	709069	5832651
114	709511	5832837	709567	5832779
115	709467	5831817	709467	5831817
116	712358	5832215	712358	5832215
117	712888	5832290	712888	5832290
118	712669	5832677	712669	5832677
119	712209	5832780	712209	5832780
120	712291	5833286	712291	5833286
121	712270	5833761	712270	5833761
122	711819	5832989	711819	5832989
123	711409	5833292	711424	5833279
124	711050	5833660	711050	5833660
125	710612	5833401	710612	5833401
126	713114	5833173	713114	5833173
127	713303	5832554	713303	5832554
128 [2]	713580	5832976	713583	5832972
129	714056	5833144	714056	5833144
130	712717	5834028	712717	5834028
131	713079	5833676	713079	5833676
132	713566	5833496	713566	5833496
133	713443	5834084	713443	5834084
134	713912	5833871	713912	5833871
135	714394	5834054	714394	5834054
136	714504	5833560	714504	5833560
137	714973	5833364	714973	5833364

Turbine	Endorsed		As-built	
ID [1]	X	Y	X	Y
38	702129	5841376	702129	5841376
39	701795	5841798	701795	5841798
40	701242	5841562	701242	5841562
41	701686	5840831	701686	5840831
42	701107	5840803	701107	5840803
43	701345	5840315	701345	5840315
44	700969	5839898	700969	5839898
45	700750	5839386	700750	5839386
46	699995	5839374	699995	5839374
47	702091	5840217	702091	5840217
48	702753	5839828	702753	5839828
49	702311	5839261	702311	5839261
50	702915	5838918	702915	5838918

Turbine	Endorsed		As-built	
ID [1]	X	Y	X	Y
88	709861	5848586	709819	5848584
89	709736	5849070	709736	5849070
90	710225	5849113	710225	5849113
91	710426	5848610	710426	5848610
92	711161	5848721	711161	5848721
93	711186	5849226	711186	5849226
94	712257	5849143	712257	5849143
95	712356	5848444	712356	5848444
96	710101	5844908	710101	5844908
97	709880	5844452	709880	5844452
98	710355	5844267	710355	5844267
99	710626	5844786	710626	5844786
100	711390	5844715	711390	5844715

Turbine	Endorsed		As-built	
ID [1]	X	Y	X	Y
138	715577	5832941	715577	5832941
139	716240	5832587	716240	5832587
140	712485	5831487	712485	5831487
141	711392	5831086	711392	5831086
142	712393	5830780	712393	5830780
143	712327	5830293	712301	5830297
144	712917	5830176	712917	5830176
145	713076	5830672	713076	5830672
146	713617	5830394	713617	5830394
147	713938	5829977	713938	5829977
148	714429	5829882	714429	5829882
149	714523	5830369	714523	5830369

Note:
1. Turbine locations that changed from the "endorsed" to the "as-built" layout when rounded to the nearest meter are highlighted in dark grey.
2. As-built coordinate for turbines 80 and 128 were modelled as per the endorsed coordinate. A layout update provided after completion of the SF modelling listed the correct coordinates.

Table 2. Shadow flicker model settings for theoretical shadow flicker calculation

Model setting	Value
Turbine rotor diameter	140.4 m
Turbine hub height	109.4 m
Maximum shadow length	1404 m
Year of calculation	2030
Minimum elevation of the sun	3°
Time step	1 min (5 min for maps)
Rotor modelled as	Sphere (disc for turbine orientation reduction calculation)
Sun modelled as	Disc
Offset between rotor and tower	None
Receptor height (single storey / double storey)	2 m / 6 m
Locations used for determining maximum shadow flicker within 50 m of each dwelling	8 points evenly spaced (every 45°) on 25 m and 50 m radius circles centred on the dwelling location

Table 3. Theoretical and predicted actual shadow flicker duration from the Stockyard Hill Wind Farm (as-built layout)

Dwelling ID [1, 2]	Easting [m] [3]	Northing [m] [3]	Status	Theoretical SF duration limit [hr/yr] [4]	Nearest turbine	Contributing turbines	Theoretical annual SF duration [hr/yr]				Predicted actual annual SF duration [hr/yr] [5]			
							At receptor		Max within 50 m		At receptor		Max within 50 m	
							2 m	6 m	2 m	6 m	2 m	6 m	2 m	6 m
B058	709623	5846924	non-participating	30	87 (1053 m)	85	16.1	15.6	21.1	20.9	3.0	2.9	3.8	3.7
B064	710107	5842201	participating	60	104 (977 m)	104	44.3	43.6	51.1	50.2	7.8	7.7	9.8	9.6
B097	708404	5839745	participating (noise only)	30	110 (652 m)	112	12.0	11.5	13.2	12.8	3.0	2.9	3.4	3.2
B103	714106	5831545	participating (noise only)	30	149 (1247 m)	117	0.0	0.0	24.2	23.6	0.0	0.0	4.4	4.3
B104	710991	5832179	participating (noise only)	30	122 (1159 m)	116 119	27.4	27.3	**31.2**	**31.4**	5.4	5.4	6.1	6.1
B110	705895	5851752	non-participating	30	9 (1309 m)	9	10.2	10.0	11.1	10.9	2.3	2.3	2.5	2.5
B119	698409	5850995	participating	60	10 (1104 m)	10	28.1	28.8	40.4	41.2	5.2	5.3	7.2	7.4
B120	699102	5852320	participating	60	11 (570 m)	11 12	14.4	13.7	**60.7**	**63.0**	3.2	3.1	14.1	14.9
B124	695961	5853202	participating	60	14 (874 m)	13 14 15	35.3	36.3	48.4	48.2	8.2	8.2	10.9	10.9
B125	695651	5853628	non-participating	30	14 (1285 m)	14	**31.7**	**31.3**	**33.0**	**32.5**	8.6	8.4	9.3	9.2
B127	696999	5851953	participating	60	13 (686 m)	12	20.2	19.7	23.7	23.1	4.0	3.9	4.5	4.4
B140	706705	5846346	participating	60	78 (861 m)	78 80	58.1	56.8	**64.7**	**63.5**	11.8	11.6	12.9	12.7
B143	703669	5844423	non-participating	30	33 (1233 m)	34	21.8	21.0	28.9	28.5	5.6	5.4	8.0	7.9
B145	705091	5843052	participating	60	34 (850 m)	32 33	18.9	18.3	30.1	29.1	4.1	4.0	6.6	6.4
B146	705384	5841864	participating	60	27 (982 m)	27	30.9	30.1	42.1	41.1	5.7	5.5	8.0	7.8
B149	701380	5842799	non-participating	30	31 (953 m)	30	11.9	11.5	12.9	12.5	2.6	2.5	2.8	2.8
B168	701154	5837552	participating (noise only)	30	59 (958 m)	58	20.5	20.0	27.7	26.9	6.2	6.1	7.7	7.4
B203	701684	5836682	participating (noise only)	30	59 (888 m)	59	24.0	23.3	27.3	26.6	5.4	5.3	6.2	6.0
B245	701784	5837154	participating (noise only)	30	59 (1103 m)	59	13.1	12.9	25.3	24.8	2.8	2.8	7.4	7.3
B345	705393	5841802	participating	60	27 (1023 m)	27	37.7	36.5	42.2	40.9	7.1	6.9	8.6	8.4
B366	705718	5852253	non-participating	30	9 (1181 m)	9	16.8	15.8	23.5	21.8	4.3	4.1	5.8	5.5

Note:

1. Dwellings with no theoretical shadow flicker occurrence when considering 10D (1404 m) shadow length have been omitted from this table.
2. Dwellings identified by SHWFPL as "demolished", "not dwelling" or "SHWFPL-owned" have been omited from this table as they were assumed not to be subject to shadow flicker duration limits.
3. Coordinate system: MGA Zone 54, GDA94 datum.
4. Shadow flicker durations above the limits outlined in the Permit (for theoretical shadow flicker durations) or one-third of the permitted limits (for predicted actual shadow flicker durations) are highlighted to indicate exceedances.
5. Predicted actual shadow flicker durations consider likely reductions in shadow flicker duration due to cloud cover and turbine orientation.

Table 4. Theoretical and predicted actual shadow flicker duration from the Stockyard Hill Wind Farm (endorsed layout)

Dwelling ID [1, 2]	Easting [m] [3]	Northing [m] [3]	Status	Theoretical SF duration limit [hr/yr] [4]	Nearest turbine	Contributing turbines	Theoretical annual SF duration [hr/yr]				Predicted actual annual SF duration [hr/yr] [5]			
							At receptor		Max within 50 m		At receptor		Max within 50 m	
							2 m	6 m	2 m	6 m	2 m	6 m	2 m	6 m
B058	709623	5846924	non-participating	30	87 (1012 m)	85	16.1	15.6	21.1	20.9	3.0	2.9	3.8	3.7
B064	710107	5842201	participating	60	104 (977 m)	104	44.3	43.6	51.1	50.2	7.8	7.7	9.8	9.6
B097	708404	5839745	participating (noise only)	30	110 (652 m)	112	10.4	9.9	11.4	10.9	2.4	2.3	2.8	2.7
B103	714106	5831545	participating (noise only)	30	149 (1247 m)	117	0.0	0.0	24.2	23.6	0.0	0.0	4.4	4.3
B104	710991	5832179	participating (noise only)	30	122 (1159 m)	116 119	27.4	27.3	**31.2**	**31.3**	5.4	5.4	6.1	6.1
B110	705895	5851752	non-participating	30	9 (1309 m)	9	10.2	10.0	11.1	10.9	2.3	2.3	2.5	2.5
B119	698409	5850995	participating	60	10 (1104 m)	10	28.1	28.8	40.4	41.2	5.2	5.3	7.2	7.4
B120	699102	5852320	participating	60	11 (570 m)	11 12	14.4	13.7	**60.7**	**63.0**	3.2	3.1	14.1	14.9
B124	695961	5853202	participating	60	14 (859 m)	13 14 15	33.2	33.9	45.4	45.0	8.1	8.1	10.4	10.4
B125	695651	5853628	non-participating	30	14 (1274 m)	14	**31.8**	**31.6**	**33.9**	**33.8**	9.0	8.9	9.3	9.1
B127	696999	5851953	participating	60	13 (686 m)	12	20.2	19.7	23.7	23.1	4.0	3.9	4.5	4.4
B140	706705	5846346	participating	60	78 (861 m)	78 80	58.1	56.8	**64.7**	**63.5**	11.8	11.6	12.9	12.7
B143	703669	5844423	non-participating	30	33 (1233 m)	34	21.8	21.0	28.9	28.5	5.6	5.4	8.0	7.9
B145	705091	5843052	participating	60	34 (850 m)	32 33	18.9	18.3	30.1	29.1	4.1	4.0	6.6	6.4
B146	705384	5841864	participating	60	27 (1034 m)	27	25.2	24.6	34.3	33.6	4.7	4.6	6.1	6.0
B149	701380	5842799	non-participating	30	31 (972 m)	30	11.9	11.5	12.9	12.5	2.6	2.5	2.8	2.8
B168	701154	5837552	participating (noise only)	30	59 (958 m)	58	20.5	20.0	27.7	26.9	6.2	6.1	7.7	7.4
B203	701684	5836682	participating (noise only)	30	59 (888 m)	59	24.0	23.3	27.3	26.6	5.4	5.3	6.2	6.0
B245	701784	5837154	participating (noise only)	30	59 (1103 m)	59	13.1	13.0	25.3	24.8	2.8	2.8	7.4	7.3
B345	705393	5841802	participating	60	27 (1073 m)	27	30.6	29.8	37.3	36.3	5.4	5.3	7.2	6.9
B366	705718	5852253	non-participating	30	9 (1181 m)	9	16.8	15.8	23.5	21.8	4.3	4.1	5.8	5.5

Note:

1. Dwellings with no theoretical shadow flicker occurrence when considering 10D (1404 m) shadow length have been omitted from this table.
2. Dwellings identified by SHWFPL as "demolished", "not dwelling" or "SHWFPL-owned" have been omited from this table as they were assumed not to be subject to shadow flicker duration limits.
3. Coordinate system: MGA Zone 54, GDA94 datum.
4. Shadow flicker durations above the limits outlined in the Permit (for theoretical shadow flicker durations) or one-third of the permitted limits (for predicted actual shadow flicker durations) are highlighted to indicate exceedances.
5. Predicted actual shadow flicker durations consider likely reductions in shadow flicker duration due to cloud cover and turbine orientation.

Table 5. Change in theoretical and predicted actual shadow flicker duration from the endorsed to the as-built layout

Dwelling ID [1]	Easting [m] [2]	Northing [m] [2]	Status	Change in theoretical annual SF duration [hr/yr] [4]				Change in predicted actual annual SF duration [hr/yr] [4]			
				At Receptor		Max within 50 m		At Receptor		Max within 50 m	
				2 m	6 m	2 m	6 m	2 m	6 m	2 m	6 m
B058	709623	5846924	non-participating	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B064	710107	5842201	participating	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B097	708404	5839745	participating (noise only)	1.6	1.6	1.8	1.8	0.6	0.6	0.6	0.6
B103	714106	5831545	participating (noise only)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B104	**710991**	**5832179**	**participating (noise only)**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
B110	705895	5851752	non-participating	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B119	698409	5850995	participating	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B120	**699102**	**5852320**	**participating**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
B124	695961	5853202	participating	2.1	2.4	3.1	3.1	0.0	0.1	0.5	0.5
B125	**695651**	**5853628**	**non-participating**	**-0.1**	**-0.3**	**-0.9**	**-1.3**	**-0.4**	**-0.5**	**0.0**	**0.1**
B127	696999	5851953	participating	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B140	**706705**	**5846346**	**participating**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
B143	703669	5844423	non-participating	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B145	705091	5843052	participating	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B146	705384	5841864	participating	5.7	5.6	7.9	7.5	0.9	0.9	1.9	1.8
B149	701380	5842799	non-participating	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B168	701154	5837552	participating (noise only)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B203	701684	5836682	participating (noise only)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B245	701784	5837154	participating (noise only)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B345	705393	5841802	participating	7.1	6.6	4.9	4.6	1.7	1.6	1.5	1.4
B366	705718	5852253	non-participating	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Note:

1. Dwellings flagged in Table 3 as exceeding the prescribed shadow flicker duration limits are listed in bold font.
2. Coordinate system: MGA Zone 54, GDA94 datum.
3. Cases where the modelled shadow flicker durations from the "as-built" layout increased compared to the "endorsed" layout are listed in red and cases where the shadow flicker durations decreased are shown in green.

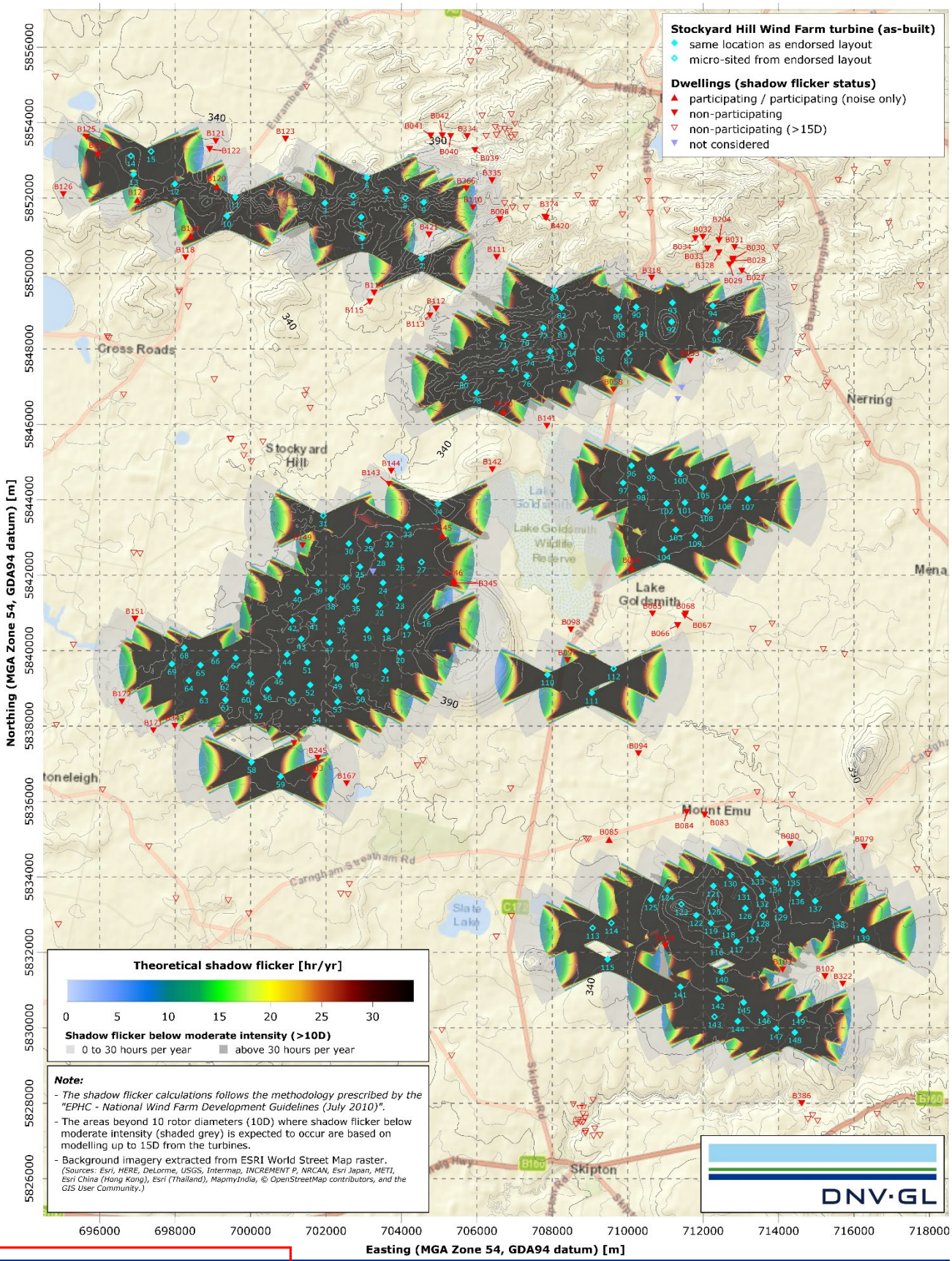


Figure 1. Theoretical annual shadow flicker duration - maximum duration at 2 m and 6 m above ground

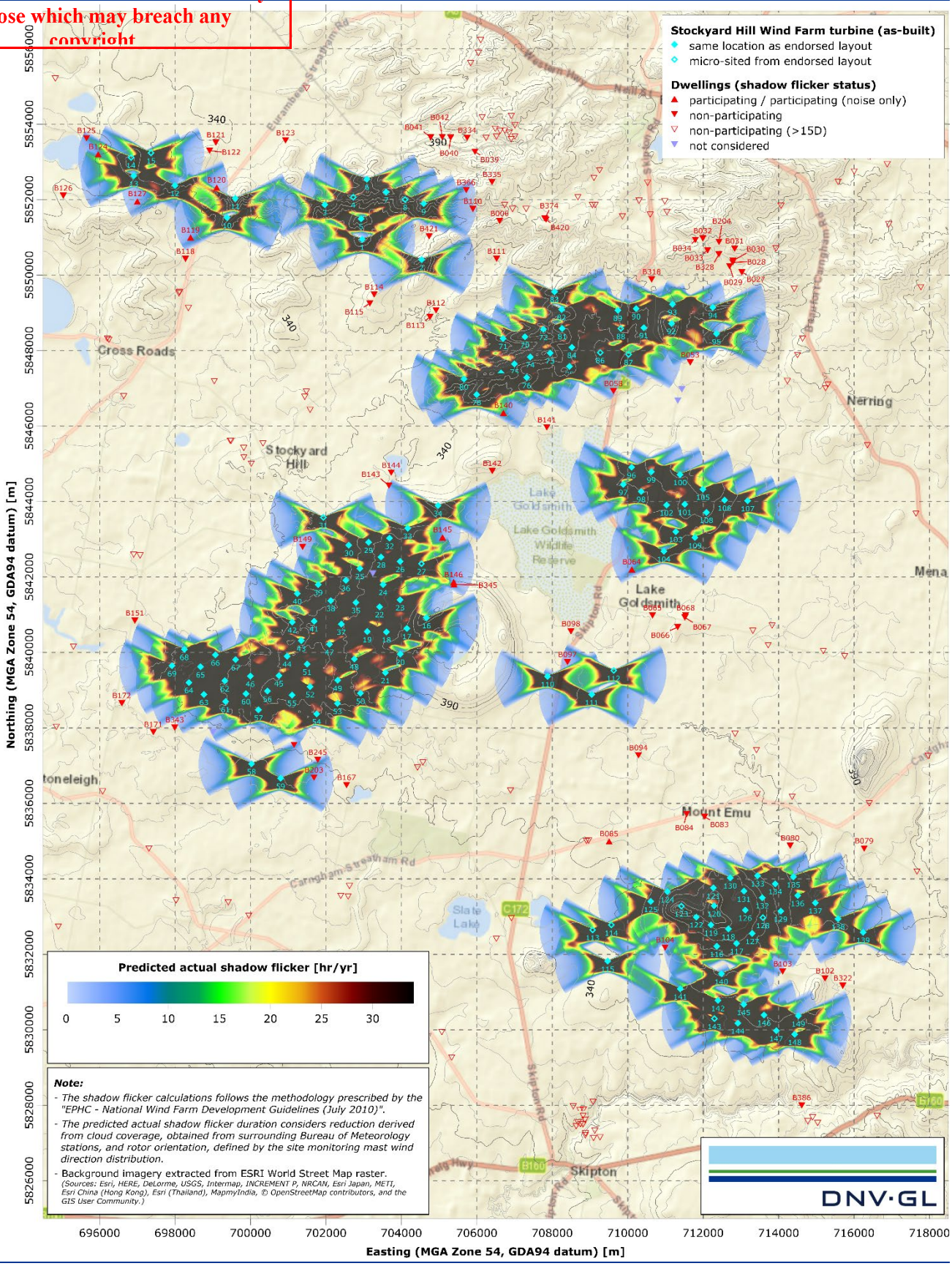


Figure 2. Predicted actual annual shadow flicker duration - maximum duration at 2 m and 6 m above ground

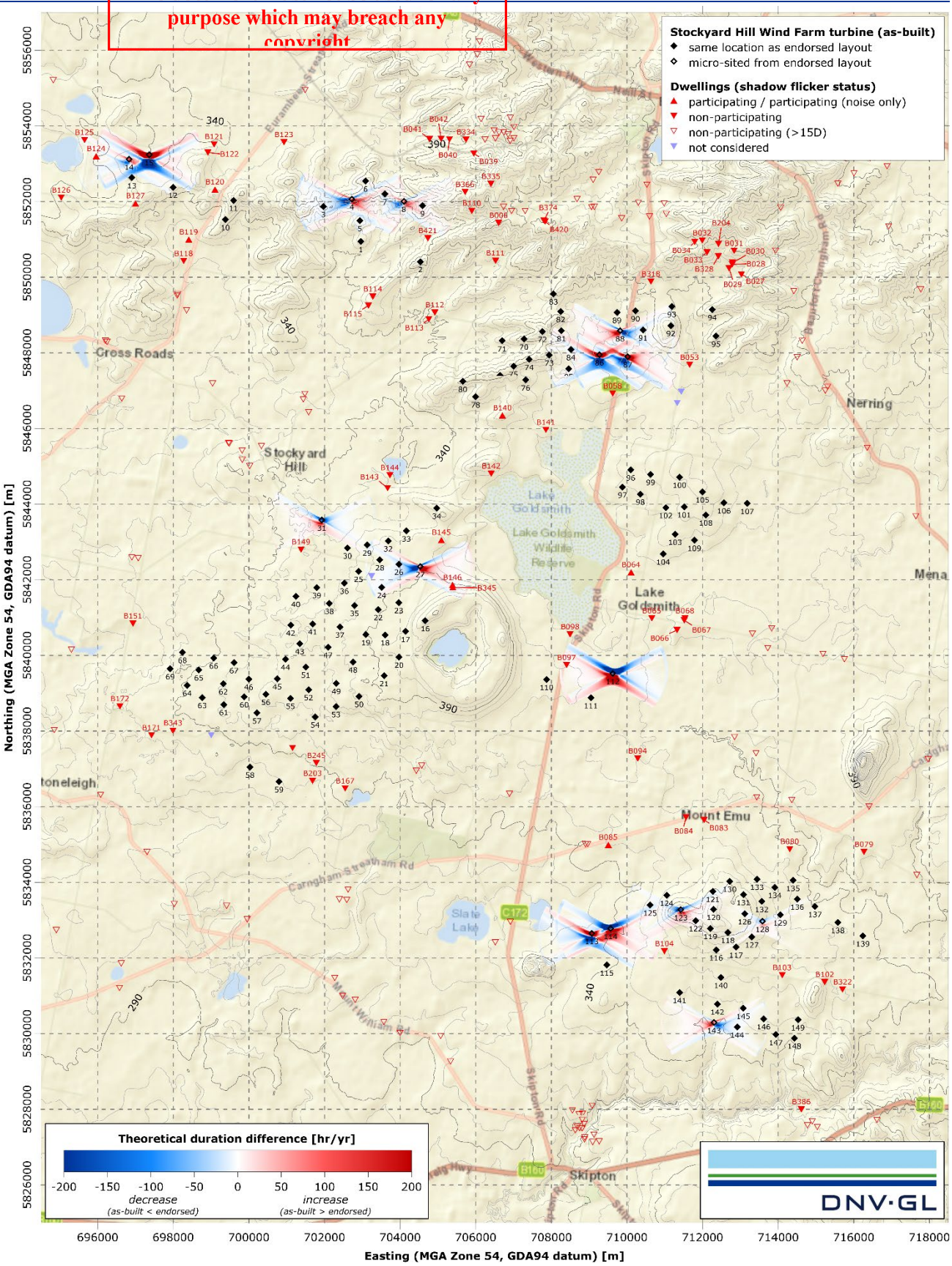


Figure 3. Change in theoretical annual shadow flicker duration – as-built vs endorsed layout

APPENDIX G - ASSESSMENT OF CHANGES IN NOISE IMPACTS, MDA

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4 August 2020

Stockyard Hill Wind Farm Pty Ltd
Suite 2, Level 25, Tower 1
100 Barangaroo Avenue
Barangaroo NSW 2000

Attention: Justin Howes

Dear Justin

STOCKYARD HILL WIND FARM
COMPARISON NOISE PREDICTIONS – ENDORSED & AS-BUILT TURBINE LAYOUTS

This letter compares predicted operational noise levels for the endorsed and as-built turbine layouts of the Stockyard Hill Wind Farm.

The results for the two layouts are compared to assess the change in noise level as a result of the differences between the endorsed and as-built layout as a result of the micro-siting of turbines.

The content of this letter addresses the noise-related information requirements of Condition 2 (i) of the Planning Permit[1].

ASSESSMENT BASIS

In accordance with the Planning Permit for the wind farm, an updated assessment of predicted operational noise levels was prepared prior to construction of the wind farm. The results of the updated assessment were documented in the pre-development noise report[2].

The pre-development noise report was prepared on the basis of a wind farm layout provided by Stockyard Hill Wind Farm Proprietary Limited (SHWFPL) on 20 December 2017 (layout reference v14.1). The turbine layout assessed in the pre-development noise report is identical to the endorsed layout, with the exception of one turbine (T34) of the endorsed layout being located approximately 14 m south (note – this layout change was inconsequential, as the nearest receiver in the direction of this turbine move is a participating receiver, B145 (P), where the wind farm is predicted to comply by at least 3 dB).

The modelling and comparison presented in this letter is based on the same general input data and methodology as the pre-development noise report. The only changes from the pre-development noise report for the purposes of this letter are:

- the turbine positions for the as-built layout which differ from those of the endorsed layout to the extent indicated in Table 2; and
- information concerning the status of some noise sensitive locations (receivers) with respect to involvement in the project.

[1] Condition 23 of Planning Permit No. PL-SP/05/0548/B, last amended 23 July 2018

[2] MDA document Rp 001 R04 20170840 *Stockyard Hill Wind Farm - Pre-development noise assessment* dated 20 December 2017

Full details of the prediction methodology are documented in the pre-development noise report, however the following summary information is noted:

- The wind turbine noise predictions are based on the endorsed and as-built layouts comprising of one-hundred and forty-nine (149) turbines, as detailed in Appendix A.

  The endorsed and as-built layout used in the modelling was provided by Goldwind Australia Pty Ltd (Goldwind Australia) on 17 July 2020 and comprises three (3) different turbine variants as detailed in the pre-development noise report:

  - Two (2) Goldwind GW140/3000 wind turbines with a maximum rating of 3.0 MW
  - Nineteen (19) Goldwind GW140/3400 wind turbines with a maximum rating of 3.4 MW
  - One hundred and twenty-eight (128) Goldwind GW140/3570 wind turbines with a maximum rating of 3.57 MW
- Revised receiver data provided by Goldwind Australia on 18 July 2020, including an indication whether the landowner is a participant in accordance with condition 49 of the planning permit.

  Receivers owned by SHWFPL have been excluded from this assessment
- The wind farm noise predictions are based on sound power level data detailed in Appendix E of the pre-development noise report
- All turbines have been modelled with a hub height of 108.5 m
- The prediction methodology is ISO 9613-2[3], modified on the basis of the recommendations of the UK Institute of Acoustics' recommendations[4] for wind farm noise modelling.

PREDICTED NOISE LEVELS

The receivers where operational wind farm noise levels are predicted to be higher than 35 dB L_{A90} are listed in Table 1, along with the predicted noise levels when the wind farm's noise emissions have reached their highest level (corresponding to hub height wind speeds of 9 m/s and above).

The value of 35 dB is referenced here for informative purposes. The minimum noise limit applicable to the wind farm at non-involved receivers is however 40 dB L_{A90}.

Predicted noise levels for each integer wind speed are tabulated in Appendix B for all considered receivers, including dwellings where the highest predicted noise level is below 35 dB L_{A90}.

Noise contour maps presenting the highest predicted noise levels for the endorsed and as-built layouts are presented in Appendix C.

[3] ISO 9613-2:1996 *Acoustics - Attenuation of sound during propagation outdoors - Part 2: General method of calculation*

[4] UK Institute of Acoustics publication *A good practice guide to the application of ETSU-R-97 for the assessment and rating of wind turbine noise*.

Predicted noise level differences greater than 0.0 dB are highlighted.

Table 1: Predicted noise levels at receivers where the higher predicted noise level is greater than 35 dB L_{A90}

	Highest predicted noise level, dB L_{A90}		
Receiver	**Endorsed layout**	**As-built layout**	**Difference, dB**
B006	35.7	35.5	-0.2
B027	35.3	35.3	0
B028	35.0	35.0	0
B029	35.8	35.8	0
B033	35.1	35.1	0
B053 (P)	39.5	39.5	0
B058 (P)	40.7	40.5	-0.2
B064 (P)	38.2	38.2	0
B065	35.2	35.1	-0.1
B079	35.1	35.1	0
B080 (P)	41.2	41.2	0
B083	36.7	36.7	0
B084	35.9	35.9	0
B097 (P)	40.0	40.1	+0.1
B098	35.8	35.8	0
B102 (P)	38.5	38.5	0
B103 (P)	41.7	41.7	0
B104 (P)	41.8	41.8	0
B110	35.8	35.7	-0.1
B111	36.5	36.2	-0.3
B112	37.0	36.9	-0.1
B113	36.7	36.6	-0.1
B114	36.3	36.2	-0.1
B115 (P)	35.0	35.0	0
B119	36.3	36.3	0
B120 (P)	41.4	41.4	0
B122	36.2	36.2	0
B124 (P)	37.9	37.8	-0.1
B127 (P)	40.0	40.0	0
B140 (P)	41.5	41.5	0

Receiver	Highest predicted noise level, dB L_{A90}		
	Endorsed layout	As-built layout	Difference, dB
B141 (P)	38.6	38.5	-0.1
B142 (P)	35.8	35.7	-0.1
B143 (P)	39.2	39.1	-0.1
B144 (P)	37.7	37.7	0
B145 (P)	41.8	41.8	0
B146 (P)	40.4	40.4	0
B149 (P)	41.6	41.6	0
B151 (P)	35.9	35.9	0
B167	35.8	35.8	0
B168 (P)	41.7	41.7	0
B171	36.6	36.6	0
B172	35.2	35.2	0
B203 (P)	38.8	38.8	0
B245 (P)	39.5	39.5	0
B318 (P)	41.2	41.2	0
B322 (P)	37.4	37.4	0
B343 (P)	39.1	39.1	0
B345 (P)	40.3	40.3	0
B366	36.0	36.0	0

(P) Participating receiver (host landowner or neighbour with noise agreement)

ASSESSMENT CONCLUSIONS

The results demonstrate that, for receivers where the predicted noise level is higher than 35 dB L_{A90}, the predicted noise levels for the as-built turbine layout are equal to or lower than those of the endorsed layout at all except one receiver.

At receiver B097 (P), the predicted noise level for the as-built layout is 0.1 dB higher than for the endorsed layout. A 0.1 dB change in environmental noise level cannot be reliably measured or perceived.

Further, the predicted noise levels are below the minimum noise limits of 40 and 45 dB L_{A90} which apply at all non-participant and participant receivers respectively, as defined by the planning permit.

This noise assessment therefore demonstrates that the as-built turbine layout for the Stockyard Hill Wind Farm is predicted to achieve the noise criteria defined by the planning permit, and the cumulative effect of the turbine layout changes from the endorsed to the as-built layout are inconsequential and of no adverse material effect with respect to noise.

We trust this information meets your requirements at this time.

Yours sincerely

MARSHALL DAY ACOUSTICS PTY LTD

Christophe Delaire

Co-CEO

APPENDIX A TURBINE LAYOUT

The following table sets out the coordinates of the endorsed and as-built layouts for the Stockyard Hill Wind Farm comprising a one hundred and forty-nine (149) wind turbine layout.

Grey shading designates turbines which have been designated as either the GW140-3.0MW or the GW140-3.4MW turbine variants. All other non-shaded turbines are the GW140-3.57MW variant.

Table 2: Turbine coordinates – MGA 94 zone 54

	Endorsed layout			As-built layout*			
Turbine	Type	Easting, m	Northing, m	Type	Easting, m	Northing, m	Change, m
1	GW140/3570	702,961	5,850,946	GW140/3570	702,961	5,850,946	0
2	GW140/3400	704,536	5,850,412	GW140/3400	704,536	5,850,412	0
3	GW140/3400	701,970	5,851,867	GW140/3400	701,970	5,851,867	0
4	GW140/3400	702,658	5,852,068	GW140/3400	702,722	5,852,065	64
5	GW140/3570	702,934	5,851,497	GW140/3570	702,934	5,851,497	0
6	GW140/3400	703,087	5,852,543	GW140/3400	703,087	5,852,543	0
7	GW140/3400	703,596	5,852,201	GW140/3400	703,596	5,852,201	0
8	GW140/3400	704,067	5,852,005	GW140/3400	704,098	5,852,006	31
9	GW140/3400	704,594	5,851,892	GW140/3400	704,594	5,851,892	0
10	GW140/3570	699,378	5,851,524	GW140/3570	699,378	5,851,524	0
11	GW140/3570	699,594	5,852,033	GW140/3570	699,594	5,852,033	0
12	GW140/3570	697,994	5,852,375	GW140/3570	697,994	5,852,375	0
13	GW140/3570	696,903	5,852,632	GW140/3570	696,903	5,852,632	0
14	GW140/3570	696,816	5,853,112	GW140/3570	696,831	5,853,118	16
15	GW140/3400	697,352	5,853,140	GW140/3400	697,361	5,853,240	100
16	GW140/3570	704,666	5,840,919	GW140/3570	704,666	5,840,919	0
17	GW140/3570	704,144	5,840,637	GW140/3570	704,144	5,840,637	0
18	GW140/3570	703,604	5,840,545	GW140/3570	703,604	5,840,545	0
19	GW140/3570	703,093	5,840,552	GW140/3570	703,093	5,840,552	0
20	GW140/3570	703,972	5,839,955	GW140/3570	703,972	5,839,955	0
21	GW140/3570	703,575	5,839,465	GW140/3570	703,575	5,839,465	0
22	GW140/3570	703,420	5,841,212	GW140/3570	703,420	5,841,212	0
23	GW140/3570	703,965	5,841,397	GW140/3570	703,965	5,841,397	0
24	GW140/3570	703,514	5,841,802	GW140/3570	703,514	5,841,802	0
25	GW140/3570	702,900	5,842,225	GW140/3570	702,900	5,842,225	0
26	GW140/3570	703,968	5,842,414	GW140/3570	703,968	5,842,414	0
27	GW140/3570	704,476	5,842,359	GW140/3570	704,532	5,842,352	56
28	GW140/3570	703,463	5,842,528	GW140/3570	703,463	5,842,528	0
29	GW140/3570	703,127	5,842,919	GW140/3570	703,127	5,842,919	0
30	GW140/3570	702,608	5,842,843	GW140/3570	702,608	5,842,843	0

	Endorsed layout			As-built layout*			
Turbine	Type	Easting, m	Northing, m	Type	Easting, m	Northing, m	Change, m
31	GW140/3570	701,943	5,843,592	GW140/3570	701,927	5,843,580	20
32	GW140/3570	703,683	5,843,029	GW140/3570	703,683	5,843,029	0
33	GW140/3570	704,167	5,843,295	GW140/3570	704,167	5,843,295	0
34	GW140/3570	704,968	5,843,893	GW140/3570	704,968	5,843,893	0
35	GW140/3570	702,793	5,841,323	GW140/3570	702,793	5,841,323	0
36	GW140/3570	702,525	5,841,912	GW140/3570	702,525	5,841,912	0
37	GW140/3570	702,406	5,840,754	GW140/3570	702,406	5,840,754	0
38	GW140/3570	702,129	5,841,376	GW140/3570	702,129	5,841,376	0
39	GW140/3570	701,795	5,841,798	GW140/3570	701,795	5,841,798	0
40	GW140/3570	701,242	5,841,562	GW140/3570	701,242	5,841,562	0
41	GW140/3570	701,686	5,840,831	GW140/3570	701,686	5,840,831	0
42	GW140/3570	701,107	5,840,803	GW140/3570	701,107	5,840,803	0
43	GW140/3570	701,345	5,840,315	GW140/3570	701,345	5,840,315	0
44	GW140/3570	700,969	5,839,898	GW140/3570	700,969	5,839,898	0
45	GW140/3570	700,750	5,839,386	GW140/3570	700,750	5,839,386	0
46	GW140/3570	699,995	5,839,374	GW140/3570	699,995	5,839,374	0
47	GW140/3570	702,091	5,840,217	GW140/3570	702,091	5,840,217	0
48	GW140/3570	702,753	5,839,828	GW140/3570	702,753	5,839,828	0
49	GW140/3570	702,311	5,839,261	GW140/3570	702,311	5,839,261	0
50	GW140/3570	702,915	5,838,918	GW140/3570	702,915	5,838,918	0
51	GW140/3570	701,501	5,839,692	GW140/3570	701,501	5,839,692	0
52	GW140/3570	701,578	5,839,096	GW140/3570	701,578	5,839,096	0
53	GW140/3570	702,305	5,838,649	GW140/3570	702,305	5,838,649	0
54	GW140/3570	701,753	5,838,374	GW140/3570	701,753	5,838,374	0
55	GW140/3570	701,099	5,838,869	GW140/3570	701,099	5,838,869	0
56	GW140/3570	700,448	5,838,975	GW140/3570	700,448	5,838,975	0
57	GW140/3570	700,212	5,838,479	GW140/3570	700,212	5,838,479	0
58	GW140/3570	700,028	5,837,050	GW140/3570	700,028	5,837,050	0
59	GW140/3570	700,797	5,836,663	GW140/3570	700,797	5,836,663	0
60	GW140/3570	699,878	5,838,908	GW140/3570	699,878	5,838,908	0
61	GW140/3570	699,336	5,838,700	GW140/3570	699,336	5,838,700	0
62	GW140/3570	699,322	5,839,251	GW140/3570	699,322	5,839,251	0
63	GW140/3570	698,765	5,838,888	GW140/3570	698,765	5,838,888	0
64	GW140/3570	698,366	5,839,207	GW140/3570	698,366	5,839,207	0
65	GW140/3570	698,674	5,839,618	GW140/3570	698,674	5,839,618	0
66	GW140/3570	699,070	5,839,935	GW140/3570	699,070	5,839,935	0

	Endorsed layout			As-built layout*			
Turbine	Type	Easting, m	Northing, m	Type	Easting, m	Northing, m	Change, m
67	GW140/3570	699,605	5,839,811	GW140/3570	699,605	5,839,811	0
68	GW140/3570	698,244	5,840,083	GW140/3570	698,244	5,840,083	0
69	GW140/3570	697,918	5,839,649	GW140/3570	697,918	5,839,649	0
70	GW140/3570	707,276	5,848,366	GW140/3570	707,276	5,848,366	0
71	GW140/3570	706,697	5,848,321	GW140/3570	706,697	5,848,321	0
72	GW140/3570	707,764	5,848,565	GW140/3570	707,764	5,848,565	0
73	GW140/3570	707,943	5,847,939	GW140/3570	707,943	5,847,939	0
74	GW140/3570	707,415	5,847,830	GW140/3570	707,415	5,847,830	0
75	GW140/3570	707,000	5,847,645	GW140/3570	707,000	5,847,645	0
76	GW140/3570	707,322	5,847,285	GW140/3570	707,322	5,847,285	0
77	GW140/3400	706,643	5,847,404	GW140/3400	706,643	5,847,404	0
78	GW140/3570	705,997	5,846,836	GW140/3570	705,997	5,846,836	0
79	GW140/3400	706,178	5,847,399	GW140/3400	706,178	5,847,399	0
80	GW140/3400	705,657	5,847,248	GW140/3400	705,657	5,847,250	2
81	GW140/3400	708,266	5,848,584	GW140/3400	708,266	5,848,584	0
82	GW140/3000	708,248	5,849,092	GW140/3000	708,248	5,849,092	0
83	GW140/3000	708,058	5,849,561	GW140/3000	708,058	5,849,561	0
84	GW140/3400	708,518	5,848,087	GW140/3400	708,518	5,848,087	0
85	GW140/3570	708,456	5,847,582	GW140/3570	708,456	5,847,582	0
86	GW140/3570	709,263	5,847,903	GW140/3570	709,272	5,847,951	49
87	GW140/3570	709,970	5,847,874	GW140/3570	710,020	5,847,899	56
88	GW140/3400	709,861	5,848,586	GW140/3400	709,819	5,848,584	42
89	GW140/3400	709,736	5,849,070	GW140/3400	709,736	5,849,070	0
90	GW140/3400	710,225	5,849,113	GW140/3400	710,225	5,849,113	0
91	GW140/3400	710,426	5,848,610	GW140/3400	710,426	5,848,610	0
92	GW140/3570	711,161	5,848,721	GW140/3570	711,161	5,848,721	0
93	GW140/3400	711,186	5,849,226	GW140/3400	711,186	5,849,226	0
94	GW140/3400	712,257	5,849,143	GW140/3400	712,257	5,849,143	0
95	GW140/3570	712,356	5,848,444	GW140/3570	712,356	5,848,444	0
96	GW140/3570	710,101	5,844,908	GW140/3570	710,101	5,844,908	0
97	GW140/3570	709,880	5,844,452	GW140/3570	709,880	5,844,452	0
98	GW140/3570	710,355	5,844,267	GW140/3570	710,355	5,844,267	0
99	GW140/3570	710,626	5,844,786	GW140/3570	710,626	5,844,786	0
100	GW140/3570	711,390	5,844,715	GW140/3570	711,390	5,844,715	0
101	GW140/3570	711,514	5,843,927	GW140/3570	711,514	5,843,927	0
102	GW140/3570	711,027	5,843,910	GW140/3570	711,027	5,843,910	0

	Endorsed layout			As-built layout*			
Turbine	Type	Easting, m	Northing, m	Type	Easting, m	Northing, m	Change, m
103	GW140/3570	711,274	5,843,205	GW140/3570	711,274	5,843,205	0
104	GW140/3570	710,958	5,842,681	GW140/3570	710,958	5,842,681	0
105	GW140/3570	711,996	5,844,324	GW140/3570	711,996	5,844,324	0
106	GW140/3570	712,567	5,844,036	GW140/3570	712,567	5,844,036	0
107	GW140/3570	713,180	5,844,022	GW140/3570	713,180	5,844,022	0
108	GW140/3570	712,086	5,843,715	GW140/3570	712,086	5,843,715	0
109	GW140/3570	711,783	5,843,045	GW140/3570	711,783	5,843,045	0
110	GW140/3570	707,874	5,839,366	GW140/3570	707,874	5,839,366	0
111	GW140/3570	709,046	5,838,882	GW140/3570	709,046	5,838,882	0
112	GW140/3570	709,676	5,839,607	GW140/3570	709,626	5,839,525	96
113	GW140/3570	709,045	5,832,608	GW140/3570	709,069	5,832,651	49
114	GW140/3570	709,511	5,832,837	GW140/3570	709,567	5,832,779	80
115	GW140/3570	709,467	5,831,817	GW140/3570	709,467	5,831,817	0
116	GW140/3570	712,358	5,832,215	GW140/3570	712,358	5,832,215	0
117	GW140/3570	712,888	5,832,290	GW140/3570	712,888	5,832,290	0
118	GW140/3570	712,669	5,832,677	GW140/3570	712,669	5,832,677	0
119	GW140/3570	712,209	5,832,780	GW140/3570	712,209	5,832,780	0
120	GW140/3570	712,291	5,833,286	GW140/3570	712,291	5,833,286	0
121	GW140/3570	712,270	5,833,761	GW140/3570	712,270	5,833,761	0
122	GW140/3570	711,819	5,832,989	GW140/3570	711,819	5,832,989	0
123	GW140/3570	711,409	5,833,292	GW140/3570	711,424	5,833,279	20
124	GW140/3570	711,050	5,833,660	GW140/3570	711,050	5,833,660	0
125	GW140/3570	710,612	5,833,401	GW140/3570	710,612	5,833,401	0
126	GW140/3570	713,114	5,833,173	GW140/3570	713,114	5,833,173	0
127	GW140/3570	713,303	5,832,554	GW140/3570	713,303	5,832,554	0
128	GW140/3570	713,580	5,832,976	GW140/3570	713,583	5,832,972	5
129	GW140/3570	714,056	5,833,144	GW140/3570	714,056	5,833,144	0
130	GW140/3570	712,717	5,834,028	GW140/3570	712,717	5,834,028	0
131	GW140/3570	713,079	5,833,676	GW140/3570	713,079	5,833,676	0
132	GW140/3570	713,566	5,833,496	GW140/3570	713,566	5,833,496	0
133	GW140/3570	713,443	5,834,084	GW140/3570	713,443	5,834,084	0
134	GW140/3570	713,912	5,833,871	GW140/3570	713,912	5,833,871	0
135	GW140/3570	714,394	5,834,054	GW140/3570	714,394	5,834,054	0
136	GW140/3570	714,504	5,833,560	GW140/3570	714,504	5,833,560	0
137	GW140/3570	714,973	5,833,364	GW140/3570	714,973	5,833,364	0
138	GW140/3570	715,577	5,832,941	GW140/3570	715,577	5,832,941	0

	Endorsed layout			As-built layout*			
Turbine	Type	Easting, m	Northing, m	Type	Easting, m	Northing, m	Change, m
139	GW140/3570	716,240	5,832,587	GW140/3570	716,240	5,832,587	0
140	GW140/3570	712,485	5,831,487	GW140/3570	712,485	5,831,487	0
141	GW140/3570	711,392	5,831,086	GW140/3570	711,392	5,831,086	0
142	GW140/3570	712,393	5,830,780	GW140/3570	712,393	5,830,780	0
143	GW140/3570	712,327	5,830,293	GW140/3570	712,302	5,830,297	26
144	GW140/3570	712,917	5,830,176	GW140/3570	712,917	5,830,176	0
145	GW140/3570	713,076	5,830,672	GW140/3570	713,076	5,830,672	0
146	GW140/3570	713,617	5,830,394	GW140/3570	713,617	5,830,394	0
147	GW140/3570	713,938	5,829,977	GW140/3570	713,938	5,829,977	0
148	GW140/3570	714,429	5,829,882	GW140/3570	714,429	5,829,882	0
149	GW140/3570	714,523	5,830,369	GW140/3570	714,523	5,830,369	0

* Coordinates for the as-built layout are based on survey data and are rounded to the nearest meter.

APPENDIX B TABULATED PREDICTED NOISE LEVEL DATA – AS-BUILT LAYOUT

The following table sets out the predicted noise levels for each integer hub height wind speed from 8 to 12 m/s, for all considered receivers, including dwellings where the highest predicted noise level is below 35 dB L_{A90}.

The notation '(P)' next to the receiver reference signifies that it is a participating receiver (host landowner or neighbour with noise agreement).

Table 3: Predicted noise levels, dB L_{A90}

	Hub height wind speed (m/s)				
Receiver	**8**	**9**	**10**	**11**	**12**
B001	29.0	30.0	30.0	30.0	30.0
B002	29.5	30.5	30.5	30.5	30.5
B003	24.7	25.7	25.7	25.7	25.7
B004	30.9	31.9	31.9	31.9	31.9
B005	32.3	33.3	33.3	33.3	33.3
B006	34.5	35.5	35.5	35.5	35.5
B007	29.5	30.6	30.6	30.6	30.6
B008	24.6	25.7	25.7	25.7	25.7
B009	19.3	20.3	20.3	20.3	20.3
B010	19.5	20.6	20.6	20.6	20.6
B011	19.1	20.2	20.2	20.2	20.2
B012	19.2	20.3	20.3	20.3	20.3
B013	19.5	20.6	20.6	20.6	20.6
B014	19.8	20.9	20.9	20.9	20.9
B015	20.3	21.4	21.4	21.4	21.4
B016	19.9	21.0	21.0	21.0	21.0
B017	19.8	20.9	20.9	20.9	20.9
B018	19.1	20.2	20.2	20.2	20.2
B019	19.3	20.4	20.4	20.4	20.4
B020	20.2	21.3	21.3	21.3	21.3
B021	20.5	21.6	21.6	21.6	21.6
B022	20.5	21.6	21.6	21.6	21.6
B023	20.8	21.9	21.9	21.9	21.9
B024	21.8	22.9	22.9	22.9	22.9
B025	25.9	27.0	27.0	27.0	27.0
B026	27.7	28.8	28.8	28.8	28.8
B027	34.2	35.3	35.3	35.3	35.3

	Hub height wind speed (m/s)				
Receiver	8	9	10	11	12
B028	33.9	35.0	35.0	35.0	35.0
B029	34.7	35.8	35.8	35.8	35.8
B030	33.7	34.8	34.8	34.8	34.8
B031	32.9	34.0	34.0	34.0	34.0
B032	33.1	34.1	34.1	34.1	34.1
B033	34.0	35.1	35.1	35.1	35.1
B034	33.4	34.5	34.5	34.5	34.5
B035	21.5	22.5	22.5	22.5	22.5
B036	21.9	23.0	23.0	23.0	23.0
B038	29.1	30.2	30.2	30.2	30.2
B039	29.6	30.7	30.7	30.7	30.7
B040	31.5	32.6	32.6	32.6	32.6
B041	33.0	34.1	34.1	34.1	34.1
B042	32.0	33.1	33.1	33.1	33.1
B043	24.4	25.5	25.5	25.5	25.5
B044	28.8	29.9	29.9	29.9	29.9
B047	21.1	22.2	22.2	22.2	22.2
B048	25.0	26.1	26.1	26.1	26.1
B049	27.0	28.1	28.1	28.1	28.1
B050	28.6	29.7	29.7	29.7	29.7
B051	31.0	32.1	32.1	32.1	32.1
B052	28.8	29.8	29.8	29.8	29.8
B053 (P)	38.4	39.5	39.5	39.5	39.5
B054	30.4	31.5	31.5	31.5	31.5
B055	30.0	31.1	31.1	31.1	31.1
B056	29.1	30.2	30.2	30.2	30.2
B058 (P)	39.4	40.5	40.5	40.5	40.5
B064 (P)	37.1	38.2	38.2	38.2	38.2
B065	34.0	35.1	35.1	35.1	35.1
B066	32.9	34.0	34.0	34.0	34.0
B067 (P)	33.3	34.4	34.4	34.4	34.4
B068 (P)	33.5	34.6	34.6	34.6	34.6

	Hub height wind speed (m/s)				
Receiver	8	9	10	11	12
B069	30.3	31.4	31.4	31.4	31.4
B070	29.8	30.9	30.9	30.9	30.9
B071	29.4	30.5	30.5	30.5	30.5
B072	27.6	28.7	28.7	28.7	28.7
B073	26.9	28.0	28.0	28.0	28.0
B074	25.9	27.0	27.0	27.0	27.0
B075	23.5	24.6	24.6	24.6	24.6
B076	23.6	24.7	24.7	24.7	24.7
B077	25.5	26.6	26.6	26.6	26.6
B078	30.9	32.0	32.0	32.0	32.0
B079	34.0	35.1	35.1	35.1	35.1
B080 (P)	40.1	41.2	41.2	41.2	41.2
B081	33.5	34.6	34.6	34.6	34.6
B082 (P)	33.8	34.9	34.9	34.9	34.9
B083	35.6	36.7	36.7	36.7	36.7
B084	34.8	35.9	35.9	35.9	35.9
B085 (P)	33.8	34.9	34.9	34.9	34.9
B086	32.7	33.8	33.8	33.8	33.8
B087	28.4	29.5	29.5	29.5	29.5
B088	28.0	29.1	29.1	29.1	29.1
B089	27.3	28.4	28.4	28.4	28.4
B090	30.5	31.6	31.6	31.6	31.6
B091	33.1	34.2	34.2	34.2	34.2
B092	32.7	33.8	33.8	33.8	33.8
B094	31.9	33.0	33.0	33.0	33.0
B095	30.8	31.9	31.9	31.9	31.9
B096	30.7	31.8	31.8	31.8	31.8
B097 (P)	39.0	40.1	40.1	40.1	40.1
B098	34.7	35.8	35.8	35.8	35.8
B100	26.8	27.9	27.9	27.9	27.9
B101	27.2	28.3	28.3	28.3	28.3
B102 (P)	37.4	38.5	38.5	38.5	38.5

	Hub height wind speed (m/s)				
Receiver	8	9	10	11	12
B103 (P)	40.6	41.7	41.7	41.7	41.7
B104 (P)	40.7	41.8	41.8	41.8	41.8
B106	30.5	31.6	31.6	31.6	31.6
B107	29.3	30.4	30.4	30.4	30.4
B108	33.1	34.1	34.1	34.1	34.1
B109	33.1	34.1	34.1	34.1	34.1
B110	34.6	35.7	35.7	35.7	35.7
B111	35.1	36.2	36.2	36.2	36.2
B112	35.8	36.9	36.9	36.9	36.9
B113	35.5	36.6	36.6	36.6	36.6
B114	35.1	36.2	36.2	36.2	36.2
B115 (P)	33.9	35.0	35.0	35.0	35.0
B116	28.8	29.9	29.9	29.9	29.9
B117	29.3	30.4	30.4	30.4	30.4
B118	32.4	33.5	33.5	33.5	33.5
B119	35.2	36.3	36.3	36.3	36.3
B120 (P)	40.3	41.4	41.4	41.4	41.4
B121	33.8	34.9	34.9	34.9	34.9
B122	35.1	36.2	36.2	36.2	36.2
B123	32.2	33.3	33.3	33.3	33.3
B124 (P)	36.7	37.8	37.8	37.8	37.8
B125	33.1	34.2	34.2	34.2	34.2
B126	29.9	31.0	31.0	31.0	31.0
B127 (P)	38.9	40.0	40.0	40.0	40.0
B128	25.6	26.7	26.7	26.7	26.7
B129	23.9	25.0	25.0	25.0	25.0
B130	23.4	24.5	24.5	24.5	24.5
B131	23.5	24.6	24.6	24.6	24.6
B132	26.0	27.1	27.1	27.1	27.1
B133	28.3	29.4	29.4	29.4	29.4
B135	31.1	32.2	32.2	32.2	32.2
B136	31.2	32.3	32.3	32.3	32.3

	Hub height wind speed (m/s)				
Receiver	8	9	10	11	12
B138	31.2	32.3	32.3	32.3	32.3
B139	30.7	31.8	31.8	31.8	31.8
B140 (P)	40.4	41.5	41.5	41.5	41.5
B141 (P)	37.4	38.5	38.5	38.5	38.5
B142 (P)	34.6	35.7	35.7	35.7	35.7
B143 (P)	38.0	39.1	39.1	39.1	39.1
B144 (P)	36.6	37.7	37.7	37.7	37.7
B145 (P)	40.7	41.8	41.8	41.8	41.8
B146 (P)	39.3	40.4	40.4	40.4	40.4
B149 (P)	40.5	41.6	41.6	41.6	41.6
B150	30.9	32.0	32.0	32.0	32.0
B151 (P)	34.8	35.9	35.9	35.9	35.9
B152	29.8	30.9	30.9	30.9	30.9
B153	25.8	26.9	26.9	26.9	26.9
B154	22.7	23.8	23.8	23.8	23.8
B155	22.4	23.5	23.5	23.5	23.5
B157	22.0	23.1	23.1	23.1	23.1
B158	22.9	24.0	24.0	24.0	24.0
B159	22.4	23.5	23.5	23.5	23.5
B160	24.5	25.6	25.6	25.6	25.6
B161	24.5	25.6	25.6	25.6	25.6
B162	24.5	25.6	25.6	25.6	25.6
B163	24.3	25.4	25.4	25.4	25.4
B164	24.3	25.4	25.4	25.4	25.4
B165	25.2	26.3	26.3	26.3	26.3
B166	24.8	25.9	25.9	25.9	25.9
B167	34.7	35.8	35.8	35.8	35.8
B168 (P)	40.6	41.7	41.7	41.7	41.7
B171	35.5	36.6	36.6	36.6	36.6
B172	34.1	35.2	35.2	35.2	35.2
B173	26.4	27.5	27.5	27.5	27.5
B174	28.0	29.1	29.1	29.1	29.1

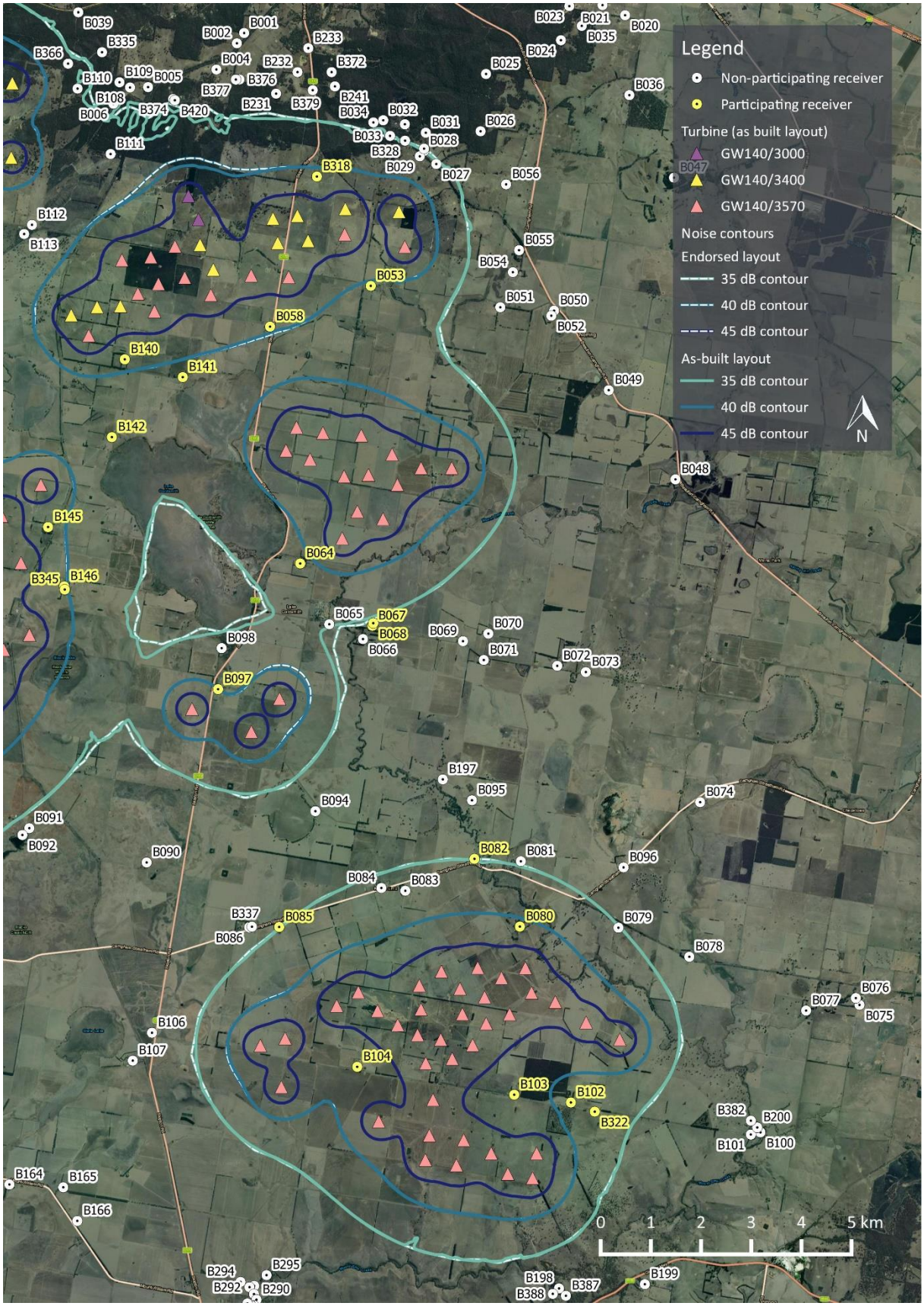
	Hub height wind speed (m/s)				
Receiver	8	9	10	11	12
B175	28.6	29.7	29.7	29.7	29.7
B176	27.8	28.9	28.9	28.9	28.9
B177	26.3	27.4	27.4	27.4	27.4
B178	24.4	25.5	25.5	25.5	25.5
B179	24.6	25.7	25.7	25.7	25.7
B180	23.1	24.2	24.2	24.2	24.2
B184	24.0	25.1	25.1	25.1	25.1
B195	28.0	29.1	29.1	29.1	29.1
B197	30.3	31.4	31.4	31.4	31.4
B198	30.7	31.8	31.8	31.8	31.8
B199	27.9	29.0	29.0	29.0	29.0
B200	27.1	28.2	28.2	28.2	28.2
B201	31.7	32.8	32.8	32.8	32.8
B203 (P)	37.7	38.8	38.8	38.8	38.8
B204	32.1	33.2	33.2	33.2	33.2
B206	28.5	29.6	29.6	29.6	29.6
B207	28.9	30.0	30.0	30.0	30.0
B208	28.5	29.6	29.6	29.6	29.6
B209	27.3	28.4	28.4	28.4	28.4
B210	29.4	30.4	30.4	30.4	30.4
B211	28.3	29.4	29.4	29.4	29.4
B212	28.9	30.0	30.0	30.0	30.0
B231	32.2	33.3	33.3	33.3	33.3
B232	30.5	31.6	31.6	31.6	31.6
B233	29.3	30.4	30.4	30.4	30.4
B241	31.4	32.5	32.5	32.5	32.5
B244	30.6	31.7	31.7	31.7	31.7
B245 (P)	38.4	39.5	39.5	39.5	39.5
B279	21.5	22.6	22.6	22.6	22.6
B281	26.6	27.7	27.7	27.7	27.7
B282	26.4	27.5	27.5	27.5	27.5
B283	26.7	27.8	27.8	27.8	27.8

	Hub height wind speed (m/s)				
Receiver	8	9	10	11	12
B284	26.2	27.3	27.3	27.3	27.3
B285	26.3	27.4	27.4	27.4	27.4
B286	25.9	27.0	27.0	27.0	27.0
B287	25.9	27.0	27.0	27.0	27.0
B288	24.6	25.7	25.7	25.7	25.7
B289	24.8	25.9	25.9	25.9	25.9
B290	26.8	27.9	27.9	27.9	27.9
B291	26.9	28.0	28.0	28.0	28.0
B292	27.1	28.2	28.2	28.2	28.2
B293	27.2	28.3	28.3	28.3	28.3
B294	27.0	28.1	28.1	28.1	28.1
B295	27.7	28.8	28.8	28.8	28.8
B318 (P)	40.1	41.2	41.2	41.2	41.2
B322 (P)	36.3	37.4	37.4	37.4	37.4
B328	33.7	34.8	34.8	34.8	34.8
B329	29.1	30.2	30.2	30.2	30.2
B332	28.4	29.5	29.5	29.5	29.5
B334	30.5	31.6	31.6	31.6	31.6
B335	33.1	34.2	34.2	34.2	34.2
B337	32.7	33.8	33.8	33.8	33.8
B343 (P)	38.0	39.1	39.1	39.1	39.1
B345 (P)	39.2	40.3	40.3	40.3	40.3
B346	30.6	31.7	31.7	31.7	31.7
B350	30.0	31.1	31.1	31.1	31.1
B351	29.9	31.0	31.0	31.0	31.0
B352	30.7	31.8	31.8	31.8	31.8
B359	25.8	26.9	26.9	26.9	26.9
B360	29.4	30.5	30.5	30.5	30.5
B366	34.9	36.0	36.0	36.0	36.0
B372	29.6	30.6	30.6	30.6	30.6
B374	32.8	33.8	33.8	33.8	33.8
B376	31.2	32.3	32.3	32.3	32.3

	Hub height wind speed (m/s)				
Receiver	**8**	**9**	**10**	**11**	**12**
B377	31.0	32.1	32.1	32.1	32.1
B379	31.7	32.8	32.8	32.8	32.8
B382	27.5	28.6	28.6	28.6	28.6
B385	26.8	27.9	27.9	27.9	27.9
B387	30.0	31.1	31.1	31.1	31.1
B388	30.4	31.5	31.5	31.5	31.5
B390	28.5	29.6	29.6	29.6	29.6
B420	33.0	34.0	34.0	34.0	34.0

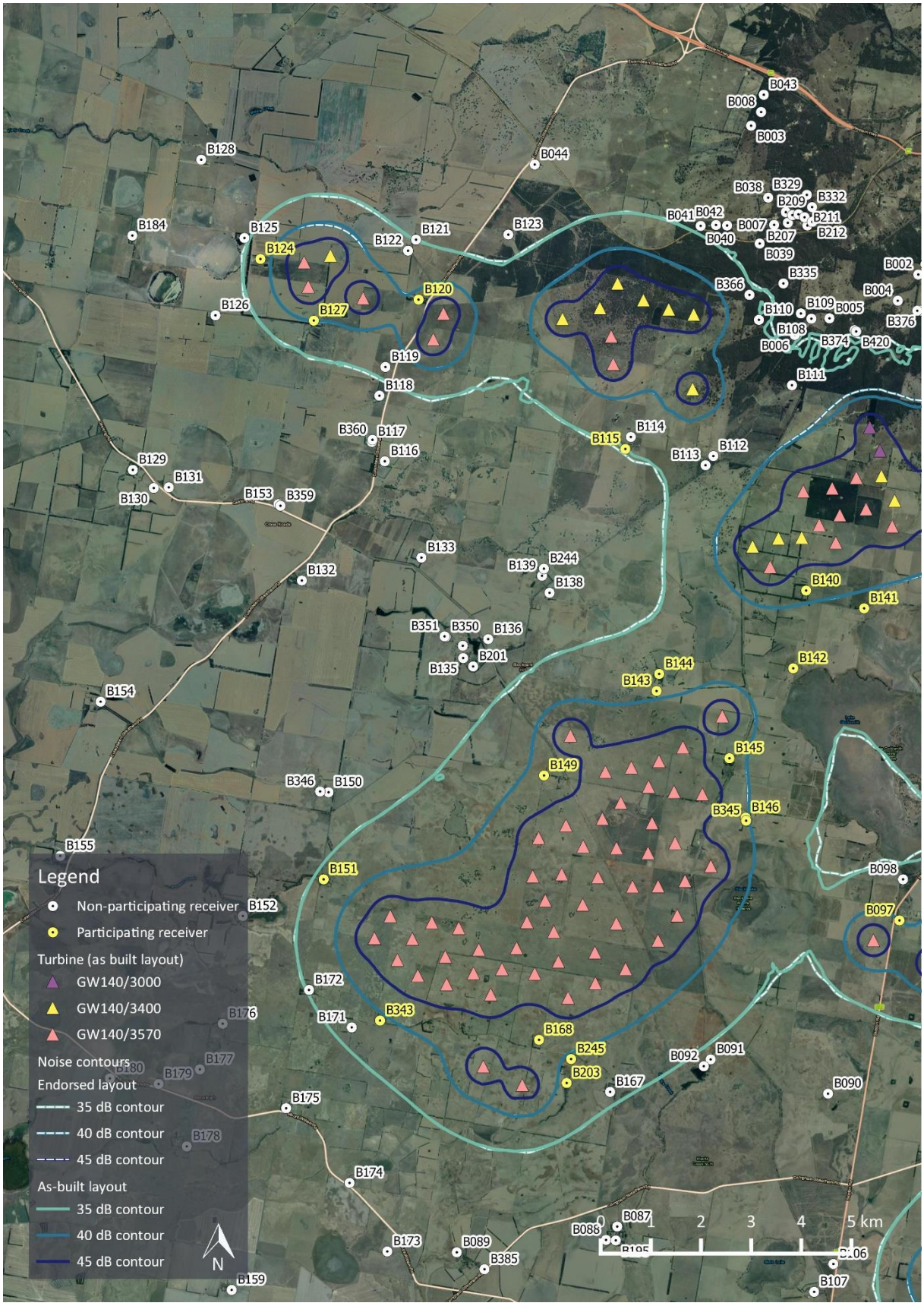
(P) Participating receiver (host landowner or neighbour with noise agreement)

Figure 2: Stockyard Hill Wind Farm (East)
Highest predicted noise level contours (corresponding to hub height wind speeds of 9 m/s or greater)



APPENDIX C NOISE CONTOUR MAPS

Figure 1: Stockyard Hill Wind Farm (West)
Highest predicted noise level contours (corresponding to hub height wind speeds of 9 m/s or greater)



APPENDIX H - ASSESSMENT OF CHANGES IN FIRE RISK, FIRETAC

PO Box 330 W
BALLARAT WEST. Vic. 3350.
PH: 1300 65 3473.
www.firetac.com.au

18th July 2020.

Attn: Investment Delivery Manager,
Mr. J. HOWES,
STOCKYARD HILL WIND FARM PTY LTD.,
Suite 2, Level 25, Tower 1,
100 Barangaroo Avenue,
BARANGAROO. NSW. 2000.

Re: **Stockyard Hill Windfarm – Wind Turbine Micro-siting impacts (Fire Risk).**

As requested, I have now completed a review/analysis of information and data provided concerning the potential for impact on assessed "fire risk" as a consequence of micro-siting adjustments made to 16 individual wind turbine installations (WTIs) at the Stockyard Hill Windfarm near Beaufort in Victoria.

In considering these matters, the following documents have been referenced:

- ***Planning Permit # PL-SP/05/0548/B (as amended) issued on 26 October 2010.***
- ***Proposed details of proposed micro-siting adjustments.***

Background:

Under Division 6, Part 4 of the Planning and Environment Act 1987, a Planning Permit has been issued by the Minister to allow the construction of a Wind Turbine (Power) Generating facility to be known as the Stockyard Hill Wind Farm on private land situated between Beaufort and Skipton in the west of the state.

Subsequent amendments to the initial permit have been allowed and provide (amongst other things) for a reduction in number of wind turbines to be built and consequential changes to their dimensions.

Whilst it is a condition of the Planning Permit that under (Clause 2) ***"the use and development as shown on the endorsed plans must not be altered or modified without the written consent of the Minister for Planning"*** an exception has been provided for the purpose of "micro-siting" which is considered to be generally in accordance with the endorsed plans,

As a matter for consideration in the process of "micro-siting" this report provides opinion as to the potential impact on the fire risk posed by any alteration to the original placement of WTIs from that shown in the original endorsed plans.

This assessment takes into account continued compliance with the general fire safety and risk requirements which remain part of the original Planning Permit conditions including those in terms of access (for emergency vehicles) , fire prevention including vegetation management; provision for water for fire-fighting purposes etc. as required (and approved) by the statutory fire authority having jurisdiction – Country Fire Authority (CFA).

Analysis:

PO Box 330 W
BALLARAT WEST. Vic. 3350.
PH: 1300 65 3473.
www.firetac.com.au

Analysis:

For the purpose of reference, WTIs are grouped together in 4 "clusters" referred to by location as being ***North Group, East Group, South Group*** and ***West Group.***

A total of 16 WTIs spread across all four clusters are the subject of this "micro-siting" analysis with alterations to position all considered to be **minor in nature**.

Wind Turbine Installations alterations are generally as follows:

North Group	***Distance variation.***	***Comment.***
# 4	64.5 m (E)	Minimal change to elevation. (< .5m)
# 8	30.7 m (E)	Minimal change to elevation. (< .5m)
# 14	16.2 m (ENE)	Minimal change to elevation. (< .5m)
#15	100.0 m (N)	Minimal change to elevation. (< .5m)
East Group		
# 80	2.0 m (N)	Minimal Change to elevation (< .5m)
# 86	48.9 m (NNE)	Minimal change to elevation. (< .5m)
# 87	62.0 m (ENE)	Minimal change to elevation. (< 1.5m)
# 88	42.3 m (WSW)	Minimal change to elevation. (< 1.0m)
# 112	96.1 m (SSW)	Minimal change to elevation. (< 1.5m)
South Group		
# 113	49.3 m (NNE)	Minimal change to elevation. (< .5m)
# 114	80.2 m (SE)	Minimal change to elevation. (< 1.0m)
# 123	20.0 m (ESE)	Minimal change to elevation. (< 1.5m)
# 128	5.0 m (SE)	Minimal change to elevation. (< .5m)
# 143	25.9 m (W)	Minimal change to elevation. (< .5m)
West Group		
# 27	56.2 m (E)	Minimal change to elevation. (< 1.0m)
# 31	20.0 m (SW)	Minimal change to elevation. (< .5m)

Given the information provided, analysis of the potential impact of these "micro-siting" adjustments on the perceived "fire risk" posed by the installation indicates **no increase** in fire risk/potential will result provided that adherence to the provision requirements of **all aspects** of Condition 4 (l) of the Planning Permit (as prescribed) under the heading of **"Country Fire Authority"** are met, including the provision and maintenance (as prescribed) of effective emergency vehicle access.

Bob Barks
Principal Advisor.
Fire, Safety & Emergency Management.

APPENDIX I - ASSESSMENT OF CHANGES IN AVIATION IMPACTS, LANDRUM & BROW

Stockyard Hill Wind Energy Facility Victoria

Planning Permit PL-SP/05/0548/B

Review of Layout Changes and Aviation Impacts

Client

Stockyard Hill Wind Farm Pty Ltd

LB00405

Final Report

24 July 2020

Version No.	Basis of issue	Author	Date
Draft v001	Initial Draft for client consideration	PWW	19 June 2020
Final Report	Final Report with all updated information	PWW	24 July 2020

Contents

1 Introduction

Stockyard Hill Wind Farm Pty Limited has tasked Landrum and Brown to consider the overall cumulative effects of the layout changes to the Stockyard Hill Wind Energy Facility (SHWEF) compared to the aviation impacts provided by the endorsed Condition 1 Development Plans and Permit requirements.

The following tasks were undertaken:

- Review of plans and shapefiles to identify and compare layout changes;
- Review of updated Instrument Approach Procedures and Air Route infrastructure;
- Review of aviation navigation aid and ATC surveillance system performance;
- Identifying differences or consistency between the layouts and their associated impacts; and
- Confirmation that the changes are in accordance with the Permit conditions.

This report assessed:

- Stockyard Hill Wind Farm Aeronautical Impact Assessment, complied by The Ambidji Group Pty Ltd dated 28 April 2016;
- Planning Permit PL-SP/05/0548/B – Pyrenees Shire Council Issued 26 October 2010 and last amended 23 July 2018; and
- Australian Aeronautical Information Publication (AIP) - Airservices Australia, effective 21 May 2020.

A glossary of aeronautical terms and abbreviations is shown at Annex C.

2 Stockyard Hill Wind Energy Facility

The SHWEF is located approximately 33km west of Ballarat and encompasses an area from approximately 5km south of Beaufort to approximately 4km north of Skipton and is centred on Stockyard Hill in Victoria.

Figure 1 shows the location of the wind farm. Micro siting of the wind turbine generators (WTG) during construction has remained within the boundary indicated.

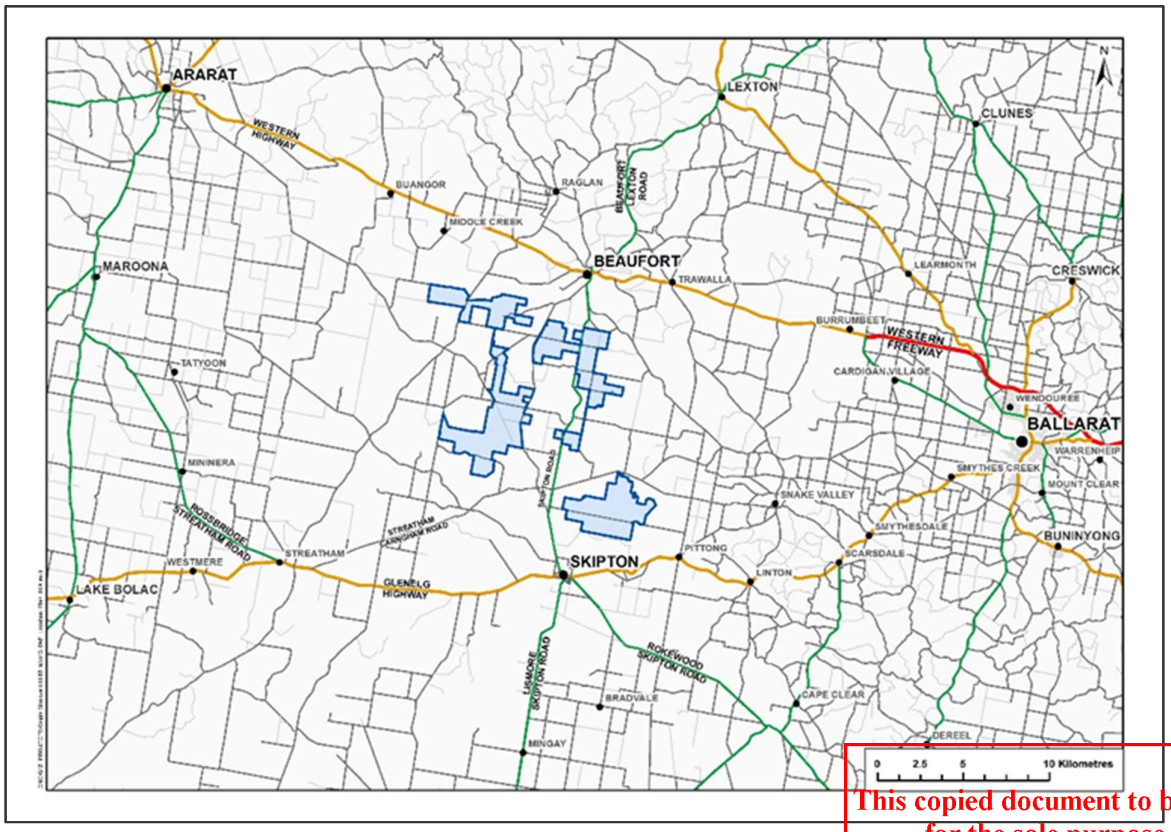


Figure 1: Location (Origin Energy 2010)

The location of WTG#16 shown on the Condition 1 Development Plans assumed the approximate highest ground surface level taken from modelled digital elevation data at 431.9 m. At this approximate ground level, the maximum turbine tip height was calculated to reach 611.9 m AHD. Micro siting of the WTGs has not increased the height of the highest endorsed WTG location (being WTG#16), however, as a consequence of the natural ground surface level at the centre of each turbine being surveyed prior to construction the actual ground level at WTG#16 has increased and was surveyed as 435.53 m.

This adjusted, more accurate surface level (based on survey data) takes the maximum turbine tip height of WTG#16 to 614.51 m AHD instead of 611.9m AHD (an increase of 2.61m due to the available survey data rather than as a result of micrositing).

The survey data has witnessed an increase in natural ground surface levels ranging from an increase of 4 m at WTG#1 to a maximum decrease in natural ground levels at WTG149 of -5.67 m. However, despite these fluctuations, the natural ground level at WTG#16 on Stockyard Hill, remains the highest turbine site for SHWEF.

Of the micro-sited turbines that experienced a layout change greater than 1m from the centre of the turbine, WTG #04 has experienced the greatest elevation difference of 2.98m, however, the increased ground elevation at this location, is still lower than the highest endorsed location pertaining to WTG #16 of 614.51 m AHD.A table containing details of turbine locations for the Condition 1 Development Plan Layout and As-Built layout is provided at Annex A.

3 Assessments

The lower height of turbines for the As-Built layout provides slightly better clearance from overlaying aviation air route and instrument approach procedures in the vicinity.

3.1 Air Routes

Air routes above the SHWEF have changed since the original report. The currently published air routes have the same Lowest Safe Altitudes (LSALT) of 4800 ft and 4100 ft. The protection surfaces for these air routes are not infringed by the As-Built layout and turbine heights.

3.2 Depiction on Aviation Charts

The general layout of the SHWEF is depicted on AIP Chart VNC-Melbourne.

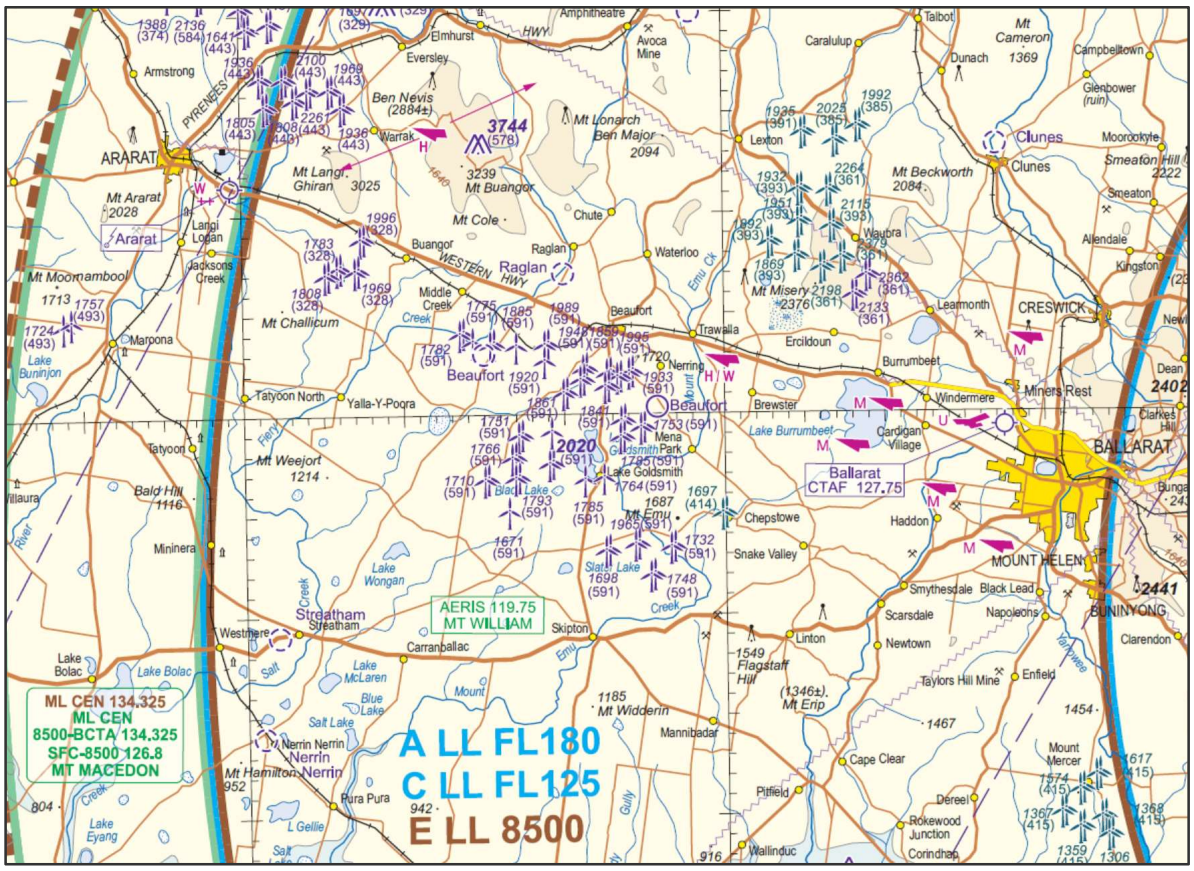


Figure 2: VNC Location Showing Multitude of Wind Farm in The Area Surrounding SHWEF. (Airservices Australia VNC – Melbourne)

The highest WTG in this wider area is shown as 2020 ft AHD. The SHWEF has a maximum height of 2017 ft (614.51 m) AHD.

3.3 Instrument Approach Procedures

The SHWEF is still located outside of the protection surfaces associated with the GPS based instrument approach procedures at Ballarat Airport but within the 25 nm Minimum Safe Altitude area. The highest WTG is below the PANS OPS surface (2100 ft AHD) associated with the 25 nm MSA for Ballarat Airport.

Ararat Aerodrome is located approximately 26 km west of the SHWEF and does not have any published instrument approach procedures.

3.4 Navigation Aids

The navigation aids at Ballarat and Yarrowee have been removed and are no longer relevant.

3.5 ATC Surveillance System Performance

The ATC surveillance systems at Melbourne Airport and at Mount Macedon remain in previously listed locations.

The SHWEF layout revision will not cause any impact upon the ATC surveillance systems as it is effectively 3 m lower than the height for which the permit was issued.

3.6 Differences in Layouts

The micro siting of the WTGs is regarded as consistent with the original layout of the SHWEF from an aviation impact perspective.

WTG elevations (AHD) are slightly lower, the maximum distance that any single WTG has moved is 100 m for one WTG, some approximately 50 m and the majority (133) have not moved at all.

The table at Annex A shows the distance that the WTGs have moved and the elevation difference, between the endorsed Development Plan layout and the As-Built layout.

3.7 Permit

The micro siting of the WTG layout is assessed from an aviation perspective as consistent with the details provided in the endorsed Development Plans.

The impacts to aviation are consistent with the conditions of the permit and have not been increased by the micro siting of the WTGs relative to the Condition 1 Development Plan Layout.

3.8 Assessor's Qualifications

A Resume of the qualifications and experience of the assessor are contained at Annex B.

4 Conclusion

The As-Built layout of the Stockyard Hill Wind Energy Facility:

- Is consistent with the Permit conditions from an Aviation Safety Perspective;
- remains within the boundary of the original layout;
- has a maximum WTG elevation slightly lower than the Development Plan layout;
- does not have any additional adverse impact upon:
    - aviation activity;
    - Air Routes;
    - Approach procedures to nearby airports;
    - ATC Surveillance Systems; and
    - Is accurately depicted on current aeronautical charts.

Annex A – Turbine Locations

Turbine no.	Endorsed Condition 1 Dev Plan Layout (C1DP)				Post-Construction Condition 2 Micro-sited Layout (C2MS)				Micro-siting and Tip Height details for C2MS				C2MS - C1DP
	Approx. Coord X	Approx. Coord Y	Approx Natural Ground Level	Tip height AHD (m)	Survey Coord X	Survey Coord Y	Survey Elevation Natural Surface (NS)	Survey Elevation Top Flange Ring (TF)	Distance moved (m)	Bearing of Turbine movement	Tip Height above Natural Ground	Tip height AHD (m)	Difference in tip height (m)
1	702961	5850946	*367.5*	*547.5*	702961	5850946	367.60	*367.895*	*0*	*0.0*	*179.245*	*546.845*	-0.70
2	704536	5850412	*401.3*	*581.3*	704536	5850412	404.50	*404.565*	*0*	*0.0*	*179.015*	*583.515*	2.20
3	701970	5851867	*393.4*	*573.4*	701970	5851867	393.10	*393.135*	*0*	*0.0*	*178.985*	*572.085*	-1.33
4	702658	5852068	*401.9*	*581.9*	702722	5852065	404.90	*404.885*	*64*	*91.0*	*178.935*	*583.835*	1.90
5	702934	5851497	*381.5*	*561.5*	702934	5851497	377.30	*377.305*	*0*	*0.0*	*178.955*	*556.255*	-5.24
6	703087	5852543	*404.1*	*584.1*	703087	5852543	407.40	*407.400*	*0*	*0.0*	*178.950*	*586.350*	2.24
7	703596	5852201	*409.6*	*589.6*	703596	5852201	410.71	*410.830*	*0*	*0.0*	*179.070*	*589.780*	0.22
8	704067	5852005	*411.6*	*591.6*	704098	5852006	415.34	*415.320*	*31*	*87.3*	*178.930*	*594.270*	2.67
9	704594	5851892	*424.0*	*604.0*	704594	5851892	425.21	*425.190*	*0*	*0.0*	*178.930*	*604.140*	0.10
10	699378	5851524	*354.3*	*534.3*	699378	5851524	355.00	*355.090*	*0*	*0.0*	*179.040*	*534.040*	-0.29
11	699594	5852033	*383.8*	*563.8*	699594	5852033	387.30	*387.295*	*0*	*0.0*	*178.945*	*566.245*	2.44
12	697994	5852375	*359.7*	*539.7*	697994	5852375	360.10	*360.138*	*0*	*0.0*	*178.988*	*539.088*	-0.57
13	696903	5852632	*353.3*	*533.3*	696903	5852632	352.32	*352.406*	*0*	*0.0*	*179.036*	*531.356*	-1.98
14	696816	5853112	*363.7*	*543.7*	696831	5853118	362.90	*363.120*	*16*	*66.8*	*179.170*	*542.070*	-1.64
15	697352	5853140	*344.4*	*524.4*	697361	5853240	341.18	*341.680*	*100*	*4.0*	*179.450*	*520.630*	-3.78
16	704666	5840919	*431.9*	*611.9*	704666	5840919	435.53	*435.560*	*0*	*0.0*	*178.980*	***614.510***	2.66
17	704144	5840637	*404.0*	*584.0*	704144	5840637	402.60	*401.200*	*0*	*0.0*	*177.550*	*580.150*	-3.83
18	703604	5840545	*396.4*	*576.4*	703604	5840545	393.88	*394.065*	*0*	*0.0*	*179.135*	*573.015*	-3.41
19	703093	5840552	*390.5*	*570.5*	703093	5840552	390.02	*390.582*	*0*	*0.0*	*179.512*	*569.532*	-0.95
20	703972	5839955	*403.2*	*583.2*	703972	5839955	402.03	*402.095*	*0*	*0.0*	*179.015*	*581.045*	-2.11
21	703575	5839465	*397.4*	*577.4*	703575	5839465	398.00	*398.152*	*0*	*0.0*	*179.102*	*577.102*	-0.25

22	703420	5841212	*390.3*	*570.3*	703420	5841212	387.89	*388.623*	*0*	*0.0*	*179.683*	*567.573*	-2.71
23	703965	5841397	*394.2*	*574.2*	703965	5841397	392.65	*392.770*	*0*	*0.0*	*179.070*	*571.720*	-2.43
24	703514	5841802	*388.3*	*568.3*	703514	5841802	386.70	*387.254*	*0*	*0.0*	*179.504*	*566.204*	-2.11
25	702900	5842225	*373.1*	*553.1*	702900	5842225	372.43	*372.992*	*0*	*0.0*	*179.512*	*551.942*	-1.17
26	703968	5842414	*388.0*	*568.0*	703968	5842414	386.20	*386.908*	*0*	*0.0*	*179.658*	*565.858*	-2.15
27	704476	5842359	*388.6*	*568.6*	704532	5842352	386.52	*387.075*	*56*	*95.2*	*179.505*	*566.025*	-2.54
28	703463	5842528	*384.3*	*564.3*	703463	5842528	381.95	*382.518*	*0*	*0.0*	*179.518*	*561.468*	-2.81
29	703127	5842919	*381.0*	*561.0*	703127	5842919	377.68	*378.244*	*0*	*0.0*	*179.514*	*557.194*	-3.79
30	702608	5842843	*366.3*	*546.3*	702608	5842843	366.07	*366.134*	*0*	*0.0*	*179.014*	*545.084*	-1.17
31	701943	5843592	*356.7*	*536.7*	701927	5843580	352.82	*353.029*	*20*	*231.0*	*179.159*	*531.979*	-4.67
32	703683	5843029	*386.7*	*566.7*	703683	5843029	387.97	*388.035*	*0*	*0.0*	*179.015*	*566.985*	0.29
33	704167	5843295	*371.2*	*551.2*	704167	5843295	369.90	*370.530*	*0*	*0.0*	*179.580*	*549.480*	-1.75
34	704968	5843893	*385.8*	*565.8*	704968	5843893	387.25	*387.669*	*0*	*291.1*	*179.369*	*566.619*	0.83
35	702793	5841323	*381.6*	*561.6*	702793	5841323	379.86	*380.193*	*0*	*0.0*	*179.283*	*559.143*	-2.47
36	702525	5841912	*373.5*	*553.5*	702525	5841912	372.91	*373.523*	*0*	*0.0*	*179.563*	*552.473*	-1.02
37	702406	5840754	*380.0*	*560.0*	702406	5840754	379.18	*379.870*	*0*	*0.0*	*179.640*	*558.820*	-1.19
38	702129	5841376	*370.7*	*550.7*	702129	5841376	368.91	*369.371*	*0*	*0.0*	*179.411*	*548.321*	-2.41
39	701795	5841798	*363.2*	*543.2*	701795	5841798	360.29	*360.976*	*0*	*0.0*	*179.636*	*539.926*	-3.32
40	701242	5841562	*361.5*	*541.5*	701242	5841562	357.99	*358.049*	*0*	*0.0*	*179.009*	*536.999*	-4.55
41	701686	5840831	*374.6*	*554.6*	701686	5840831	372.33	*372.864*	*0*	*0.0*	*179.484*	*551.814*	-2.74
42	701107	5840803	*364.4*	*544.4*	701107	5840803	361.27	*361.808*	*0*	*0.0*	*179.488*	*540.758*	-3.61
43	701345	5840315	*366.7*	*546.7*	701345	5840315	363.19	*363.715*	*0*	*0.0*	*179.475*	*542.665*	-4.04
44	700969	5839898	*366.4*	*546.4*	700969	5839898	364.00	*364.535*	*0*	*0.0*	*179.485*	*543.485*	-2.91
45	700750	5839386	*361.5*	*541.5*	700750	5839386	358.39	*358.495*	*0*	*0.0*	*179.055*	*537.445*	-4.09
46	699995	5839374	*357.4*	*537.4*	699995	5839374	353.98	*354.020*	*0*	*0.0*	*178.990*	*532.970*	-4.42
47	702091	5840217	*375.5*	*555.5*	702091	5840217	373.77	*374.298*	*0*	*0.0*	*179.478*	*553.248*	-2.25
48	702753	5839828	*383.5*	*563.5*	702753	5839828	382.68	*382.675*	*0*	*0.0*	*178.945*	*561.625*	-1.86
49	702311	5839261	*373.7*	*553.7*	702311	5839261	372.13	*372.573*	*0*	*0.0*	*179.393*	*551.523*	-2.15
50	702915	5838918	*381.0*	*561.0*	702915	5838918	379.03	*379.490*	*0*	*0.0*	*179.410*	*558.440*	-2.54
51	701501	5839692	*368.2*	*548.2*	701501	5839692	366.04	*366.404*	*0*	*0.0*	*179.314*	*545.354*	-2.89

52	701578	5839096	*365.3*	*545.3*	701578	5839096	363.50	*364.010*	*0*	*0.0*	*179.460*	*542.960*	-2.30
53	702305	5838649	*369.6*	*549.6*	702305	5838649	366.98	*367.558*	*0*	*0.0*	*179.528*	*546.508*	-3.11
54	701753	5838374	*361.2*	*541.2*	701753	5838374	359.40	*359.963*	*0*	*0.0*	*179.513*	*538.913*	-2.27
55	701099	5838869	*364.6*	*544.6*	701099	5838869	363.16	*363.725*	*0*	*0.0*	*179.515*	*542.675*	-1.97
56	700448	5838975	*366.7*	*546.7*	700448	5838975	364.63	*365.181*	*0*	*0.0*	*179.501*	*544.131*	-2.61
57	700212	5838479	*357.9*	*537.9*	700212	5838479	355.51	*355.580*	*0*	*0.0*	*179.020*	*534.530*	-3.40
58	700028	5837050	*328.8*	*508.8*	700028	5837050	326.54	*327.002*	*0*	*0.0*	*179.412*	*505.952*	-2.84
59	700797	5836663	*331.1*	*511.1*	700797	5836663	329.02	*329.587*	*0*	*0.0*	*179.517*	*508.537*	-2.52
60	699878	5838908	*357.0*	*537.0*	699878	5838908	353.25	*353.814*	*0*	*0.0*	*179.514*	*532.764*	-4.25
61	699336	5838700	*351.2*	*531.2*	699336	5838700	348.60	*349.158*	*0*	*0.0*	*179.508*	*528.108*	-3.12
62	699322	5839251	*351.8*	*531.8*	699322	5839251	350.48	*350.539*	*0*	*0.0*	*179.009*	*529.489*	-2.27
63	698765	5838888	*347.9*	*527.9*	698765	5838888	345.63	*346.195*	*0*	*0.0*	*179.515*	*525.145*	-2.78
64	698366	5839207	*343.2*	*523.2*	698366	5839207	340.56	*340.797*	*0*	*0.0*	*179.187*	*519.747*	-3.47
65	698674	5839618	*343.0*	*523.0*	698674	5839618	340.62	*341.188*	*0*	*0.0*	*179.518*	*520.138*	-2.85
66	699070	5839935	*342.5*	*522.5*	699070	5839935	339.98	*340.658*	*0*	*0.0*	*179.628*	*519.608*	-2.90
67	699605	5839811	*349.1*	*529.1*	699605	5839811	347.06	*347.520*	*0*	*0.0*	*179.410*	*526.470*	-2.60
68	698244	5840083	*336.0*	*516.0*	698244	5840083	333.81	*334.355*	*0*	*0.0*	*179.495*	*513.305*	-2.69
69	697918	5839649	*332.1*	*512.1*	697918	5839649	327.76	*328.301*	*0*	*0.0*	*179.491*	*507.251*	-4.85
70	707276	5848366	*389.3*	*569.3*	707276	5848366	391.75	*391.552*	*0*	*0.0*	*178.752*	*570.502*	1.21
71	706697	5848321	*366.7*	*546.7*	706697	5848321	368.48	*368.862*	*0*	*0.0*	*179.332*	*547.812*	1.10
72	707764	5848565	*409.9*	*589.9*	707764	5848565	413.20	*413.338*	*0*	*0.0*	*179.088*	*592.288*	2.36
73	707943	5847939	*391.3*	*571.3*	707943	5847939	393.35	*393.794*	*0*	*0.0*	*179.394*	*572.744*	1.40
74	707415	5847830	*389.4*	*569.4*	707415	5847830	393.68	*393.854*	*0*	*0.0*	*179.124*	*572.804*	3.36
75	707000	5847645	*392.6*	*572.6*	707000	5847645	393.28	*393.350*	*0*	*0.0*	*179.020*	*572.300*	-0.33
76	707322	5847285	*374.9*	*554.9*	707322	5847285	374.94	*375.185*	*0*	*0.0*	*179.195*	*554.135*	-0.76
77	706643	5847404	*397.6*	*577.6*	706643	5847404	396.40	*396.491*	*0*	*0.0*	*179.041*	*575.441*	-2.13
78	705997	5846836	*382.6*	*562.6*	705997	5846836	381.80	*382.063*	*0*	*0.0*	*179.213*	*561.013*	-1.56
79	706178	5847399	*393.7*	*573.7*	706178	5847399	398.70	*398.788*	*0*	*0.0*	*179.038*	*577.738*	4.00
80	705657	5847248	*390.0*	*570.0*	705657	5847250	390.70	*390.787*	*2*	*0.0*	*179.037*	*569.737*	-0.29
81	708266	5848584	*372.5*	*552.5*	708266	5848584	371.30	*371.447*	*0*	*0.0*	*179.097*	*550.397*	-2.12
82	708248	5849092	*385.2*	*565.2*	708248	5849092	379.98	*380.565*	*0*	*0.0*	*179.535*	*559.515*	-5.67

83	708058	5849561	*392.8*	*572.8*	708058	5849561	391.53	*391.661*	*0*	*0.0*	*179.081*	*570.611*	-2.17
84	708518	5848087	*365.7*	*545.7*	708518	5848087	365.20	*365.290*	*0*	*0.0*	*179.040*	*544.240*	-1.41
85	708456	5847582	*366.7*	*546.7*	708456	5847582	365.50	*365.661*	*0*	*0.0*	*179.111*	*544.611*	-2.09
86	709263	5847903	*365.7*	*545.7*	709272	5847951	363.35	*363.897*	*49*	*9.4*	*179.497*	*542.847*	-2.89
87	709970	5847874	*372.9*	*552.9*	710020	5847899	371.12	*371.325*	*56*	*62.0*	*179.155*	*550.275*	-2.67
88	709861	5848586	*373.7*	*553.7*	709819	5848584	369.59	*369.693*	*42*	*265.5*	*179.053*	*548.643*	-5.10
89	709736	5849070	*370.6*	*550.6*	709736	5849070	367.72	*367.834*	*0*	*0.0*	*179.064*	*546.784*	-3.83
90	710225	5849113	*387.1*	*567.1*	710225	5849113	386.10	*386.225*	*0*	*0.0*	*179.075*	*565.175*	-1.88
91	710426	5848610	*377.2*	*557.2*	710426	5848610	374.96	*375.406*	*0*	*0.0*	*179.396*	*554.356*	-2.85
92	711161	5848721	*427.1*	*607.1*	711161	5848721	427.97	*428.391*	*0*	*0.0*	*179.371*	*607.341*	0.27
93	711186	5849226	*393.0*	*573.0*	711186	5849226	391.42	*391.670*	*0*	*0.0*	*179.200*	*570.620*	-2.41
94	712257	5849143	*404.7*	*584.7*	712257	5849143	408.53	*408.701*	*0*	*0.0*	*179.121*	*587.651*	2.98
95	712356	5848444	*398.9*	*578.9*	712356	5848444	400.55	*401.051*	*0*	*0.0*	*179.451*	*580.001*	1.13
96	710101	5844908	*368.3*	*548.3*	710101	5844908	364.79	*365.206*	*0*	*0.0*	*179.366*	*544.156*	-4.12
97	709880	5844452	*363.1*	*543.1*	709880	5844452	359.84	*360.174*	*0*	*0.0*	*179.284*	*539.124*	-3.99
98	710355	5844267	*363.4*	*543.4*	710355	5844267	360.95	*361.077*	*0*	*0.0*	*179.077*	*540.027*	-3.40
99	710626	5844786	*373.5*	*553.5*	710626	5844786	371.55	*371.816*	*0*	*0.0*	*179.216*	*550.766*	-2.75
100	711390	5844715	*381.3*	*561.3*	711390	5844715	380.82	*381.054*	*0*	*0.0*	*179.184*	*560.004*	-1.26
101	711514	5843927	*374.7*	*554.7*	711514	5843927	373.00	*373.170*	*0*	*0.0*	*179.120*	*552.120*	-2.62
102	711027	5843910	*365.0*	*545.0*	711027	5843910	362.40	*362.562*	*0*	*0.0*	*179.112*	*541.512*	-3.49
103	711274	5843205	*364.9*	*544.9*	711274	5843205	363.70	*363.975*	*0*	*0.0*	*179.225*	*542.925*	-2.00
104	710958	5842681	*356.8*	*536.8*	710958	5842681	355.40	*355.777*	*0*	*0.0*	*179.327*	*534.727*	-2.10
105	711996	5844324	*382.5*	*562.5*	711996	5844324	380.32	*380.518*	*0*	*0.0*	*179.148*	*559.468*	-3.06
106	712567	5844036	*365.8*	*545.8*	712567	5844036	365.65	*365.780*	*0*	*0.0*	*179.080*	*544.730*	-1.05
107	713180	5844022	*355.4*	*535.4*	713180	5844022	354.00	*354.263*	*0*	*0.0*	*179.213*	*533.213*	-2.20
108	712086	5843715	*372.0*	*552.0*	712086	5843715	371.98	*372.294*	*0*	*0.0*	*179.264*	*551.244*	-0.76
109	711783	5843045	*357.5*	*537.5*	711783	5843045	356.05	*356.260*	*0*	*0.0*	*179.160*	*535.210*	-2.28
110	707874	5839366	*365.2*	*545.2*	707874	5839366	364.00	*364.442*	*0*	*0.0*	*179.392*	*543.392*	-1.76
111	709046	5838882	*359.4*	*539.4*	709046	5838882	358.37	*358.538*	*0*	*0.0*	*179.118*	*537.488*	-1.96
112	709676	5839607	*358.0*	*538.0*	709626	5839525	357.30	*357.667*	*96*	*209.9*	*179.317*	*536.617*	-1.37

113	709045	5832608	335.4	515.4	709069	5832651	333.98	334.586	49	27.3	179.556	513.536	-1.84
114	709511	5832837	337.8	517.8	709567	5832779	337.03	337.552	80	134.5	179.472	516.502	-1.32
115	709467	5831817	338.0	518.0	709467	5831817	336.33	336.395	0	0.0	179.015	515.345	-2.61
116	712358	5832215	374.7	554.7	712358	5832215	373.02	373.578	0	0.0	179.508	552.528	-2.19
117	712888	5832290	379.3	559.3	712888	5832290	378.52	378.661	0	0.0	179.091	557.611	-1.71
118	712669	5832677	396.2	576.2	712669	5832677	394.85	395.417	0	0.0	179.517	574.367	-1.83
119	712209	5832780	401.6	581.6	712209	5832780	401.44	402.018	0	0.0	179.528	580.968	-0.60
120	712291	5833286	418.6	598.6	712291	5833286	418.50	419.040	0	0.0	179.490	597.990	-0.59
121	712270	5833761	394.3	574.3	712270	5833761	393.18	393.567	0	0.0	179.337	572.517	-1.81
122	711819	5832989	396.0	576.0	711819	5832989	394.83	395.436	0	0.0	179.556	574.386	-1.62
123	711409	5833292	411.0	591.0	711424	5833279	412.68	413.235	20	129.5	179.505	592.185	1.14
124	711050	5833660	365.6	545.6	711050	5833660	364.70	365.355	0	308.2	179.605	544.305	-1.30
125	710612	5833401	354.3	534.3	710612	5833401	352.17	352.601	0	0.0	179.381	531.551	-2.75
126	713114	5833173	397.5	577.5	713114	5833173	396.34	396.881	0	0.0	179.491	575.831	-1.67
127	713303	5832554	381.8	561.8	713303	5832554	377.15	377.713	0	0.0	179.513	556.663	-5.12
128	713580	5832976	375.9	555.9	713583	5832972	373.50	373.808	5	143.1	179.258	552.758	-3.17
129	714056	5833144	359.3	539.3	714056	5833144	355.39	355.956	0	0.0	179.516	534.906	-4.41
130	712717	5834028	389.5	569.5	712717	5834028	388.69	389.225	0	0.0	179.485	568.175	-1.28
131	713079	5833676	390.4	570.4	713079	5833676	387.62	388.205	0	0.0	179.535	567.155	-3.22
132	713566	5833496	371.9	551.9	713566	5833496	371.20	371.768	0	0.0	179.518	550.718	-1.16
133	713443	5834084	361.4	541.4	713443	5834084	360.54	360.904	0	0.0	179.314	539.854	-1.51
134	713912	5833871	358.0	538.0	713912	5833871	357.27	357.833	0	0.0	179.513	536.783	-1.17
135	714394	5834054	348.5	528.5	714394	5834054	347.76	348.330	0	0.0	179.520	527.280	-1.25
136	714504	5833560	348.3	528.3	714504	5833560	346.16	346.223	0	0.0	179.013	525.173	-3.10
137	714973	5833364	343.5	523.5	714973	5833364	341.86	341.877	0	0.0	178.967	520.827	-2.67
138	715577	5832941	351.3	531.3	715577	5832941	347.89	348.217	0	0.0	179.277	527.167	-4.15
139	716240	5832587	345.2	525.2	716240	5832587	343.72	344.108	0	0.0	179.338	523.058	-2.10
140	712485	5831487	361.1	541.1	712485	5831487	360.83	361.400	0	0.0	179.520	540.350	-0.79
141	711392	5831086	354.0	534.0	711392	5831086	351.32	351.880	0	0.0	179.510	530.830	-3.16
142	712393	5830780	349.6	529.6	712393	5830780	347.64	348.207	0	0.0	179.517	527.157	-2.39
143	712327	5830293	341.6	521.6	712301	5830297	341.06	341.564	26	277.8	179.454	520.514	-1.05

144	712917	5830176	*348.4*	*528.4*	712917	5830176	346.38	*346.959*	*0*	*0.0*	*179.529*	*525.909*	-2.51
145	713076	5830672	*352.2*	*532.2*	713076	5830672	351.41	*351.987*	*0*	*0.0*	*179.527*	*530.937*	-1.21
146	713617	5830394	*352.5*	*532.5*	713617	5830394	352.23	*352.795*	*0*	*0.0*	*179.515*	*531.745*	-0.78
147	713938	5829977	*348.4*	*528.4*	713938	5829977	348.10	*348.413*	*0*	*0.0*	*179.263*	*527.363*	-1.00
148	714429	5829882	*343.0*	*523.0*	714429	5829882	341.88	*342.445*	*0*	*0.0*	*179.515*	*521.395*	-1.65
149	714523	5830369	*351.6*	*531.6*	714523	5830369	349.62	*350.181*	*0*	*0.0*	*179.511*	*529.131*	-2.44
										Min	177.55	505.95	-5.67
	Note 1 - Max Tip height above natural ground is 179.68 - Complies with Condition 4(b)									***Max***	**179.68**	**614.51**	**4.00**
	Note 2 - Maximum Tip Height is 614.510 AHD									***Average***	179.29	550.79	-1.84

Annex B – Resume – Peter White

Peter White

Managing Consultant - Airspace Safeguarding

Qualifications

Diploma of Aviation (ATS), RAAF School of Air Traffic Control 1986

PANS OPS Basic, DFS Akademie, Langen, Germany, 2001

Advanced PANS OPS, Singapore Aviation Academy, 2002

Aviation Quality and Safety Systems Lead Auditor, Aviation Quality Services, 2013

Operational Risk Management, AeroSafe, 2013

Safety Management Systems, AeroSafe, 2013

Australian Pilots Licence with Command Instrument Rating

Year Started in Industry

1980

Year Started at L&B

2017

Overview

Peter is a Managing Consultant overseeing L&B's Airspace and Air Traffic Management team.

He has over 39 years' experience in Air Traffic Services as a Flight Service Officer, Military Air Traffic Controller and Civilian Air Traffic Controller, including as an On-the-job-training instructor and more recently as the Civil Aviation Authority of New Zealand's ATC Testing Officer.

Peter is an experienced instrument flight procedure designer (ICAO PANS OPS) designing the entire range of instrument approaches to military and civilian airports and heliports in Australia and overseas, including Saudi Arabia, Fiji, East Timor and the Solomon Islands.

Having worked for the RAAF Aeronautical Information Service as Chief Designer and Airservices Australia as a CASA Qualified Instrument Flight Procedure Designer, he has successfully designed conventional ground-based procedures and GPS based procedures, including SIDS and STARS.

As an Air Safety Regulator with New Zealand's Civil Aviation Authority Peter was responsible for hazard determinations in relation to airport airspace (Part 77), conditions for approval of new aerodromes and heliports, airspace designations and as CAA's ATS Examiner, ensuring senior ATC staff met and complied with Part 172 requirements as ATS training officers and ATS examiners. He was a senior member of New Zealand's New Southern Sky program which transitioned New Zealand airspace into the Performed Based Navigation (PBN) environment.

Peter was New Zealand's member of ICAO's Separation and Airspace Safety Panel (SASP) from 2013 to 2017, working mainly on the implementation of parallel runway approach standards implemented in ICA Doc 4444 in 2018, having his dedicated service formally recognised by ICAO.

Peter provides consultancy services related to the safeguarding of airspace around major and regional airports in relation to infrastructure developments such as high-rise buildings, wind farms and other man-made obstacles and their potential impact upon aviation activity in the area. He also arranges aviation authority approval for these activities.

He is responsible for the operation of the two CA/GRO operations at Ballina/Byron Gateway airport and Ayres Rock airport.

Peter also holds a Command Instrument Rating for fixed wing aircraft and is also a qualified gliding instructor.

Relevant Experience

Survey and design instrument approach procedures for medivac and military aircraft operations, East Timor and the Solomon Islands; 2003/2004

During UN and Australian peacekeeping missions UNMISET and RAMSI, Peter was deployed to East Timor and the Solomon Islands to assist survey teams to identify suitable runways and heliports and then to design RNAV (GNSS) instrument flight procedures to them to support military and civilian contracted medivac flight operations to those locations.

ICAO Instrument Flight Procedure Design Expert, King Abdulaziz International Airport, Jeddah, Kingdom of Saudi Arabia: 2012- 2013

Guide a small team of designers to develop amended departure and approach procedures related to the construction of the proposed (now under construction) Kingdom Tower, Kingdom City, 5 km north east of the airport.

Air Safety Regulator, Civil Aviation Authority of New Zealand, 2013 - 2017

Assess, approve and promulgate airspace amendments, air-route restructures, aerodrome and heliport working plans, Performance Based Navigation (PBN) planning and implementation, separation standards and regulatory oversight and examination of ATC operations, lead safety audits of ATS providers.

New Zealand member on ICAO Separation and Airspace Safety Panel (SASP) developing modern performance-based separation standards to facilitate more efficient use of controlled airspace used worldwide.

Western Australia Route Review, Airservices Australia, 2006 - 2008

Review and redesign the terminal airspace configuration supporting Perth International Airport, RAAF Bases Pearce and Gin Gin, and Jandakot Airport for efficiency and capacity improvements – redesign SIDs and STARs, design new RNAV approaches, integrate ATC procedures, confirm aircraft profiles.

Solar Farm Glare Impact Assessment, Major International Airport, January 2018.

Conduct glare assessment for a proposed large on-airfield solar farm at a major international airport to ensure that reflected glare would not cause retinal damage or after image distraction for pilots on approach paths and ATC Tower staff.

Wind Farm Impact Assessments

Conduct obstacle, radar interference and lighting requirement assessment of wind farms both near and remote from aerodromes. Provide liaison with aviation authorities for approvals of these major infrastructure developments.

High Intensity Radiation Frequency (HIRF) Impact assessment on Air-Routes, Arrival Routes and Approach and Departure Procedures, November 2017 – April 2018 and ongoing.

Assess the likely impact of increased power to communications station signals from a major Deep Space Communication Centre, against existing Departure and Arrival route to determine airspace protection requirements.

Infrastructure Development Airspace Protection Assessments, Nov 2017 – Ongoing.

Provide detailed advice to infrastructure developers such as high rise buildings, wind farms and mobile phone towers, regarding any impact upon local airspace that is likely cause disruption to aviation activity or that may require procedure amendment to accommodate critically required infrastructure.

Future International Airport Siting Assessment, April 2018 - Ongoing.

As part of a small team, investigate the most suitable location for a green-field airport to support large scale local infrastructure development. Local airspace, ATC procedures, terrain and meteorological impacts formed the basis of this assessment.

CA/GRO Management: August 2019 – Present

Manage L&B's Certified Air/Ground Radio operations at Ballina/Byron Gateway and Ayres Rock Airports.

Wind Shear Assessment, Container Terminal Expansion: 2019

Assess the impact of proposed larger container vessels to a large container vessel terminal in very close proximity to a major international airport.

Runway Development Program: 2019

Research previous studies and assess new data in relation to determining the best option for the next runway configuration at a major international airport. Peter's active participation in multi-disciplined workshops enabled the airport to determine the best configuration for the planning and development of the next runway at the airport.

Conduct Operational Risk Assessment for airport apron operations at major international airport: 2018

Organise and conduct Bowtie based operational risk assessment workshops involving all stakeholders to determine hazard management systems for all operations on the aprons of a major international airport. Prepare and present final report for airport management.

Annex C – Glossary of Aeronautical Terms and Abbreviations

To facilitate the understanding of aviation terminology used in this report, the following is a glossary of terms and acronyms that are commonly used in aeronautical impact assessments and similar aeronautical studies.

AC (Advisory Circulars) are issued by CASA and are intended to provide recommendations and guidance to illustrate a means, but not necessarily the only means, of complying with the *Regulations*.

Aeronautical study is a tool used to review aerodrome and airspace processes and procedures to ensure that safety criteria are appropriate.

AIPs (Aeronautical Information Publications) are publications promulgated to provide operators with aeronautical information of a lasting character essential to air navigation. They contain details of regulations, procedures and other information pertinent to flying and operation of aircraft. In Australia, AIP is issued by Airservices Australia on behalf of CASA.

Air routes exist between navigation aid equipped aerodromes or waypoints to facilitate the regular and safe flow of aircraft operating under IFR.

Airservices Australia is the Australian government-owned corporation providing safe and environmentally sound air traffic management and related airside services to the aviation industry.

Altitude is the vertical distance of a level, a point or an object, considered as a point, measured from mean sea level.

ATC (Air Traffic Control) service is a service provided for the purpose of:

a. preventing collisions:
    1. between aircraft; and
    2. on the manoeuvring area between aircraft and obstructions; and
b. expediting and maintaining an orderly flow of air traffic.

CASA (Civil Aviation Safety Authority) is the Australian government authority responsible under the *Civil Aviation Act 1988* for developing and promulgating appropriate, clear and concise aviation safety standards. As Australia is a signatory to the ICAO *Chicago Convention,* CASA adopts the standards and recommended practices established by ICAO, except where a difference has been notified.

CASR (Civil Aviation Safety Regulations) are promulgated by CASA and establish the regulatory framework *(Regulations)* within which all service providers must operate.

Civil Aviation Act 1988 (the Act) establishes the CASA with functions relating to civil aviation, in particular the safety of civil aviation and for related purposes.

ICAO (International Civil Aviation Organization) is an agency of the United Nations which codifies the principles and techniques of international air navigation and fosters the planning and development of international air transport to ensure safe and orderly growth. The ICAO Council adopts standards and recommended practices concerning air navigation, its infrastructure, flight inspection, prevention of unlawful interference, and facilitation of border-crossing procedures for international civil aviation. In addition, the ICAO defines the protocols for air accident investigation followed by transport safety authorities in countries signatory to the Convention on International Civil Aviation, commonly known as the Chicago Convention. Australia is a signatory to the Chicago Convention.

IFR (Instrument Flight Rules) are rules applicable to the conduct of flight under IMC. IFR are established to govern flight under conditions in which flight by outside visual reference is not safe. IFR flight depends upon flying by reference to instruments in the flight deck, and navigation is accomplished by reference to electronic signals. It is also referred to as, “a term used by pilots and controllers to indicate the type of flight

plan an aircraft is flying," such as an IFR or VFR flight plan. Pilots must hold IFR qualifications and aircraft must be suitably equipped with appropriate instruments and navigation aids to enable flight in IMC.

IMC (Instrument Meteorological Conditions) are meteorological conditions expressed in terms of visibility, distance from cloud and ceiling, less than the minimum specified for visual meteorological conditions.

LSALT (Lowest Safe Altitudes) are published for each low-level air route segment. Their purpose is to allow pilots of aircraft that suffer a system failure to descend to the LSALT to ensure terrain or obstacle clearance in IMC where the pilot cannot see the terrain or obstacles due to cloud or poor visibility conditions. It is an altitude that is at least 1,000 feet above any obstacle or terrain within a defined safety buffer region around a particular route that a pilot might fly.

MOS (Manual of Standards) comprises specifications (Standards) prescribed by CASA, of uniform application, determined to be necessary for the safety of air navigation.

NOTAMs (Notices to Airmen) are notices issued by the NOTAM office containing information or instruction concerning the establishment, condition or change in any aeronautical facility, service, procedure or hazard, the timely knowledge of which is essential to persons concerned with flight operations.

Obstacles. All fixed (whether temporary or permanent) and mobile objects, or parts thereof, that are located on an area intended for the surface movement of aircraft or that extend above a defined surface intended to protect aircraft in flight.

OLS (Obstacle Limitation Surfaces) are a series of planes associated with each runway at an aerodrome that defines the desirable limits to which objects may project into the airspace around the aerodrome so that aircraft operations may be conducted safely.

PANS OPS (Procedures for Air Navigation Services - Aircraft Operations) is an Air Traffic Control term denominating rules for designing instrument approach and departure procedures. Such procedures are used to allow aircraft to land and take off under Instrument Meteorological Conditions (IMC) or Instrument Flight Rules (IFR). ICAO document 8168-OPS/611 (volumes 1 and 2) outlines the principles for airspace protection and procedure design which all ICAO signatory states must adhere to. The regulatory material surrounding PANS OPS may vary from country to country.

PANS OPS Surfaces. Similar to an Obstacle Limitation Surface, the PANS OPS protection surfaces are imaginary surfaces in space which guarantee the aircraft a certain minimum obstacle clearance. These surfaces may be used as a tool for local governments in assessing building development. Where buildings may (under certain circumstances) be permitted to infringe the OLS, they cannot be permitted to infringe any PANS OPS surface, because the purpose of these surfaces is to guarantee pilots operating under IMC an obstacle free descent path for a given approach.

Prescribed airspace is an airspace specified in, or ascertained in accordance with, the Regulations, where it is in the interests of the safety, efficiency or regularity of existing or future air transport operations into or out of an airport for the airspace to be protected. The prescribed airspace for an airport is the airspace above any part of either an OLS or a PANS OPS surface for the airport and airspace declared in a declaration relating to the airport.

Regulations (Civil Aviation Safety Regulations)

VFR (Visual Flight Rules) are rules applicable to the conduct of flight under VMC. VFR allow a pilot to operate an aircraft in weather conditions generally clear enough to allow the pilot to maintain visual contact with the terrain and to see where the aircraft is going. Specifically, the weather must be better than basic VFR weather minima. If the weather is worse than VFR minima, pilots are required to use instrument flight rules. Pilots must be specifically qualified and aircraft specifically equipped to enable flight in IMC,

VMC (Visual Meteorological Conditions) are meteorological conditions expressed in terms of visibility, distance from cloud and ceiling, equal or better than specified minima.

Abbreviations

Abbreviations used in this report, and the meanings assigned to them for the purposes of this report are detailed in the following table.

Abbreviation	Meaning
AC	Advisory Circular (document support CAR 1998)
ACFT	Aircraft
AD	Aerodrome
ADS-B	Automatic Dependent Surveillance - Broadcast
AHD	Australian Height Datum
AIP	Aeronautical Information Publication
Airports Act	Airports Act 1996, as amended
AIS	Aeronautical Information Service
ALT	Altitude
AMSL	Above Mean Sea Level
APARs	Airports (Protection of Airspace) Regulations, 1996 as amended
ARP	Aerodrome Reference Point
AsA	Airservices Australia
ATC	Air Traffic Control(ler)
ATM	Air Traffic Management
BRA	Building Restricted Area
CAO	Civil Aviation Order
CAR	Civil Aviation Regulation
CASA	Civil Aviation Safety Authority
CASR	Civil Aviation Safety Regulation
Cat	Category
DAP	Departure and Approach Procedures (charts published by AsA)

Abbreviation	Meaning
DER	Departure End of (the) Runway
DME	Distance Measuring Equipment
Doc nn	ICAO Document Number nn
ELEV	Elevation (above mean sea level)
ENE	East North East
ERSA	Enroute Supplement Australia
FAF	Final Approach Fix
FAP	Final Approach Point
ft	feet
GBAS	Ground Based Augmentation System (satellite precision landing system)
GNSS	Global Navigation Satellite System
GP	Glide Path
IAS	Indicated Airspeed
ICAO	International Civil Aviation Organisation
IHS	Inner Horizontal Surface, an Obstacle Limitation Surface
ILS	Instrument Landing System
ISA	International Standard Atmosphere
km	kilometres
kt	Knot (one nautical mile per hour)
LAT	Latitude
LLZ	Localizer
LONG	Longitude
m	metres
MAPt	Missed Approach Point
MDA	Minimum Descent Altitude
MGA94	Map Grid Australia 1994

Abbreviation	Meaning
MOC	Minimum Obstacle Clearance
MOS	Manual of Standards, published by CASA
MSA	Minimum Sector Altitude
MVA	Minimum Vector Altitude
NASAG	National Airports Safeguarding Advisory Group
NDB	Non Directional Beacon
NE	North East
NM	Nautical Mile (= 1.852 km)
nnDME	Distance from the DME (in nautical miles)
NNE	North North East
NOTAM	NOtice to AirMen
OAS	Obstacle Assessment Surface
OCA	Obstacle Clearance Altitude
OCH	Obstacle Clearance Height
OHS	Outer Horizontal Surface
OIS	Obstacle Identification Surface
OLS	Obstacle Limitation Surface
PANS OPS	Procedures for Air Navigation Services – Aircraft Operations, ICAO Doc 8168
PBN	Performance Based Navigation
PRM	Precision Runway Monitor
QNH	An altimeter setting relative to height above mean sea level
REF	Reference
RL	Relative Level
RNAV	aRea NAVigation
RNP	Required Navigation Performance

Abbreviation	Meaning
RPA	Rules and Practices for Aerodromes; replaced by the MOS Part 139 - Aerodromes
RPT	Regular Public Transport
RTCC	Radar Terrain Clearance Chart
RWY	Runway
SFC	Surface
SID	Standard Instrument Departure
SOC	Start Of Climb
STAR	STandard ARrival
SGHAT	Solar Glare Hazard Analysis Tool
TAR	Terminal Approach Radar
TAS	True Air Speed
THR	Threshold (Runway)
TNA	Turn Altitude
TODA	Take-Off Distance Available
V_n	aircraft critical Velocity reference
VOR	Very high frequency Omni directional Range
WAC	World Aeronautical Chart

APPENDIX J - SUMMARY OF COMPLIANCE IN RELATION TO CONDITIONS 1 AND 4 REQUIREMENTS

Appendix J - Summary of compliance in relation to Conditions 1 and 4 requirements

Compliance with Condition 1 requirements

Condition 1(a-j)	Condition 1 requirement	Design response
1	Before the development starts, development plans must be prepared to the satisfaction of the Minister for Planning. The plans may be submitted for approval in stages or for particular wind farm sectors shown on the indicative layout plan (Amended Indicative Layout Plan - 20160428 Rev 0A). When approved, the plans will be endorsed by the Minister for Planning and will then form part of this permit. The plans must be drawn to scale with dimensions and three copies must be provided.	The attached revised set of Development Plans are to replace the set of Plans endorsed by the Minister on 17 May 2018 prior to construction commencing and the 28 May 2019 which form part of the Permit.
1a	the location, setbacks to property boundaries, layout and dimensions of all on-site buildings and works including all approved wind turbines, access tracks, underground cables, overhead powerlines, substations, permanent anemometers, the maintenance facility, designated car parking and bicycle facilities, the single business identification sign, landscaping, firefighting infrastructure, and construction compounds, staging areas, off-site road works, removal of native vegetation, and concrete batching plants)	The revised set of Plans show all the requirements set under this Condition. The Plans as detailed in the attached Plan Register show: -the location (see Sheet Ref 1-5), -setbacks to property boundaries (see Sheet Ref 6-9), -layout and dimensions of all on-site buildings and works including: -all approved wind turbines, -access tracks, -underground cables, -overhead powerlines, substations, -permanent anemometers, -the maintenance facility, designated car parking and bicycle facilities, the single business identification sign, landscaping, - firefighting infrastructure, and

Condition 1(a-j)	Condition 1 requirement	Design response
		-construction compounds, staging areas, off-site road works, removal of native vegetation, and concrete batching plants).
1b	the GPS coordinates, using an appropriate datum, for each turbine and anemometer	Sheet 2 of 5 of the updated DPs contain each turbines GPS coordinate (GDA 94, MGA 54) and anemometer within the northern section; Sheet 3 of 5 of the updated DPs contain each turbines GPS coordinate (GDA 94, MGA 54) and anemometer within the western section; Sheet 4 of 5 of the updated DPs contain each turbines GPS coordinate (GDA 94, MGA 54) and anemometer within the eastern section; Sheet 5 of 5 of the updated DPs contain each turbines GPS coordinate (GDA 94, MGA 54) and anemometer within the southern section.
1c	details of the model and capacity of the wind turbines to be installed	Sheet 10 provides details of the GW140 Turbine model with generating capacities of 3MW,3.4 MW and 3.57MW.
1d	dimensions, elevations, materials and finishes of wind turbines and other permanent buildings and works	Sheets 10-12 provides the turbine specifications listed against this condition for the turbines. Sheets 13-48 provide details for buildings and works
1e	any staging of development	The Project is not staged
1f	the setting back of all turbines by at least 100 metres from boundaries to non-participating neighbouring properties and roads which are formed roads at the date of this permit (when measured from the centre of the base of the turbine at ground level)	Sheets 6-9 of the updated DPs address this condition for each cluster.
1g	the collocation of the internal and external powerlines on common poles where their routes coincide	There are no locations where the 33kV internal line and external 132kV lines have the same alignment and collocation is not applicable.
1h	any additional works and facilities and any changes to the layout required to meet CFA conditions	Sheets 1-5 show the location of water tanks and sheet 47 shows the dimensions of access tracks.
1h	any further necessary adjustment to the layout:	
1i	to ensure that clearing of native	The updated development plans (Sheets 1-5) show a

Condition 1(a-j)	Condition 1 requirement	Design response
	vegetation is avoided or minimised.	micro-sited layout that has reduced the impact on native vegetation through construction of access tracks and reduced impact on higher significance areas of native vegetation. The layout is consistent with the updated NVMP Dec 2020 that shows details of native vegetation
1i (i)	to ensure ground disturbance associated with construction does not adversely impact on drainage lines.	The layout shown in Sheets 1-5 avoids major drainage lines, works were carried out in accordance with EMP which includes and Sediment, Erosion and Water Quality Management Plan to avoid adverse impacts on drainage lines.
1 i (ii)	to ensure remnant indigenous grasslands, and areas of significant fauna habitat identified by a qualified ecologist engaged to inspect micro-sited turbine and powerline pole locations are avoided or minimised.	The location of infrastructure shown in Sheets 1-5 have avoided or minimised impacts on remnant indigenous grasslands, and areas of significant fauna habitat consistent with the updated NVMP.
1 i (iii)	to ensure that any indigenous or non-indigenous archaeological site identified by the on-site archaeological survey, and required to be protected, is avoided.	Sheets 1-5 are consistent with the approved CHMPs to ensure indigenous or non-indigenous archaeological site are protected and avoided.
1 i (iv)	to accommodate road and intersection upgrades and access requirements.	Sheets 2-5 show the alterations and creations of new road and intersection access upgrades
1 i (v)	to meet the siting conditions required in other conditions of this permit.	The Plans show the detail of the layout and dimensions and characteristics of the equipment installed. Expert advice has also been separately supplied to demonstrate compliance of the layout with the objectives of the Permit.
1 i (vi)	The display of one permitted business sign. Siting, dimensions and other details of sign to be generally as per Indicative Business Sign Drawing No. 0106120_02 and Amended Indicative Layout Plan 20160428 Rev 0A. No company logos are permitted on any turbine.	Sheet 49 provides details for this condition

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Compliance with Condition 4 requirements

Condition	Condition 4 requirement	Consistency with requirement
4	The wind energy facility must meet the following requirements:	See below, all requirements have been met, no variation is sought.
a)	the WEF must comprise no more than 149 wind turbines;	Only 149 wind turbines are being installed. This requirement has been met.
b)	maximum height of the wind turbines to tip of rotor blade must not exceed 180 m above natural ground level;	Total structure height is 178.950 m. The height relative to surveyed ground level varies, maximum is 179.261 m. This requirement has been met.
c)	wind turbines must be mounted on a tubular tower with a hub-height of no greater than 120 m	Hub height is 108.750 m. This requirement has been met.
d)	Each wind turbine is to have three blades and a rotor diameter of no more than 142 m.	Each turbine rotor has three blades with a rotor diameter of 140.36 m. This requirement has been met.
e)	the ground clearance from the bottom of the blades to the ground level is not less than 32m;	The ground clearance is 38.55 m. This requirement has been met.
f)	no aviation safety lighting is permitted on any turbine;	No aviation lighting is required or has been installed. This requirement has been met.
g)	the transformer for each WTG must be located beside the tower and pad mounted, or be enclosed within the tower or nacelle structure;	The transformer for each WTG is located within the wind turbine tower. This requirement has been met.
h)	the wind turbine towers, nacelles and rotor blades must be of non-reflective finish and colour that blends within the landscape to the satisfaction of the Minister for Planning;	The wind turbine components are finished in a non-reflective colour that blends with the landscape. This requirement has been met.

Condition	Condition 4 requirement	Consistency with requirement
i)	the colours and finishes of all other buildings and ancillary equipment must be such as to minimise the impact of the development on landscape to the satisfaction of the Minister for Planning;	The colours and finishes of the Operational and Maintenance (O&M) Buildings and Warehouses use the following colour scheme to reduce impacts on the landscape: Walls – Colorbond SURFMIST Roof – Colorbond WINDSPRAY. This requirement has been met.
j)	access tracks are to be sited and designed to minimise impacts on overland flows, soil erosion, landscape values, environmentally sensitive areas and farming activities to the satisfaction of the Minister.	Access tracks are sited and designed to minimize impacts on overland flows, erosion, landscape values and environmental sensitive areas. This requirement has been met.
k)	all wind turbines must be set back at least 100 metres from boundaries to non-participating neighbouring properties and roads which are formed roads at the date of this permit;	As shown in development plans, all turbines are set back at least 100m from boundaries to non-participating neighbouring properties. This requirement has been met.
l)	on-site firefighting infrastructure must be provided in accordance with CFA conditions in this permit;	On-Site fire-fighting infrastructure has been provided in accordance with CFA conditions in this Permit. This requirement has been met.
m)	lightning protection devices must be installed on each wind turbine;	Lightning protection devices are installed on each wind turbine. This requirement has been met.
n)	monitoring systems must be installed in each tower to detect temperature and shut down at a threshold	Monitoring systems are installed in each tower to detect temperature and shut down at a threshold. This requirement has been met.
o)	no turbine shall be installed within 50 metres of a designated waterway	No turbine has been installed within 50 metres of a designated waterway. This requirement has been met.