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Crookwell 2 Wind Farm - Modification 2

Noise Impact Assessment

Report Number 640.11047-R1

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Crookwell Development Pty Ltd

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SYDNEY NSW 2000

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Crookwell 2 Wind Farm - Modification 2

Noise Impact Assessment

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1 INTRODUCTION

SLR Consulting Australia Pty Ltd (SLR) was commissioned by Crookwell Development Pty Ltd to assess the potential noise impacts from proposed modifications to Crookwell 2 Wind Farm together with an amended layout for Crookwell 3 Wind Farm.

Crookwell 2 Wind Farm is currently approved for construction and operation of up to 46 turbines and Crookwell 3 Wind Farm is pending approval for construction and operation of up to 28 turbines from the NSW Department of Planning and Environment (DP&E). Crookwell 1 Wind Farm is currently owned by Trustpower has been operating since 1998.

SLR (previously Heggies Pty Ltd) has been involved with the project since 2004, and has previously conducted noise assessments for both Crookwell 2 Wind Farm and Crookwell 3 Wind Farm.

As some receptors are affected by both Crookwell 2 and Crookwell 3 Wind Farms, advice from DP&E has been to consider the both wind farms cumulatively. Previous noise impact assessment reports from SLR have considered the following scenarios:

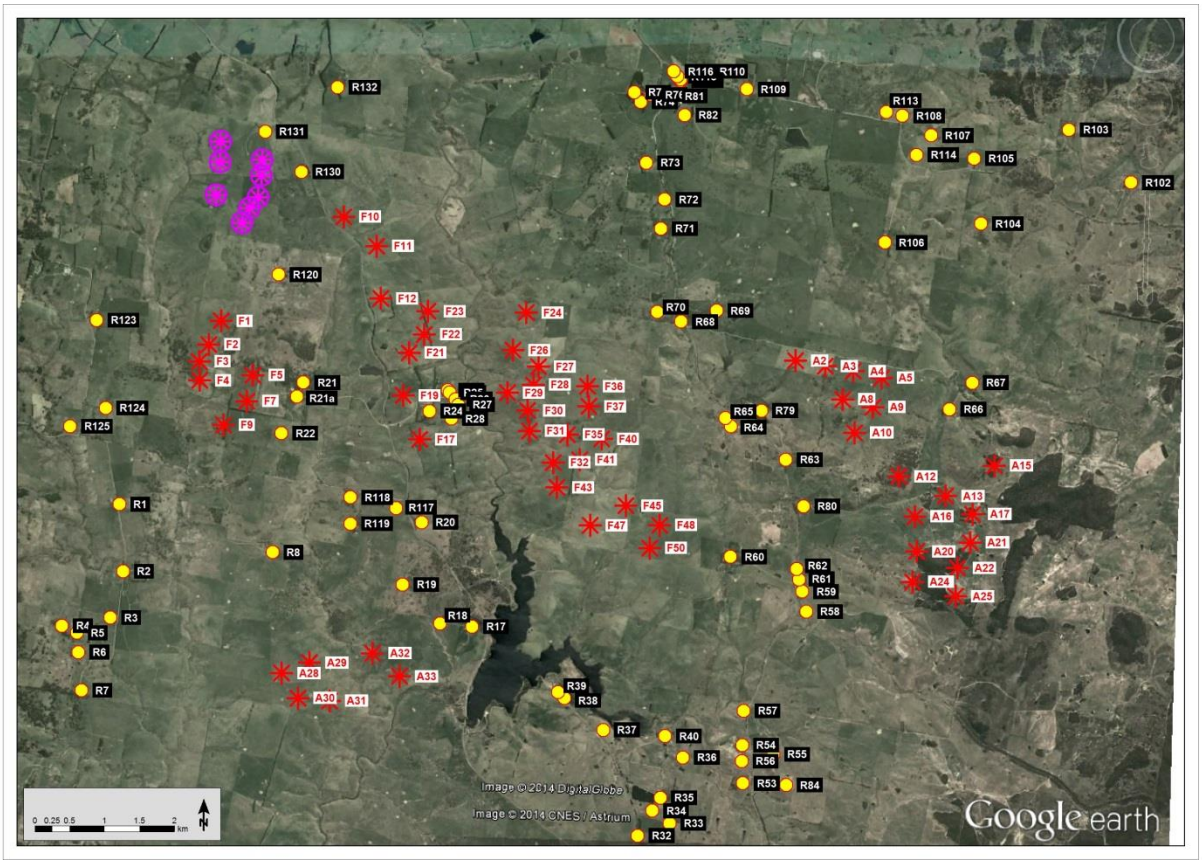
- Crookwell 1, 2 and 3 Wind Farms
- Crookwell 1 and 3 Wind Farms
- Crookwell 1 and 2 Wind Farms

This report assesses the new layout with up to 33 turbines proposed for Crookwell 2 Wind Farm together with an amendment to the proposed layout with up to 23 turbines for Crookwell 3 Wind Farm, with the intention of meeting the Wind Farm Noise Limits from the cumulative noise of Crookwell 1, Crookwell 2 and Crookwell 3 Wind Farms operating simultaneously. Both Crookwell 2 and Crookwell 3 Wind Farms are assumed to be operated with the same wind turbine generator (WTG) model.

2 SITE LAYOUT

Figure 1 shows the locations of all receptors (yellow), Crookwell 2 Wind Farm WTGs (red F), Crookwell 3 Wind Farm WTGs (red A), as well as the existing Crookwell 1 Wind Farm WTGs (purple).

Figure 1 Site overview (image courtesy Google Earth)



A tabulated list of the receptors with details including their position, distance to closest WTGs from Crookwell 2 Wind Farm and Crookwell 3 Wind Farm and project involved host property status are included in **Table 1**.

A tabulated list of the WTG positions for Crookwell 2 Wind Farm and Crookwell 3 Wind Farm are included in **Table 2** and **Table 3** respectively.

Table 1 Receptor locations (UTM, GDA 94)

ID	Property Name	X (m East)	Y (m North)	Closest WTG Crookwell 2 (km)	Closest WTG Crookwell 3 (km)	Host Property?
R1	Evermore	731647	6172983	1.9	3.3	
R2	Bendemere	731698	6172026	2.5	2.7	
R3	D'Ambrosio	731516	6171362	3.2	2.6	
R4		730825	6171246	3.7	3.2	
R5		731037	6171145	3.6	3.0	
R6		731060	6170869	3.9	2.9	
R7	Emohruo	731103	6170322	4.3	2.9	
R8	Narangi	733838	6172296	2.0	1.7	
R12		740272	6166772	5.7	5.9	
R13		739985	6166712	5.7	5.8	
R14	Foxground Hayeselton	739932	6166971	5.4	5.6	
R15		739764	6167108	5.3	5.3	
R16	Calamondah	737882	6167951	4.6	3.4	
R17	*Wollondilly 1	736692	6171234	2.2	1.3	Yes
R18	*Wollondilly 2	736232	6171276	2.6	1.0	Yes
R19	Wombat Hollow	735698	6171835	2.1	1.1	
R20	Normaroo	735970	6172727	1.2	2.0	
R21	*Ahgunyah	734279	6174723	0.7	4.0	Yes
R21a	*Ahgunyah Cottage	734183	6174526	0.7	3.8	Yes
R22	*Minnamurra	733964	6173999	0.7	3.3	Yes
R23	*Gundowringa	736342	6174616	0.6	3.9	Yes
R24	*Savannah	736082	6174316	0.4	3.6	Yes
R25	*Cottage 1 (Gundowringa)	736368	6174580	0.7	3.9	Yes
R26	*Cottage 2 (Gundowringa)	736458	6174487	0.7	3.8	Yes
R27	*Cottage 3 (Gundowringa)	736496	6174408	0.7	3.8	Yes
R28	*Cottage 4 (Gundowringa)	736395	6174209	0.5	3.5	Yes
R29		738978	6167634	4.7	4.4	
R30	Airam	739244	6167665	4.7	4.6	
R31	Youanmite	739448	6167994	4.4	4.6	
R32		739063	6168245	4.1	4.1	
R33	Whispering Pines	739518	6168420	4.0	4.4	
R34	Kooloona	739270	6168600	3.8	4.1	
R35	Clydesdale	739384	6168786	3.6	4.1	
R36	Tyrendarra	739709	6169363	3.0	4.2	
R37	Carinya	738567	6169756	2.7	3.0	
R38		738011	6170209	2.5	2.4	
R39	St Stephens Pejar Anglican Church	737919	6170298	2.4	2.3	
R40	Tyrendarra	739452	6169668	2.7	3.9	
R41	Middle Arm Fire Brigade Wayo Station	738995	6167592	4.8	4.4	

ID	Property Name	X (m East)	Y (m North)	Closest WTG Crookwell 2 (km)	Closest WTG Crookwell 3 (km)	Host Property?
R43	Rullawayo	741086	6166113	6.5	6.1	
R45		740618	6166300	6.2	6.1	
R46	Limokee	740589	6166536	6.0	6.0	
R47		740918	6166707	5.9	5.6	
R48	Rolling Hills	740743	6166982	5.6	5.5	
R49		740850	6167190	5.4	5.3	
R50		741118	6167758	5.0	4.6	
R51		740840	6167997	4.7	4.6	
R52	Mount Wayo	741178	6167993	4.8	4.4	
R53		740567	6168992	3.6	4.0	
R54	Ginmara	740557	6169539	3.1	3.7	
R55		741001	6169408	3.4	3.4	
R56	Mathlie	740550	6169310	3.3	3.9	
R57	Kenrich	740578	6170029	2.7	3.4	
R58		741473	6171450	2.4	1.8	
R59		741415	6171733	2.3	1.7	
R60	Pejar Park	740389	6172231	1.1	2.5	
R61	Wallaroobie	741369	6171908	2.1	1.7	
R62	Cottonwood	741337	6172055	2.1	1.7	
R63	Rocky Corner	741181	6173622	2.0	1.1	
R64	Valdarnam Hill	740395	6174100	1.7	1.3	
R65	Windalee	740315	6174217	1.8	1.3	
R66	Little Vale 1	743524	6174343	4.5	1.0	
R67	Little Vale 2	743724	6174675	4.8	1.2	
R68	*Meadowvale	739684	6175594	1.6	1.7	Yes
R69	Atholvale	740191	6175752	2.1	1.3	
R70	Snowgum	739339	6175736	1.5	2.1	
R71	Lynross	739396	6176926	2.3	2.7	
R72		739448	6177340	2.6	3.0	
R73	Highlands	739184	6177867	2.7	3.5	
R74	Rosslyn	739107	6178738	3.4	4.3	
R75	Rosslyn	739013	6178876	3.5	4.5	
R76	Rosslyn	739250	6178840	3.6	4.3	
R77	Bellevue Park	738837	6180318	4.8	5.8	
R79	*Leeston	740830	6174323	2.2	0.9	Yes
R80	*Hillview Park	741434	6172956	2.1	1.3	Yes
R81	Rosslyn	739537	6178821	3.7	4.2	
R82	Rosslyn	739732	6178548	3.6	3.9	
R83	Trappers Folly	741707	6167504	5.5	4.6	
R84	Nierrina Heights	741184	6168967	3.9	3.6	
R87	Grey Wood	748793	6169806	9.9	5.5	

ID	Property Name	X (m East)	Y (m North)	Closest WTG Crookwell 2 (km)	Closest WTG Crookwell 3 (km)	Host Property?
R88	Ghost Gum Gully	749841	6170267	10.7	6.4	
R89	Windvale	749291	6170516	10.2	5.8	
R90	Glenwood Park	749595	6171049	10.4	5.9	
R91		748820	6171555	9.5	5.1	
R93	Pearces Hill	750414	6171045	11.2	6.7	
R96		750652	6172926	11.3	6.5	
R97		748494	6176524	9.9	5.3	
R98	Daramalar	748494	6176524	9.9	5.3	
R99	Mountain Ash	747850	6176725	9.4	4.9	
R100	Greenways	747569	6176543	9.1	4.5	
R101	Hetherington Glen	747522	6177634	9.5	5.3	
R102	Holmwood	746121	6177583	8.3	4.5	
R103	Ivy Lodge	745231	6178338	7.8	4.4	
R104	Highland Park	743973	6176996	6.1	2.6	
R105	Jaradean	743875	6177928	6.4	3.4	
R106	Rosedale	742598	6176726	4.7	1.9	
R107	Quinton	743258	6178256	6.1	3.5	
R108	Eagleview	742847	6178538	5.9	3.7	
R109	Frendale	740622	6178917	4.5	3.9	
R110	Wallaroy	740029	6179174	4.3	4.3	
R111	Community Hall	739678	6179037	4.0	4.3	
R112	Roslyn Community Hall	739674	6179055	4.0	4.3	
R113	Karinga	742622	6178593	5.8	3.7	
R114	Frenleigh	743051	6177981	5.8	3.2	
R115	Roslyn Bush Fire Brigade	739626	6179103	4.0	4.4	
R116	Railway House	739578	6179174	4.0	4.5	
R117	Rainmore House DA 1	735603	6172925	1.0	2.1	
R118	Rainmore House DA 2	734952	6173081	1.3	2.3	
R119	Rainmore House DA 3	734950	6172706	1.6	1.9	
R120	Elmgrove	733927	6176267	1.1	5.6	
R123		731321	6175616	1.6	5.7	
R124		731448	6174361	1.4	4.6	
R125		730942	6174100	2.0	4.6	
R130	Wharekorari	734250	6177739	0.9	7.0	
R131	Wharekorari (new)	733732	6178313	1.7	7.6	
R132	Lake Edward Cottage	734771	6178947	1.9	7.6	
R133	Lake Edward	733794	6180765	3.8	9.5	

Table 2 Crookwell 2 WTG locations (UTM, GDA 94)

Name	X	Y	Name	X	Y
F1	733099	6175609	F27	737640	6174955
F2	732921	6175270	F28	737568	6174695
F3	732784	6175029	F29	737195	6174580
F4	732790	6174758	F30	737485	6174324
F5	733554	6174834	F31	737509	6174035
F7	733468	6174459	F32	737847	6173582
F9	733130	6174119	F35	738050	6173982
F10	734850	6177095	F36	738339	6174672
F11	735322	6176679	F37	738359	6174384
F12	735383	6175929	F40	738544	6173920
F17	735938	6173914	F41	738227	6173622
F19	735702	6174542	F43	737901	6173227
F21	735787	6175152	F45	738887	6172965
F22	736007	6175416	F47	738381	6172683
F23	736060	6175745	F48	739373	6172687
F24	737463	6175724	F50	739227	6172360
F26	737273	6175188			

Table 3 Crookwell 3 WTG locations (UTM, GDA 94)

Name	X	Y	Name	X	Y
A2	741318	6175038	A20	743049	6172311
A3	741739	6174961	A21	743818	6172439
A4	742142	6174888	A22	743634	6172076
A5	742545	6174793	A24	742989	6171875
A8	741992	6174487	A25	743605	6171669
A9	742420	6174375	A28	733966	6170569
A10	742163	6174009	A29	734365	6170720
A12	742793	6173382	A30	734198	6170212
A13	743466	6173101	A31	734648	6170173
A15	744163	6173538	A32	735268	6170853
A16	743023	6172812	A33	735649	6170525
A17	743851	6172845			

3 LEGISLATION & GUIDELINES

The noise criteria adopted for both the original Crookwell 2 Wind Farm Noise Assessment in 2004 and the Revised Noise Assessment in 2008 were based on the South Australia EPA *Noise Guidelines for Wind Farms*, 2003 (SA EPA Guidelines).

The SA EPA Guidelines are still the current assessment guideline adopted in NSW.

3.1 SA EPA Wind Farm Noise Guidelines

The SA EPA Guidelines recommend the following noise criteria for new wind farms,

> "*The predicted equivalent noise level ($L_{Aeq,\ 10min}$), adjusted for tonality in accordance with these guidelines, should not exceed:*
>
> - 35 dBA, or
> - the background noise level by more than 5 dBA,
>
> *whichever is the greater, at all relevant receivers for each integer wind speed from cut-in to rated power of the WTG.*"

The guidelines also provide information on measuring the background noise levels, locations and requirements on the number of valid data points to be obtained and the methodology for excluding invalid data points. It also outlines the process for determining lines of best fit for the background data, and determination of the noise limit.

The Guideline explicitly states that the "swish" or normal modulation noise from wind turbines is a fundamental characteristic of such turbines; however, it specifies that tonal or annoying characteristics of turbine noise should be penalised.

A 5 dBA penalty should be applied to the measured noise level if an "authorised" officer determines that tonality is an issue and that tonality should be assessed in a way acceptable to the EPA.

The Guideline does not provide an assessment for the potential of low frequency noise or infrasound, but it does state that recent turbine designs do not appear to generate significant levels of infrasound, as the earlier turbine models did.

The Guideline accepts that wind farm developers commonly enter into agreements with private landowners in which they are provided compensation. The guideline is intended to be applied to premises that do not have an agreement with the wind farm developer. This does not absolve the obligations of the wind farm developer entirely as appropriate action can be taken under the *Environmental Protection Act* if a development 'unreasonably interferes' with the amenity of an area. The guideline lists that there is unlikely to be unreasonable interference if:

- a formal agreement is documented between the parties
- the agreement clearly outlines to the landowner the expected impact of the noise from the wind farm and its effect on the landowner's amenity
- the likely impact of exposure will not result in adverse health impacts (e.g. the level does not result in sleep disturbance)

The proponent has discussed the possible noise implications of the proposed turbine layout with the involved residents whose property the turbines would be located on and will enter into agreements with these parties.

These agreements would specify that:

(a) The proponent would ensure that the properties met the World Health Organisation noise guidelines (see **Section 3.2**); and,

(b) The proponent would implement an adaptive management approach which could include the use of building treatments and turbine operation / management strategies if operational noise causes significant impact to the amenity of involved residents.

This noise agreement would only be required under those turbine configurations where the SA EPA Guidelines would be exceeded for that particular property.

3.2 World Health Organisation (WHO) Guidelines

Where noise levels at project-involved residences do not comply with the SA EPA Guidelines, the proponent intends to enter into agreements with the owners of those residences to achieve noise criteria in accordance with World Health Organisation (WHO) Guidelines. The proponent will apply those guidelines as necessary to ensure that the project does not result in an 'unreasonable interference' with the amenity or cause any adverse health effects at those residences. (See **Section 3.1**)

The WHO publication '*Guidelines for Community Noise'* identifies the main health risks associated with noise and derives acceptable environmental noise limits for various activities and environments.

The appropriate guideline limits are listed in **Table 4** below**.**

Table 4 WHO Guideline values for environmental noise in specific environments

Specific Environment	**Critical Health Effect(s)**	**L_{eq} (dBA)**	**Time base (hours)**	**L_{Max} (dBA, Fast)**
Outdoor living area	Serious Annoyance, daytime & evening	55	16	-
	Moderate annoyance, daytime & evening	50	16	-
Dwelling indoors	Speech Intelligibility & moderate annoyance, daytime & evening	35	16	
Inside bedrooms	Sleep disturbance, night-time	30	8	45
Outside bedrooms	Sleep disturbance – window open, night-time	45	8	60

For the assessment of project involved residences the adopted external criteria of 45 dBA or the level given by the SA EPA Guideline criteria, where higher, will be adopted. Effectively this becomes 45 dBA or background + 5 dBA, whichever is the higher.

4 BACKGROUND NOISE LEVELS

4.1 2004 Monitoring

Background noise monitoring for the original Crookwell 2 Wind Farm Noise Assessment was undertaken in May/June 2004. The same data and criteria were adopted for the Revised Crookwell 2 Wind Farm Noise Assessment in 2009.

The noise data was correlated to wind speed at a reference height of 10 m above ground level. This is no longer standard practice for current wind farm noise assessments, which are correlated to wind speed at a hub height reference.

4.2 2010 Monitoring

Subsequent measurements of background noise were undertaken for the proposed Crookwell 3 Wind Farm. These were correlated to hub-height wind speed, which is the current approach for establishing the noise limit curve.

Consideration of the cumulative noise from all three wind farms requires that we use a common reference height for wind speed. For these reasons, the receivers around Crookwell 2 and Crookwell 3 Wind Farms were grouped around background monitoring locations measured during the Crookwell 3 Noise Monitoring campaign. Full details of the monitoring and analysis have been presented to DP&E previously, (refer to SLR Report Number **40-1952-R1R5**).

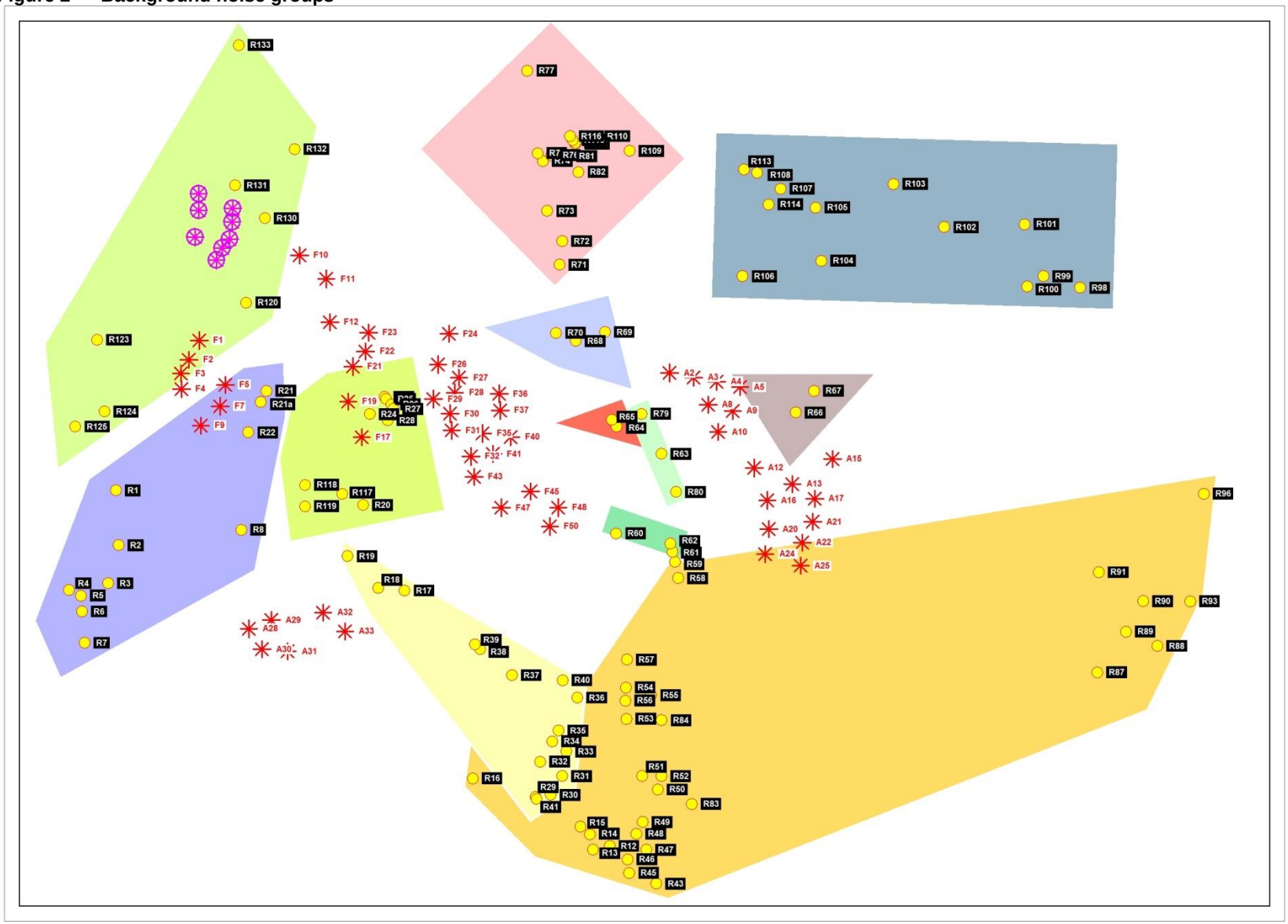
Table 5 shows the background noise at each monitoring location, regressed to a third order polynomial function.

Table 5 Background noise regression equations

Location	Representative of Locations	Derived Background Noise Equation
R8 Narangi	R1, R2, R3, R4, R5, R6, R7, R8, R21, R21a, R22	$-0.0201x^3 + 0.7209x^2 - 5.4402x + 35.805$
R18 Woolondilly	R17, R18, R19, R29, R30, R31, R32, R33, R34, R35, R36, R37, R38, R39, R40, R41	$-0.0143x^3 + 0.5536x^2 - 4.7402x + 39.782$
R20 Normaroo	R20, R23, R24, R25, R26, R27, R28, R117, R118, R119	$-0.0124x^3 + 0.4392x^2 - 2.7661x + 29.349$
R58 600 Woodhouselee Rd	R12, R13, R14, R15, R16, R43, R45, R46, R47, R48, R49, R50, R51, R52, R53, R54, R55, R56, R57, R58, R59, R83, R84, R87, R88, R89, R90, R91, R93, R96	$-0.0045x^3 + 0.2194x^2 - 1.5322x + 31.956$
R62 Cottonwood	R60, R61, R62	$-0.0135x^3 + 0.4454x^2 - 2.4834x + 29.187$
R64 Valdarmon Hill	R64, R65	$-0.0032x^3 + 0.0596x^2 + 2.2844x + 12.521$
R66 Little Vale	R66, R67	$-0.0038x^3 + 0.1588x^2 + 0.201x + 17.442$
R70 Snowgums	R68, R69, R70	$-0.0182x^3 + 0.5772x^2 - 3.0782x + 26.75$
R71 Lynross	R71, R72, R73, R74, R75, R76, R77, R81, R82, R109, R110, R111, R112, R115, R116	$-0.0083x^3 + 0.243x^2 + 0.3267x + 18.194$
R79 Leeston	R63, R79, R80	$0.001x^3 - 0.053x^2 + 2.4941x + 19.177$
R106 Rosedale	R97, R98, R99, R100, R101, R102, R103, R104, R105, R106, R107, R108, R113, R114	$-0.0085x^3 + 0.2644x^2 - 0.8076x + 32.476$
R120 Elmgrove*	R120, R123, R124, R125, R130, R131, R132, R133	$-0.0023x^3 + 0.1114x^2 - 0.2106x + 28.947$

* The background noise equation has been redefined for this group, see **Section 4.3**.

Figure 2 Background noise groups



4.3 Additional monitoring – Elmgrove

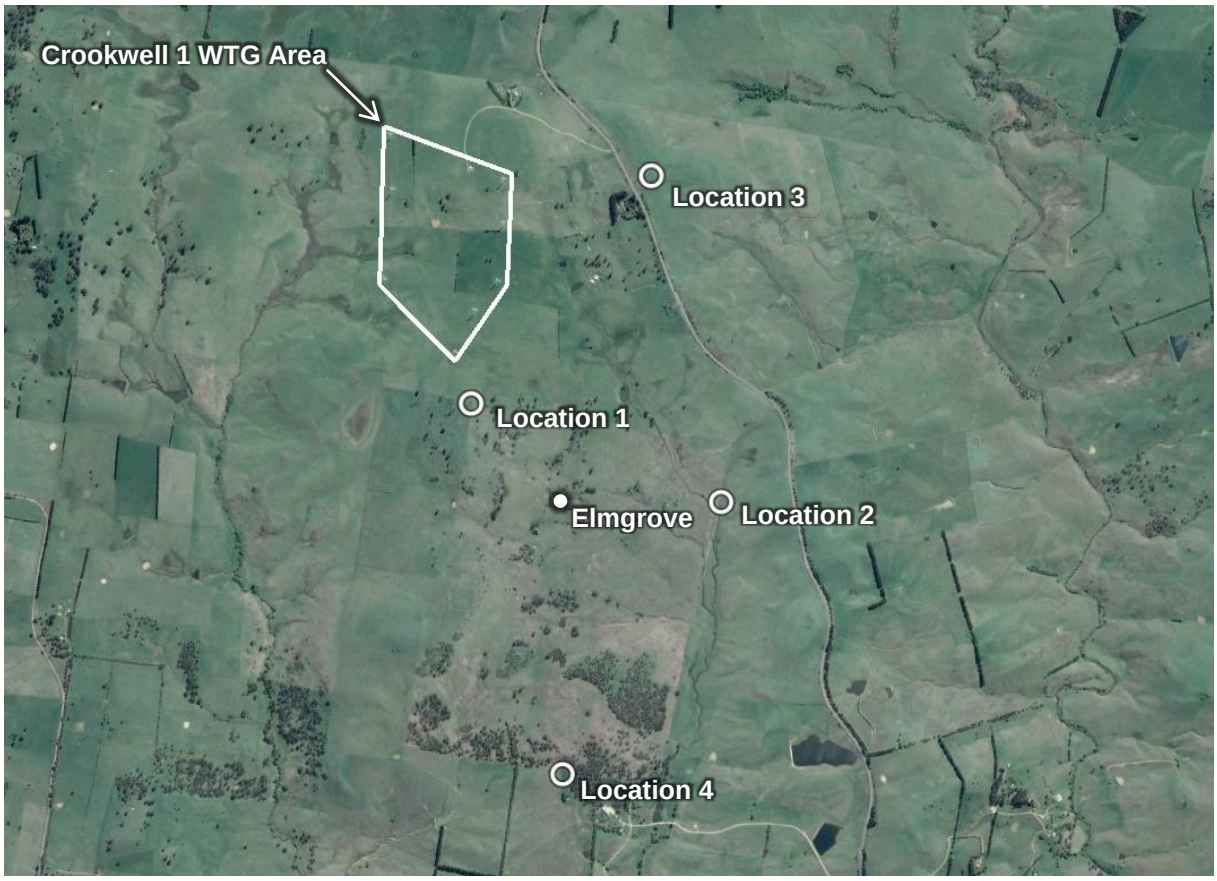
Additional noise monitoring has been undertaken around the outside perimeter of Elmgrove property. The purpose of the monitoring was to confirm the current noise emissions from Crookwell 1 Wind Farm, as well as provide a more recent estimate of the background noise environment for the Elmgrove property, where attempts to complete noise monitoring were rejected by the landowner.

The details of noise logging equipment are shown in **Table 6.** The approximate locations of the noise monitoring positions are shown in **Figure 3**, along with the area where Crookwell 1 Wind Farm is situated, and the property of Elmgrove itself. All noise loggers were calibrated before and after the measurements. No significant drift was observed.

Table 6 Noise logger details

Location Number	Make / Model	Serial	Deployed on
1	ARL 316	16-203-505	1/09/2015 11:17 AM
2	ARL 316	16-203-525	1/09/2015 12:40 AM
3	ARL 316	16-203-531	1/09/2015 11:13 AM
4	ARL 316	16-203-524	1/09/2015 12:49 AM

Figure 3 Noise monitoring locations around Elmgrove

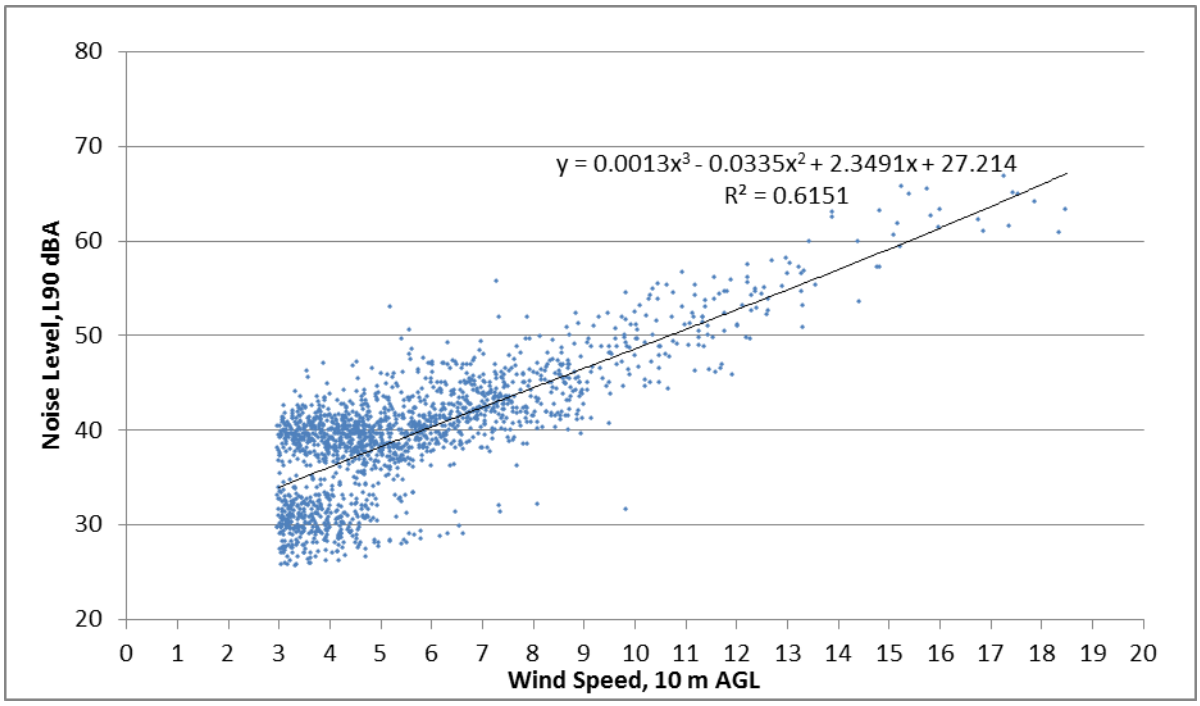


4.3.1 Crookwell 1 Wind Farm noise levels

The measured 10 minute L_{90} noise levels for Location 1 were correlated to wind speed (at 10 m above ground level for consistency with IEC61400-11 reporting) in order to provide validation of the noise model prediction of Crookwell 1 Wind Farm.

Figure 4 shows the measured data and the regressed line of best fit through the points.

Figure 4 Measured Crookwell 1 Wind Farm noise levels (Location 1)



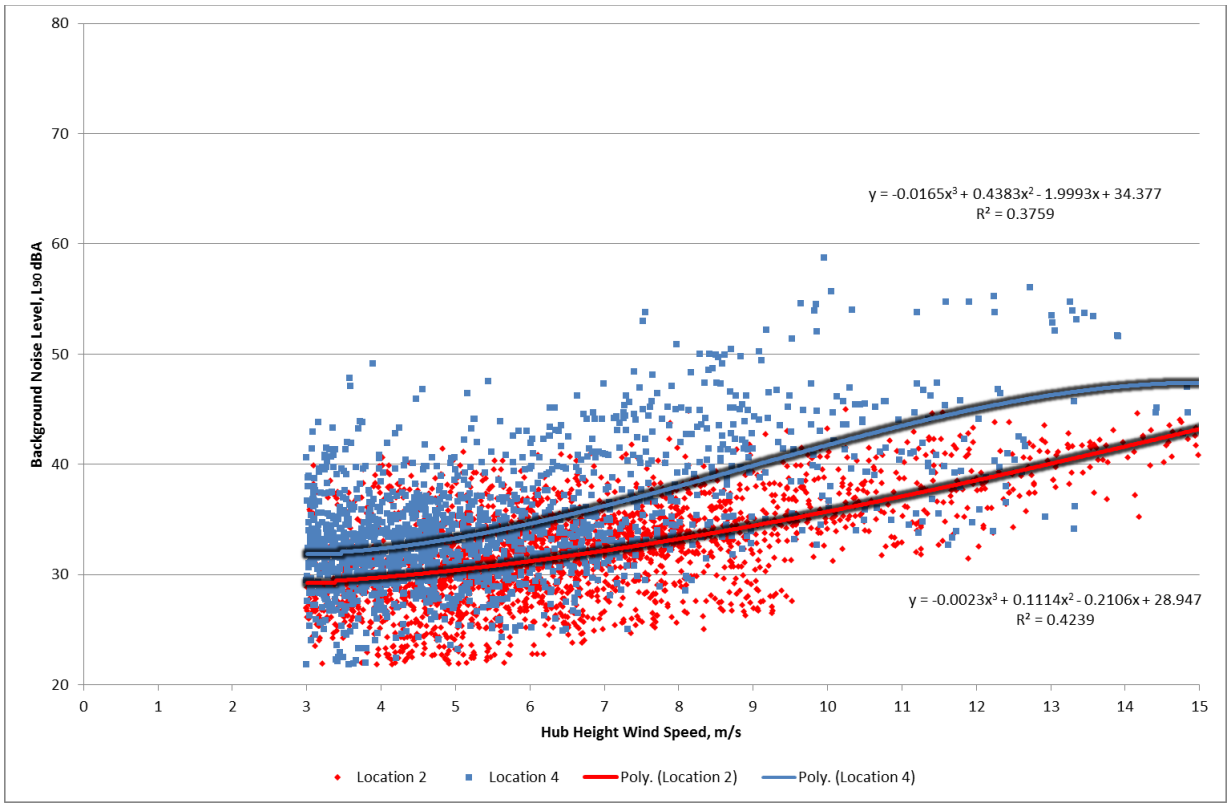
As a verification exercise, the regressed line at Location 1 was compared to the noise model prediction at the same location. The difference between the measured and modelled noise level was 0.1 dBA. The sound power curve for the Vestas V44 used in the original and revised assessments for Crookwell 2 Wind Farm were estimates based on the original noise assessment for Crookwell 1 Wind Farm (e.g. not confirmed via IEC 61400-11 testing). The noise modelling undertaken in this current assessment therefore confirms the validity of the Sound Power Level used for the Crookwell 1 WTGs.

4.3.2 Elmgrove Background Noise Levels

The measured background noise levels from Location 2 and Location 4 were correlated to hub height wind speed in order to estimate background noise levels for Elmgrove. The predicted noise level at these locations confirms that the influence of Crookwell 1 Wind Farm at these locations would be negligible.

Figure 5 shows the derived background noise curves from the two locations

Figure 5 Measured Background Noise Level vs Wind Speed



The lower of the two curves (from Location 2) has been adopted as being representative of the Elmgrove property, which provides for a conservative estimate.

5 OPERATIONAL NOISE CRITERIA

As discussed in **Section 4** the noise criteria for the project are based on the monitoring and analysis completed for the Crookwell 3 Wind Farm.

Table 7 Wind Farm Noise Criteria

Receiver Location / Group	Background Noise Regression Equation, L_{90} dBA	Noise Limit, dBA at wind Speed (m/s)								
		10m AGL	3	4	5	6	7	8	9	10
		94m HH	4.3	5.7	7.1	8.5	10.0	11.4	12.8	14.2
H8	$y = -0.0201x^3 + 0.7209x^2 - 5.4402x + 35.805$		35	35	35	35	38	43	47	51
H18	$y = -0.0143x^3 + 0.5536x^2 - 4.7402x + 39.782$		35	35	35	36	38	41	45	48
H20	$y = -0.0124x^3 + 0.4392x^2 - 2.7661x + 29.349$		35	35	35	35	38	41	45	48
H58	$y = -0.0045x^3 + 0.2194x^2 - 1.5322x + 31.956$		35	35	36	37	39	41	44	47
H62	$y = -0.0135x^3 + 0.4454x^2 - 2.4834x + 29.187$		35	35	35	37	40	44	47	50
H64	$y = -0.0032x^3 + 0.0596x^2 + 2.2844x + 12.521$		35	35	36	39	43	47	50	53
H66	$y = -0.0038x^3 + 0.1588x^2 + 0.201x + 17.442$		35	35	35	35	36	40	43	47
H70	$y = -0.0182x^3 + 0.5772x^2 - 3.0782x + 26.75$		35	35	35	36	40	45	49	52
H71	$y = -0.0083x^3 + 0.243x^2 + 0.3267x + 18.194$		35	35	35	39	42	46	50	53
H79	$y = 0.001x^3 - 0.053x^2 + 2.4941x + 19.177$		35	37	40	42	45	47	50	52
H106	$y = -0.0085x^3 + 0.2644x^2 - 0.8076x + 32.476$		38	40	42	45	47	50	53	55
H120	$y = -0.0023x^3 + 0.1114x^2 - 0.2106x + 28.947$		35	36	37	39	41	43	45	47

6 NOISE ASSESSMENT

6.1 Model Inputs

Table 8 and **Table 9** summarise the relevant turbine input data used for noise level prediction.

Table 8 WTG Manufacturers data

Make, model, power	Vestas V126 3.45 MW	GE 130 3.2 MW	Senvion M122 3.0 MW
Rotor diameter	126 m	130 m	122 m
Hub height	94 m	94 m	94 m
Cut-in wind speed	3 m/s	3 m/s	3 m/s
Rated wind speed	12 m/s	12 m/s	11 m/s
Rotor speed	5.3 -16.5rpm	7.6 -12.1rpm	5.6 -11.3 rpm
'Standard Mode' Sound Power Level, $L_{WA,ref\ 8\ m/s}$	105 dBA	106 dBA	103.9 dBA

Noise emissions for the proposed WTG have been determined or estimated by the manufacturers from measurements conducted in accordance with International Standard IEC 61400-11. Copies of the certification test or manufacturers documentation that give the sound power level variation with wind speed, frequency spectra and tonality assessment have been provided to SLR by Crookwell Development Pty Ltd and will be made available to the relevant authorities on request**.**

Table 9 WTG Sound Power Curves

Wind Turbine Model	Wind speed Vs (m/s) ref: 10 m AGL									
	3	4	5	6	7	8	9	10	11	12
Vestas V44 (CW1)*	89.0	91.1	93.3	95.4	97.4	99.5	101.6	103.6	105.7	107.8
Vestas V126 Mode 0	89.5	90.7	95.3	99.6	103.8	105.0	105.4	105.6	105.9	106.0
Vestas V126 Mode 2	89.5	90.7	95.3	99.4	101.7	102.6	103.4	104.1	104.5	104.5
Vestas V126 Mode 3	89.5	90.7	95.2	98.1	99.4	100.4	101.4	102.1	102.5	102.5
Vestas V126 Mode 4	89.5	90.7	94.9	96.8	97.9	98.9	99.9	100.6	101.0	101.0
Senvion M122	96.0	99.8	103.1	104.5	104.4	103.9	103.8	103.8		
GE 130 3.2 MW	95.9	98.3	102.7	105.6	106.0	106.0	106.0	106.0	106.0	106.0

* Derived from SLR measurements around Elmgrove. See **Section 4.3.1**

6.2 Assessment of Tonality and Infrasound

A part of IEC 61400-11 noise testing is to conduct an assessment of the audibility of any tones present.

The tonal audibility is assessed using the methodology outlined in *Joint Nordic Method Version 2 – Objective Method for Assessing the Audibility of Tones in Noise* (JNM2). It should be noted that JNM2 imposes a sliding scale tonality penalty commencing when the tonal audibility $\Delta L_{A,k}$ >4 dB, and reaches the maximum allowable penalty of +6 dB when the tonal audibility $\Delta L_{A,k}$ >10 dB. The absence of any audible tones when tested in the near field as per IEC 61400-11 requirements, ensures that no audible tones will be experienced in the far field at receptors.

The tonal audibility data $\Delta L_{A,k}$ values have been supplied by the WTG manufacturers as follows:

Table 10 Audible tonality $\Delta L_{A,k}$ assessment to IEC 61400-11

Wind Turbine Model	Wind speed Vs (Hub Height) (m/s)									
	7	8	9	10	11	12	13	14	15	16
Vestas V126	-0.49	-2.47	n/a	-2.5	-0.34	-0.99	-1.71	-2.64	n/a	n/a

The GE 130 Specification document states the following with regard to tonality:

> *The GE 130 At the reference measuring point R0 the 3.2-130 wind turbines have a value for tonality of $\Delta L_{A,k} < 4$ dB.*

The Senvion M122 has no statement with regard to tonality. Confirmation of the $\Delta L_{A,k}$ tests should be provided by the manufacturer prior to construction.

Infrasound is not tested as an obligatory part of IEC 61400-11. It is noted that, in general, modern WTG's do not exhibit significant infrasound emissions.

6.3 Noise Model Predictions

The results of ISO9613 noise modelling are presented in **Table 11** for all assessed receptor locations for the three investigated WTG models for Crookwell 2 and Crookwell 3 Wind Farms at a reference wind speed of 8 m/s (10m AGL). A copy of the assessment graphs for each WTG model over the range of wind speeds are presented in **Appendix A.** Tabulated results of the assessment are presented in **Appendix C.**

Table 11 Predicted Noise Levels – dBA Leq

Receiver Name	Vestas V126 Mode 0	GE130	Senvion M122	Receiver Name	Vestas V126 Mode 0	GE130	Senvion M122
R1	34.7	36.3	33.6	R64	39.6	41.1	38.6
R2	32.7	34.3	31.6	R65	39.2	40.7	38.2
R3	30.7	32.3	29.5	R66	41.2	42.5	40.1
R4	30.5	32.2	29.3	R67	38.4	39.8	37.4
R5	30.0	31.7	29.0	R68*	36.1	37.6	35.2
R6	29.9	31.5	28.9	R69	37.1	38.6	36.1
R7	30.5	32.1	29.2	R70	38.0	39.4	37.0
R8	36.6	38.1	35.6	R71	34.0	35.6	33.1
R12	27.6	29.3	25.9	R72	32.6	34.1	31.6
R13	27.6	29.3	25.9	R73	33.7	35.4	32.6
R14	28.0	29.7	26.3	R74	27.6	29.3	26.3
R15	28.1	29.9	26.6	R75	27.3	29.0	26.1
R16	26.0	27.7	24.6	R76	27.6	29.3	26.4
R17*	36.8	38.2	35.8	R77	24.8	26.5	23.3
R18*	38.7	40.1	37.6	R79*	38.9	40.3	37.8
R19	38.7	40.1	37.6	R80*	38.4	39.9	37.4
R20	38.6	40.1	37.6	R81	27.3	29.0	26.1
R21*	42.2	43.5	41.1	R82	27.7	29.3	26.5
R21a*	43.3	44.6	42.2	R83	27.8	29.5	26.4
R22*	42.8	44.1	41.7	R84	30.4	32.1	29.2

Receiver Name	Vestas V126 Mode 0	GE130	Senvion M122	Receiver Name	Vestas V126 Mode 0	GE130	Senvion M122
R23*	45.8	47.1	44.7	R87	24.0	25.8	22.6
R24*	46.7	48.0	45.6	R88	20.4	22.0	18.5
R25*	45.6	46.8	44.5	R89	21.7	23.3	20.0
R26*	45.5	46.8	44.4	R90	20.8	22.3	19.0
R27*	45.5	46.8	44.4	R91	21.8	23.5	20.1
R28*	45.4	46.7	44.3	R93	20.6	22.3	18.9
R29	28.3	30.0	26.8	R96	19.1	20.6	16.9
R30	28.4	30.1	26.9	R97	21.2	22.8	19.4
R31	25.8	27.4	24.3	R98	21.2	22.8	19.4
R32	27.4	29.1	26.0	R99	22.0	23.6	20.3
R33	29.5	31.2	28.2	R100	22.6	24.3	21.0
R34	30.9	32.6	29.5	R101	21.6	23.2	19.8
R35	30.2	31.9	28.9	R102	24.4	26.1	22.8
R36	30.2	32.0	29.1	R103	24.2	25.8	22.8
R37	32.2	33.9	31.2	R104	28.9	30.5	27.8
R38	33.2	34.8	32.2	R105	27.2	28.8	26.0
R39	33.9	35.5	32.9	R106	34.1	35.6	33.3
R40	29.5	31.1	28.3	R107	26.0	27.7	24.7
R41	28.3	30.0	26.8	R108	25.7	27.4	24.3
R43	21.8	23.4	19.9	R109	28.8	30.5	27.5
R45	26.9	28.6	25.1	R110	26.3	28.0	25.0
R46	27.2	28.9	25.5	R111	26.8	28.4	25.4
R47	27.4	29.1	25.7	R112	26.8	28.4	25.4
R48	27.8	29.5	26.2	R113	25.7	27.4	24.3
R49	28.1	29.8	26.5	R114	27.8	29.3	26.6
R50	28.3	30.1	27.0	R115	26.7	28.3	25.4
R51	28.3	30.0	26.9	R116	26.5	28.2	25.2
R52	28.1	29.8	26.8	R117	38.2	39.7	37.3
R53	29.9	31.6	28.6	R118	36.9	38.3	35.9
R54	30.5	32.1	29.3	R119	37.1	38.6	36.1
R55	31.0	32.7	29.9	R120	40.7	42.0	39.7
R56	30.4	32.1	29.2	R123	36.0	37.5	35.0
R57	31.6	33.3	30.6	R124	37.0	38.4	35.9
R58	35.5	37.0	34.6	R125	29.7	31.2	28.6
R59	36.6	38.1	35.6	R130	39.3	40.4	38.5
R60	35.8	37.4	34.8	R131	36.6	37.1	36.2
R61	37.2	38.8	36.3	R132	31.5	32.8	30.6
R62	37.2	38.7	36.2	R133	24.5	26.0	23.2
R63	40.5	41.9	39.5				

* Receptor is project involved

Some exceedances are predicted for the three investigated WTG models which would require mitigation optimisation.

It is anticipated that prior to construction the final selected WTG model for the project must be within the proposed turbine envelope size and a Revised Noise Impact Assessment will need to demonstrate a mitigated and complying layout (including any noise agreements).

For the purposes of this Noise Impact Assessment a mitigation layout utilising the Vestas V26 WTG is investigated to provide evidence that a compliant layout is achievable. The predicted exceedances for the Vestas V126 WTG layout, operating in Mode 0, are shown in **Table 12.**

Table 12 Predicted Exceedances Vestas V126 – Mode 0

Location	Exceedance at hub height wind speed, dBA										Maximum
	4.3	5.7	7.1	8.5	10.0	11.4	12.8	14.2	15.7	17.1	
R66				0.8	3.5	1.4					3.5
R67					0.8						0.8
R24*					0.6	1.7	2.1				2.1
R23*						0.8	1.2				1.2
R25*						0.6	1.0				1.0
R26*						0.5	1.0				1.0
R27*						0.5	0.9				0.9
R28*						0.4	0.9				0.9

* Receptor is project involved

6.4 Mitigation Layout

6.4.1 Sector Management vs Noise Management Mode

Modern wind farms are generally able to apply two types of noise mitigation to their operations, Sector Management (SM) and Noise Management Mode (NMM). It is important to differentiate between them as these two terms are often, incorrectly, used interchangeably.

Noise Management Mode is a firmware-locked operation mode of the WTG whereby the speed of the rotor is reduced to lessen the sound power generated by the blades. This is set by the turbine manufacturer and is fixed for each WTG. The WTG effectively becomes a fixed variant of the standard model, with a lower sound power output at higher wind speeds. Conservative noise modelling sometimes predicts a small exceedance of the criteria, for which NMM is employed to show that the criteria can be met. If post-construction measurements demonstrate that the wind farm already complies and that additional mitigation is not required then the firmware is not installed and the reduced noise mode is never used. Alternatively, if additional mitigation is required then the manufacturer will change firmware settings within each WTG to activate the reduced noise mode. The WTG then operates according to the lower sound power curve settings.

Sector Management is a method where individual turbines are switched off during certain meteorological conditions such as particular wind speed and directions (or ‘sectors’). This method is usually implemented when a particular combination of wind speeds and directions results in markedly higher noise levels at a receptor or the development of Special Audible Characteristics (SACs). Sector Management is controlled by the operator of the Wind Farm through the SCADA system as the conditions arise, just as turbines are turned on and off to respond to changing wind conditions on site to maximise the power output of the Wind Farm.

DP&E have expressed that their preference is to avoid use of SM as a basis for establishing compliance during the planning and approval process. SLR understands that this means NMM could be used for establishing compliance if necessary as using a WTG in NMM is akin to selecting a WTG model with a lower sound power level.

6.4.2 Noise Management Mode - mitigated layout

Information regarding Noise Management Mode for the GE130 and Senvion M122 models was not available at the time of compiling this report as these turbine models are relatively new and it is expected that subsequent testing should be able to show the possibility of operating in Noise Management Mode.

A mitigated layout was developed using Noise Management Mode of the Vestas V126 WTG, in which a number of WTGs were placed into Mode 3 and Mode 4 operation, which reduces the sound power output of those turbines compared to standard Mode 0 operation.

Table 13 shows a list of all WTGs and their mode for the mitigated scenario.

Table 13 Mitigated Turbine Layout

Turbine Name	Type	Turbine Name	Type
A5	Mode 4	F17	Mode 3
A9	Mode 4	F19	Mode 3
A10	Mode 3	F29	Mode 3
A12	Mode 4		
A13	Mode 4		
A15	Mode 4		

The predicted noise levels for the mitigated layout at the reference wind speed are shown in **Table 14**. Full results at all wind speeds are shown graphically in **Appendix A4** and tabulated in **Appendix C4.**

Table 14 Predicted Noise Levels – Mitigated Turbine Layout – Crookwell 1,2 & 3 – Leq dBA

Receiver Name	Vestas V126 (9 in NMM)	Receiver Name	Vestas V126 (9 in NMM)
R1	34.6	R64	38.6
R2	32.6	R65	38.2
R3	30.5	R66	37.5
R4	30.3	R67	34.8
R5	29.9	R68	35.5
R6	29.8	R69	36.2
R7	30.3	R70	37.7
R8	36.3	R71	33.5
R12	27.0	R72	31.8
R13	27.0	R73	33.2
R14	27.3	R74	27.0
R15	27.5	R75	26.8
R16	25.7	R76	27.0
R17	36.7	R77	24.3
R18	38.6	R79	37.4
R19	38.5	R80	36.8
R20	37.5	R81	26.6
R21	41.9	R82	27.0
R21a	43.1	R83	27.1

Receiver Name	Vestas V126 (9 in NMM)	Receiver Name	Vestas V126 (9 in NMM)
R22	42.6	R84	29.5
R23	44.5	R87	22.9
R24	43.7	R88	18.9
R25	44.2	R89	20.3
R26	44.2	R90	19.6
R27	44.2	R91	20.6
R28	43.6	R93	19.4
R29	27.8	R96	17.8
R30	27.8	R97	19.7
R31	25.3	R98	19.7
R32	27.0	R99	20.5
R33	28.9	R100	21.1
R34	30.3	R101	20.1
R35	29.6	R102	22.6
R36	29.6	R103	22.4
R37	31.9	R104	26.7
R38	33.0	R105	25.2
R39	33.7	R106	32.0
R40	29.0	R107	24.5
R41	27.8	R108	24.3
R43	21.1	R109	27.5
R45	26.2	R110	25.6
R46	26.6	R111	26.0
R47	26.7	R112	26.0
R48	27.1	R113	24.4
R49	27.4	R114	26.1
R50	27.6	R115	26.0
R51	27.4	R116	25.8
R52	27.3	R117	36.7
R53	29.0	R118	35.7
R54	29.8	R119	36.4
R55	30.1	R120	40.6
R56	29.5	R123	36.0
R57	30.7	R124	36.9
R58	34.8	R125	29.6
R59	35.4	R130	39.3
R60	34.9	R131	36.5
R61	35.9	R132	31.4
R62	35.8	R133	24.3
R63	38.1		

* Receptor is project involved

The mitigated layout (if required) is shown to comply to all receptors noise limits at all wind speeds.

7 ADDITIONAL MODELLING – SITE SPECIFIC METEOROLOGY

7.1 Feedback from DP&E

During discussions between the proponent and the NSW Department of Planning and Environment (DP&E) the potentially conservative assumption of all downwind propagation assumed in the noise model were highlighted. At the request of DP&E additional detailed modelling has been undertaken to determine a model result that better represents a more typical operation of the wind farm, including the range of varying meteorology that occurs throughout its typical operation.

In order to determine the range in noise levels that could typically occur, the noise modelling algorithm was required to be changed from the ISO 9613 Standard to the CONCAWE calculation method (as implemented by SoundPLAN 7.3 modelling software). The primary differences between these two algorithms are explained below.

7.1.1 ISO 9613

Traditionally, Wind Farm noise models in Australia have implemented *ISO9613-2 Acoustics – Attenuation of sound during propagation outdoors – Part 2 General Method of Calculation 1996.*

The noise modelling under ISO 9613 is known to be conservative in its underlying assumptions, namely, that all WTGs are considered to be propagating 'downwind'. From the standard itself:

> *Downwind propagation conditions for the method specified in this part in ISO 9613 are as specified in 5.4.3.3 of ISO 1996-2:1987, namely:*
>
> - *Wind direction within an angle of ±45° of the direction connecting the centre of the dominant sound source wind the centre of the specified receiver region, with the wind blowing from source to receiver, and*
>
> - *Wind speed between approximately 1m/s and 5 m/s, measured at a height of 3m to 11m above the ground*
>
> *The equations for calculating the average downwind sound pressure level $L_{AT}(DW)$ in this part of ISO 9613, including the equations for attenuation given in clause 7, are the average for meteorological conditions within these limits the term average here means the average over a short time interval, as defined in 3.1.*
>
> *These equations also hold, equivalently, for average propagation under a well-developed moderate ground-based temperature inversion, such as commonly occurs on clear, calm nights.*

The accuracy of ISO 9613 for wind farms in Australian conditions has been investigated and published in a research paper[1]. The ISO 9613 standard with hard ground (G=0) was found to slightly over-predict noise by typically 2 dBA to 3 dBA.

While the approach of modelling in ISO 9613 has been found to be acceptable for planning purposes, the results may not be representative of typical noise levels at all receptors, considering that downwind propagation from all WTGs to each receptor is not in reality possible for many receptors.

Furthermore, ISO 9613 provides a limited opportunity to examine the influence of meteorology on the final measured noise level.

[1] Comparison of predicted and measured wind farm noise levels and implications for assessments of new wind farms – Tom Evans and Jonathan Cooper – AECOM & Resonate Acoustics – Acoustics Australia Vol 40 No1 April 2012 pg 28

7.1.2 CONCAWE

The other noise model typically used in Australian noise assessments is *CONservation of Clean Air and Water in Europe (CONCAWE) – the propagation of noise for petroleum and petrochemical complexes to neighbouring communities report 4/81.*

The CONCAWE algorithm has inputs for meteorology and allows for a more detailed analysis of the influence of wind speed, wind direction and atmospheric stability on the final predicted noise level. From the same study[1], the CONCAWE algorithm with 'soft' Ground Absorption (G=1), showed similarly accurate results to the ISO 9613 methodology overall. Our detailed analysis has therefore used CONCAWE with soft ground.

7.1.2.1 CONCAWE meteorological categories

CONCAWE defines six meteorological categories based on a combination of Pasquill stability class (atmospheric stability can be representative of temperature gradient) and the vector wind speed which produces a varying effect on noise propagation. **Table 15** provides a breakdown of variables that determine CONCAWE's meteorological category.

Table 15 CONCAWE Enhancement Group

Meteorological Category	Pasquil Stability Category		
	A, B	**C, D, E**	**F, G**
1	V < -3.0	-	-
2	-3 < V < -0.5	V < -3.0	-
3	-0.5 < V < +0.5	-3 < V < -0.5	V < -3.0
4	0.5 < V < +3	-0.5 < V < +0.5	-3 < V < -0.5
5	V > +3.0	0.5 < V < +3	-0.5 < V < +0.5
6	-	V > +3.0	0.5 < V < +3

7.2 Modelling wind farm noise over of a range of conditions

7.2.1 Full range of meteorology

The meteorological parameters of wind speed, wind direction and atmospheric stability were iterated across a full range and the noise model run for each condition in order to determine a predicted range of noise levels due to meteorology. **Table 16** specifies the parameters varied in the CONCAWE noise model predictions and the number of resultant permutations.

Table 16 Meteorological Variables

Parameter	Options	Number of Options
Wind Speed, m/s	3, 4, 5, 6, 7, 8, 9, 10, 11, 12	10
Wind Direction (octant)	N, NE, E, SE, S, SW, W, NW	8
Pasquill Stability Class	A, D, F	3
TOTAL		**240**

With 240 individual calculations, there were 240 results for each receptor, each representing a given condition.

The modelled WTG was the Vestas V126.

7.2.2 Noise directivity of WTGs

In addition to the octant wind directions that will affect noise propagation in different directions it was necessary to account for the directivity of WTG's as a noise source. Traditional noise modelling of WTGs assume a point noise source located at the hub with a sound power level equivalent to that determined from noise testing to IEC 61400-11, which is in the downwind direction.

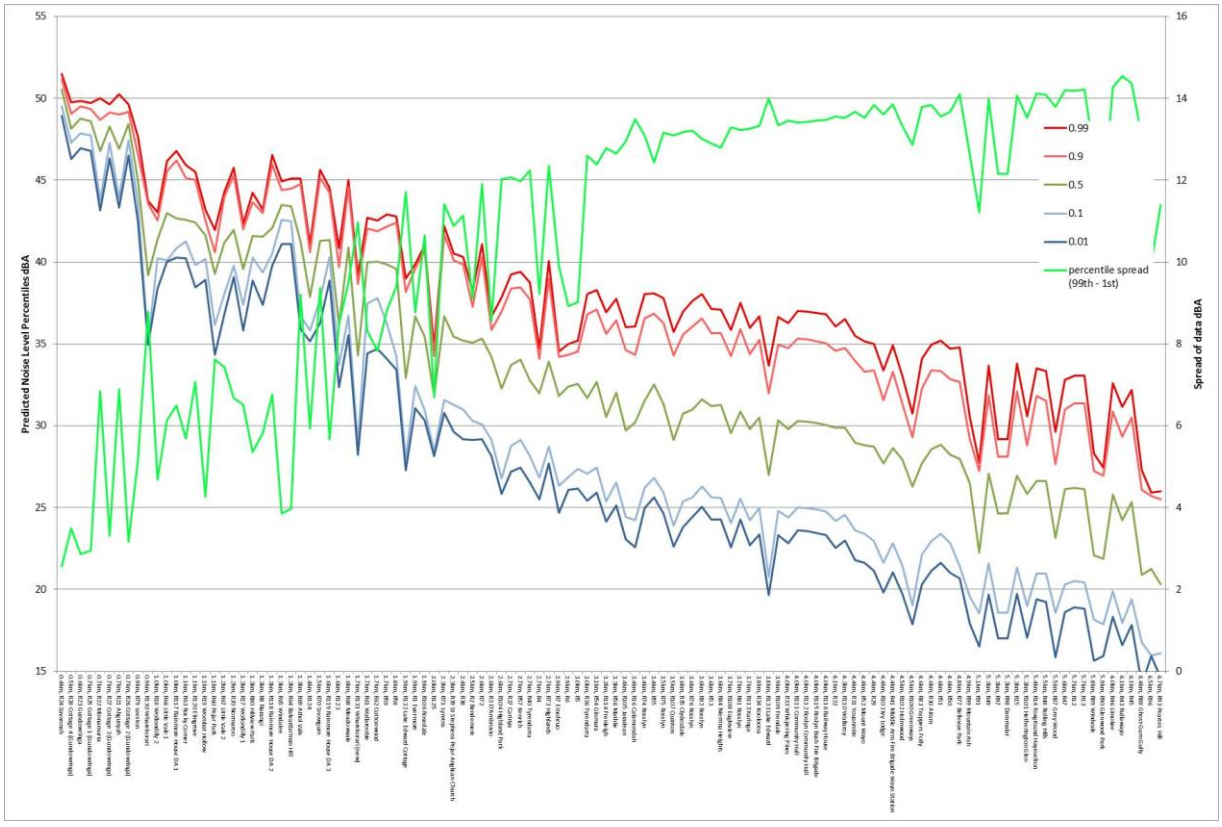
A review of documented (ref: (Friman, 2011), (Cooper & Evans, 2012)) directivity data measured around several large wind turbines showed a relatively consistent trend where overall dBA noise levels to the crosswind sides of the WTG (eg at 90 and 270 degrees) were up to 3 dB lower than directly downwind. Directly upwind was between 1 dB to 2 dB lower than downwind. An appropriate interpolated polar directivity chart for WTGs was built within SoundPLAN and subsequently the global directivity was rotated in accordance with the octant wind directions and saved as individual noise source files to be substituted for each wind direction run.

7.3 Influence of meteorology on wind farm noise propagation and directivity

The objective of this analysis is to evaluate the influence of meteorology on the noise propagation and directivity from the wind farms in isolation of WTG sound power level in order to gauge the magnitude of variance these effects have and hence estimate the degree of conservatism of conventional ISO 9613 modelling.

The spread of predicted L_{eq} noise level across the 240 permutations of meteorological conditions is presented by statistical percentiles in **Figure 6** for each receptor, ordered in increasing distance from the nearest WTG associated with Crookwell 2 or Crookwell 3 wind farms. The magnitude of the spread of results is indicated by the percentile spread, being the difference between the highest (99th percentile) and the lowest (1st percentile) noise level.

Figure 6 CONCAWE predicted noise level over full range of meteorology



The results indicate that at receptors closest to WTGs the difference due to meteorological condition is only minimal, as the distance from the wind farm increases, so too does the spread of predicted noise levels. At distances of:

- approximately at 0.5 km the percentile spread is approximately 3 dBA
- approximately 1 km the percentile spread is approximately 6 dBA
- approximately 2 km the percentile spread is approximately 10 dBA
- approximately 5km to 6km the percentile spread is approximately 14 dBA

Whilst the trend in results may have been intuitively expected the accuracy of CONCAWE predictions of WTG noise under such specific meteorological conditions hasn't been extensively verified.

The paper presented at the Acoustics 2012 conference in Freemantle, *Influence of wind direction on noise emission and propagation from wind turbines* (Cooper & Evans, 2012), examined data collected at a range of distances and under differing conditions from a modern wind farm. One relevant summary drawn in the paper was that for receiver locations typically at 1000 metres of more from the nearest turbines the noise level from a turbine will be highest under downwind conditions, typically 6 dBA to 7 dBA higher than under upwind conditions. This aligns very closely with the percentile spread determined from the predictions at the same distance.

7.4 Predicted wind farm noise over a year of typical meteorology

The objective of this analysis is to evaluate the spread of predicted wind farm noise levels at each receptor for a full year of typical operations. This analysis includes;

- the influence of meteorology on noise propagation
- the noise directivity of a typical WTG
- the Sound Power Level curve of the Vestas V126 WTG

To achieve this a full year of wind data, measured on site in 2014, was used to define the meteorological parameters. The wind data is collected in 10 minute intervals and hence there are over 52,000 intervals that define the entire year. A predicted level at each receptor was derived for each interval.

7.4.1 Wind speed and direction

Wind speed and direction data is collected at the wind farm monitoring masts. The relationship between wind speeds at differing heights above the ground can be approximated to:

$$\frac{V_h}{V_g} = \left(\frac{h}{h_g}\right)^{\alpha}$$

$where$

$V_h = Velocity\ at\ height\ h$

$V_g = Velocity\ at\ ground\ level$

$\alpha = Wind\ Shear\ Exponent$

For each 10 minute period, the average shear exponent was determined and used to derive the wind speed at 10 m AGL, which is used to determine the Sound Power Level of the WTGs as well as the vector wind speed component between each WTG and each receptor.

7.4.2 Atmospheric Stability

Pasquill Stability Class was estimated using on the Islitzer and Slade method, using the standard deviation of the horizontal wind direction, $\sigma_{\theta,}$ for each 10 minute period. It should be noted that the method is normally based on σ_θ at 10 m AGL however as this was not available from the wind monitoring on site, the 20 m height was used. As variations in the wind direction would likely be higher at 10 m or below due to local turbulence sources, this is considered a reasonable approach as it would tend to slightly over-estimate the prevalence of stable atmospheres.

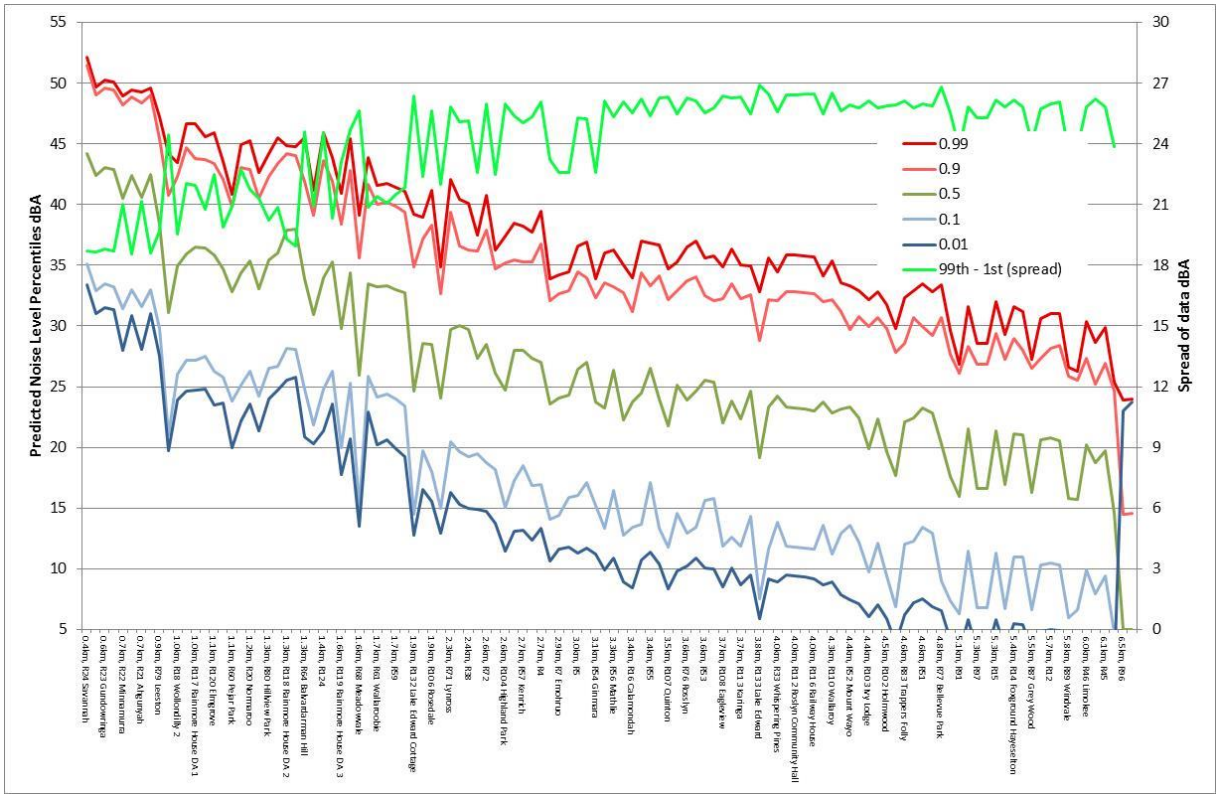
Table 17 Pasquill Stability Class from Sigma Theta - Islitzer and Slade (1968)

Pasquill Stability Class	σ_θ at 10 m, degrees
A	$\sigma_\theta > 22.5$
B	$22.5 \geq \sigma_\theta > 17.5$
C	$17.5 \geq \sigma_\theta > 12.5$
D	$12.5 \geq \sigma_\theta > 7.5$
E	$7.5 \geq \sigma_\theta > 3.75$
F	$3.75 \geq \sigma_\theta > 2.0$
G	$2.0 \geq \sigma_\theta$

For each 10 minute interval, the 10 m wind speed (resolved to nearest integer), 20 m wind direction and Pasquill Stability Class was defined and the nearest matching calculation result (from the 240 permutations) was determined.

The spread of predicted L_{eq} noise level over typical operations for a full year of meteorological parameters is presented by statistical percentiles in **Figure 7** for each receptor, ordered in increasing distance from the nearest WTG associated with Crookwell 2 or Crookwell 3 wind farms.

Figure 7 CONCAWE predicted noise over a year of meteorology



The results indicate that the spread of predicted noise levels due to combined effects of meteorological propagation enhancement, WTG directivity and Sound power Level over the course of a full year are approximately:

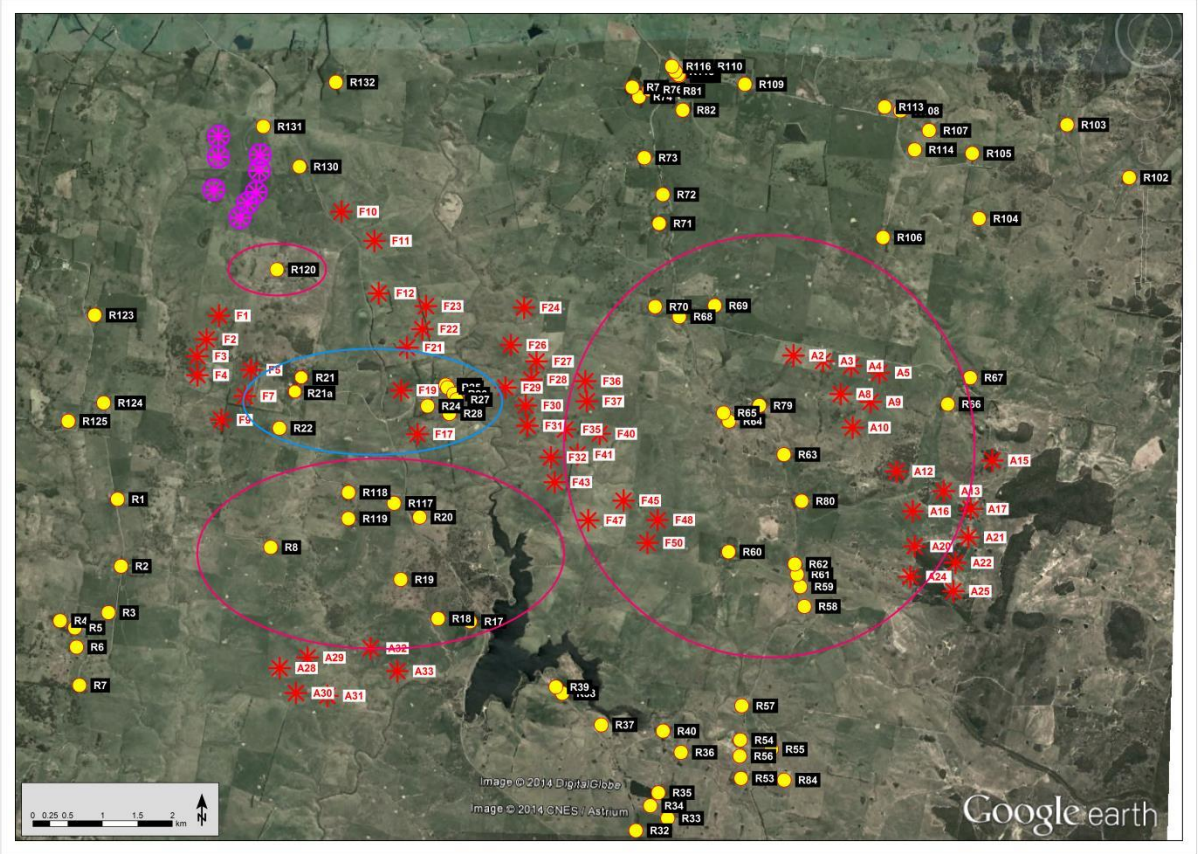
- approximately at 0.5 km the percentile spread is approximately 19 dBA
- approximately 1 km the percentile spread is between 19 dBA and 24 dBA
- approximately 2 km the percentile spread is between 22 dBA and 26 dBA
- approximately 5km to 6km the percentile spread is approximately 26 dBA

7.5 Site Specific Meteorology Summary

Some receptors in the project area have WTGs at similar proximity from multiple octant directions (eg contributing WTGs span an arc of approaching 180 degree's or greater). It is not possible for these to experience downwind exposure from each WTG simultaneously. For these receptors it is expected that the ISO9613 modelling approach, which assumes downwind propagation from all WTGs, is overly conservative.

Such receptors are indicated in **Figure 8** where project involved receptors at closer proximity to WTGs are highlighted in the blue ellipse and non-involved receptors at greater distance from WTGs are highlighted in the red ellipses.

Figure 8 Receptors at which ISO9613 predicts conservatively high noise levels



7.5.1 Project involved receptors

For project involved receptors that are closer to WTGs (eg between 0.5km to 1 km) and predicted wind farm noise levels are relatively high (eg 40 dBA to 45 dBA), the variability in WTG noise levels due to meteorology at this proximity is relatively minor. The elevation of the sources, the number of sources and their proximity to the receptors lead to a reduced noise level variance due to the influence of meteorology according to the CONCAWE model analysis.

For these receptors it is anticipated that the ISO9613 modelling approach is potentially overly conservative by 1 dBA to 2 dBA. That is to say that the highest actual wind farm L_{eq} noise level is potentially up to 1 dBA to 2 dBA lower than that indicated by the ISO 9613 modelling and that due to the variation in meteorological conditions and the varying operation of the wind farm, noise levels at these receptors for some conditions are potentially up to 19 dBA lower than the highest predicted wind farm L_{eq}.

7.5.2 Non-involved receptors

For some non-involved receptors, which are at greater distances from the wind farm (e.g. 1 km to 3 km), have similar proximity to WTGs from multiple octant directions, (refer receptors highlighted in the red ellipses in **Figure 8).**

For these receptors it is expected that the ISO9613 modelling approach is potentially overly conservative by 2 dBA to 3 dBA. That is to say that the highest actual wind farm L_{eq} noise level is potentially up to 2 dBA to 3 dBA lower than that indicated by the ISO 9613 modelling and that due to the variation in meteorological conditions and the varying operation of the wind farm, noise levels at these receptors for some conditions are potentially up to 19 dBA to 26 dBA lower than the highest predicted wind farm L_{eq}.

In summary the detailed evaluation of typical wind farm operations over a year of varying meteorology indicates that some receptors which have WTGs at similar proximity from multiple octant directions (eg contributing WTGs span an arc of approaching 180 degree's or greater) are likely to be receive noise levels between 1 dBA and 3 dBA lower than that indicated by ISO9613 model results.

Furthermore, the wind farm noise levels are expected to vary quite significantly over the course of a year (19 dBA to 26 dBA) due to combined effects of meteorological propagation enhancement, WTG directivity and WTG Sound Power Level.

8 CONCLUSION

SLR has conducted a noise impact assessment of the proposed modification to Crookwell 2 Wind Farm with up to 33 turbines, including the influence of the existing Crookwell 1 Wind Farm and proposed Crookwell 3 Wind Farms with up to 23 turbines.

Additional monitoring has been undertaken at four locations in the vicinity surrounding the Elmgrove property. The purpose of the monitoring was to confirm the noise level produced by Crookwell 1 Wind Farm is accurately implemented in the noise model as well as to provide an estimate as to the background noise level at the Elmgrove property where no previous monitoring has been able to be completed due to access constraints.

Modelling using the standard ISO9613 methodology was completed for three alternative WTG models, the results indicating that the wind farm may exceed the relevant noise limits at some receptors.

A mitigation investigation was undertaken for the Vestas V126 WTG model utilising Noise Management Mode. Compliance at all receptors can be achieved using a mitigated layout where some WTGs are operated in Noise Management Modes. It should be noted that when WTGs are configured in Noise Management Mode they are always operating in the reduced noise mode, which is distinctly different from Sector Management. The final configuration of Noise Management Mode WTGs will be determined from the result of noise monitoring undertaken post-construction of the wind farm.

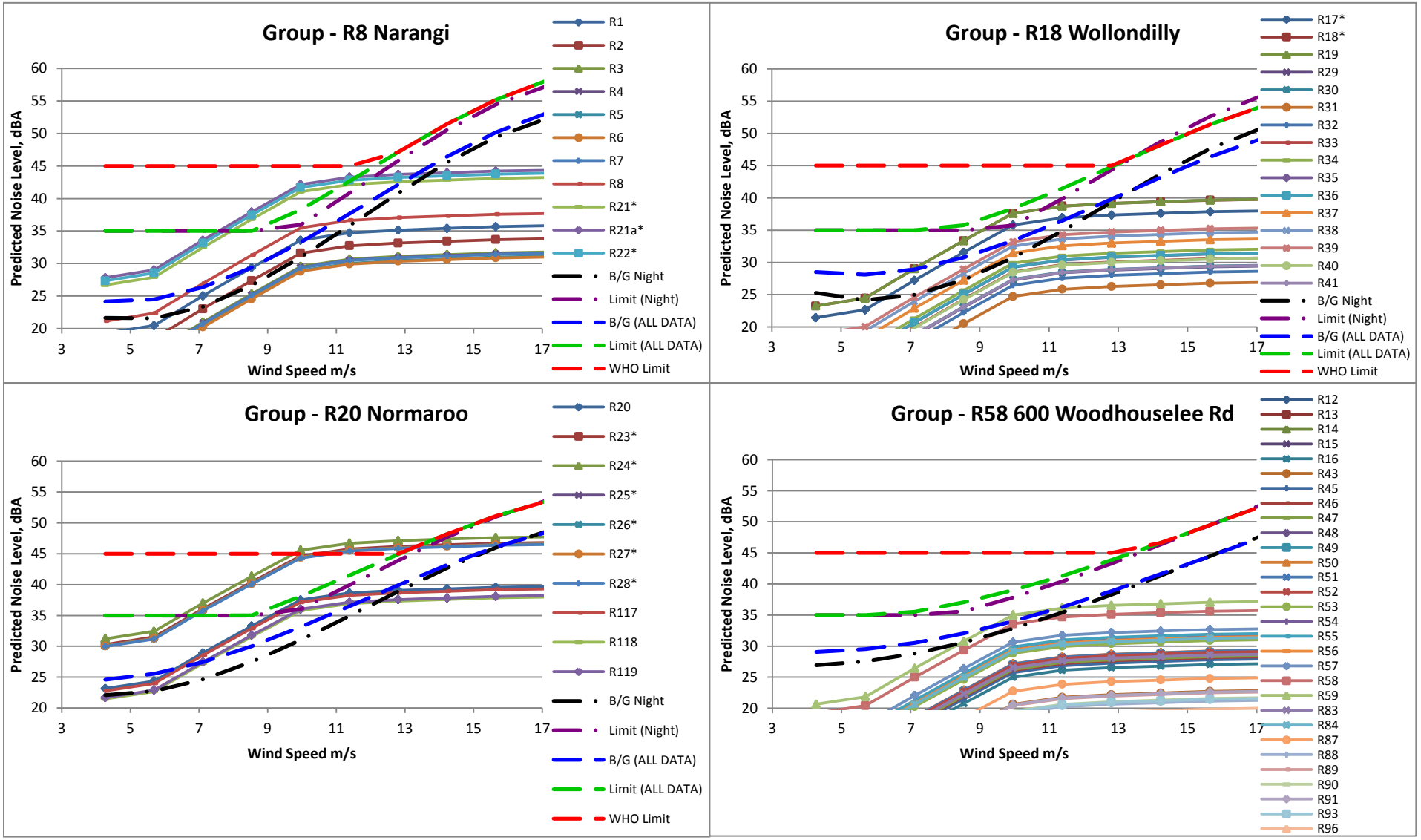
A potential limitation of the ISO9613 methodology is that it assumes downwind propagation from each source to each receptor, which is an unrealistic over-simplification of what is able to occur to some receptors.

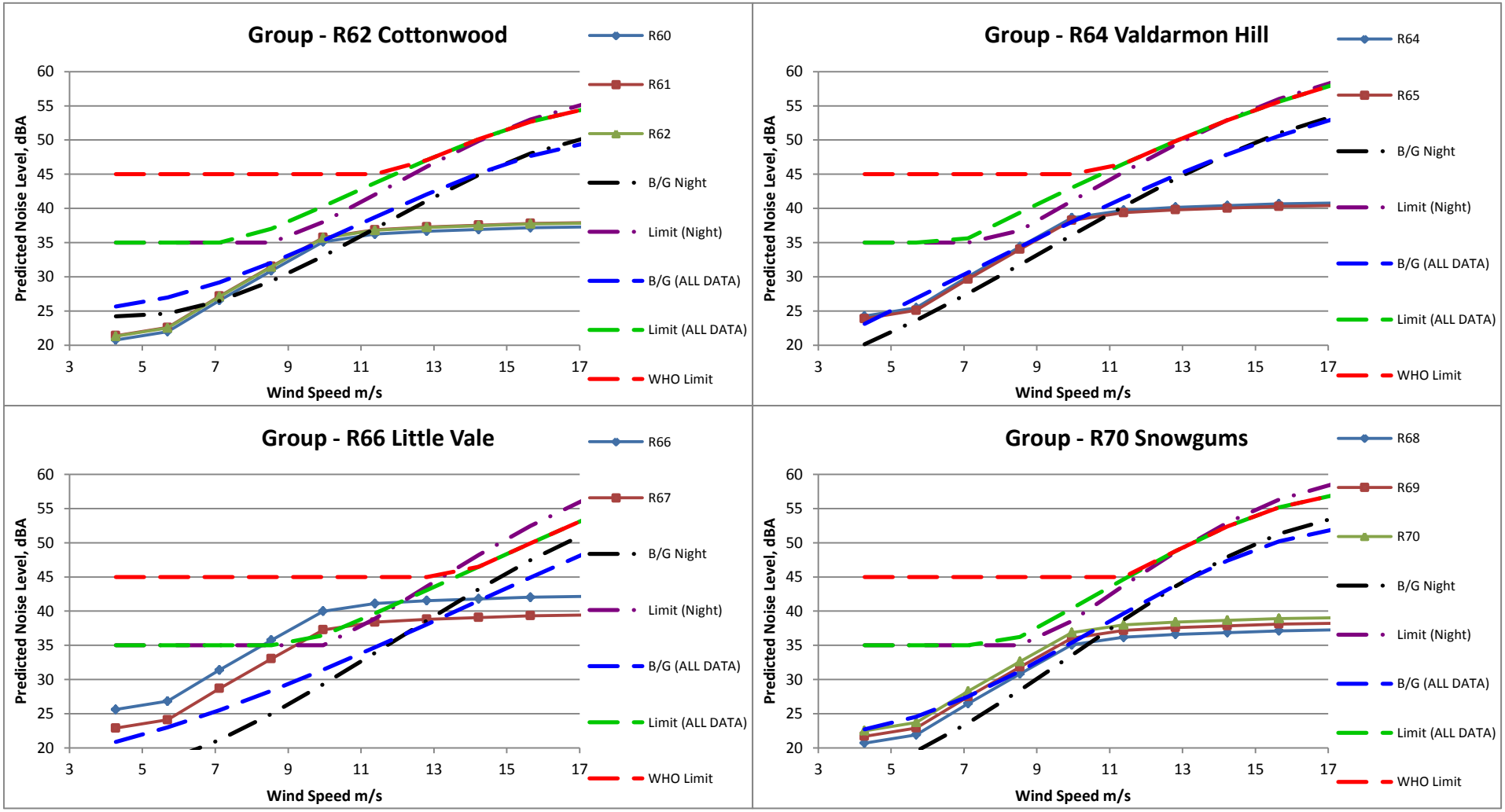
At the request of the Department of Planning and Environment a detailed predictive analysis was completed using a more realistic evaluation of the effect of variation of meteorology on noise from the wind farm. The investigation implemented a full range of meteorological conditions that effect the emission and propagation of noise from WTGs as implemented in CONCAWE. The investigation found that all receptors would experience variations in WTG noise level throughout the full operating range and a typical year.

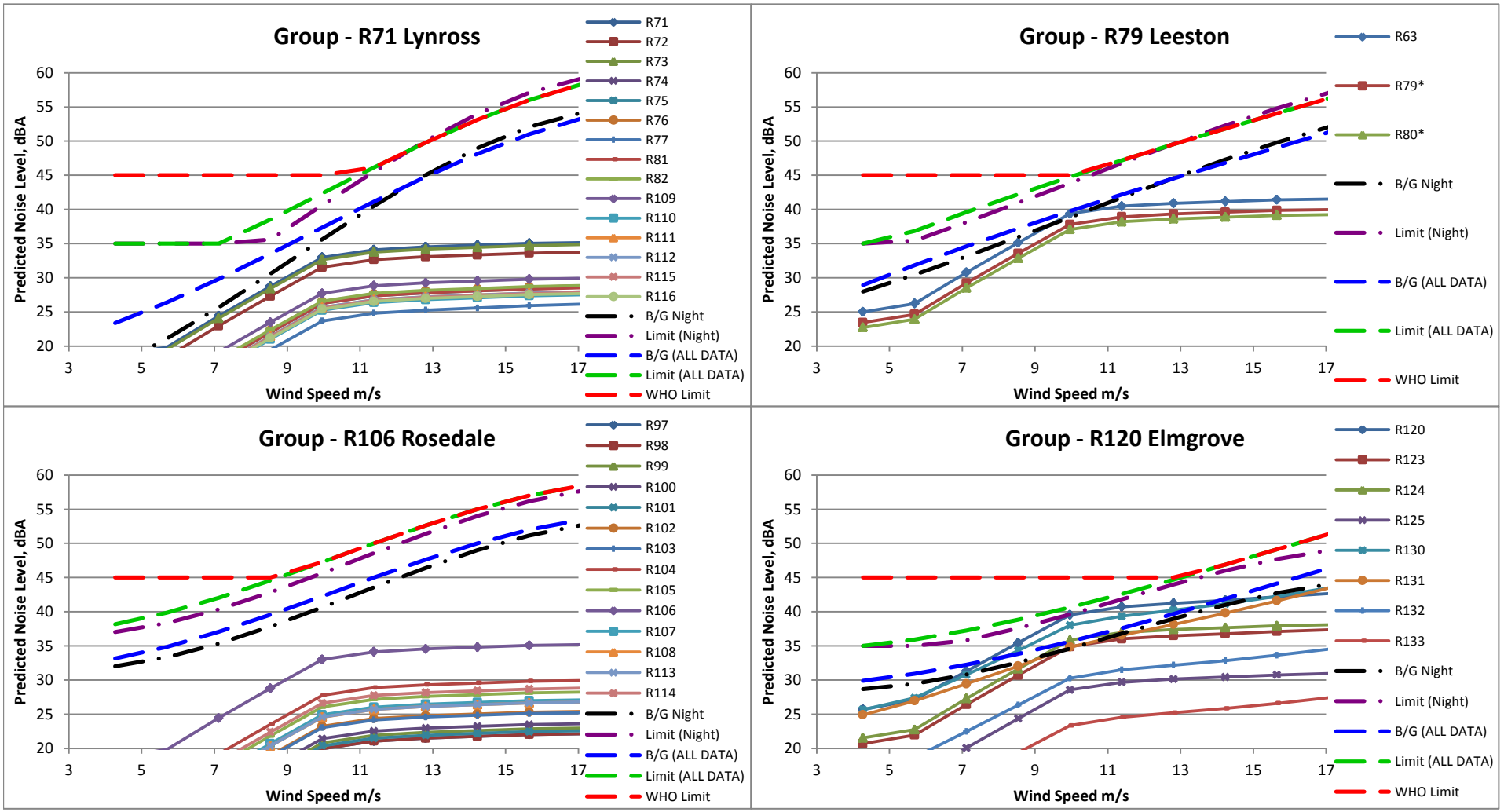
For project involved receptors that are closer to WTGs (eg between 0.5km to 1 km) and predicted wind farm noise levels are relatively high (eg 40 dBA to 45 dBA), the variability in WTG noise levels due to meteorology is typically in the range 3 dBA to 6 dBA. It is hypothesised that where such receptors have WTGs at similar proximity from multiple octant directions then the ISO9613 modelling approach, which assumes downwind propagation form all WTGs, is potentially overly conservative by 1 dBA to 2 dBA. That is to say that the highest predicted wind farm L_{eq} noise level is potentially up to 1 dBA to 2 dBA lower than that indicated by the ISO 9613 modelling. Furthermore, when considering combined effects of meteorological propagation enhancement, WTG directivity and WTG Sound Power Level the variation in wind farm noise levels can be up to 19 dBA lower than the highest predicted wind farm L_{eq}.

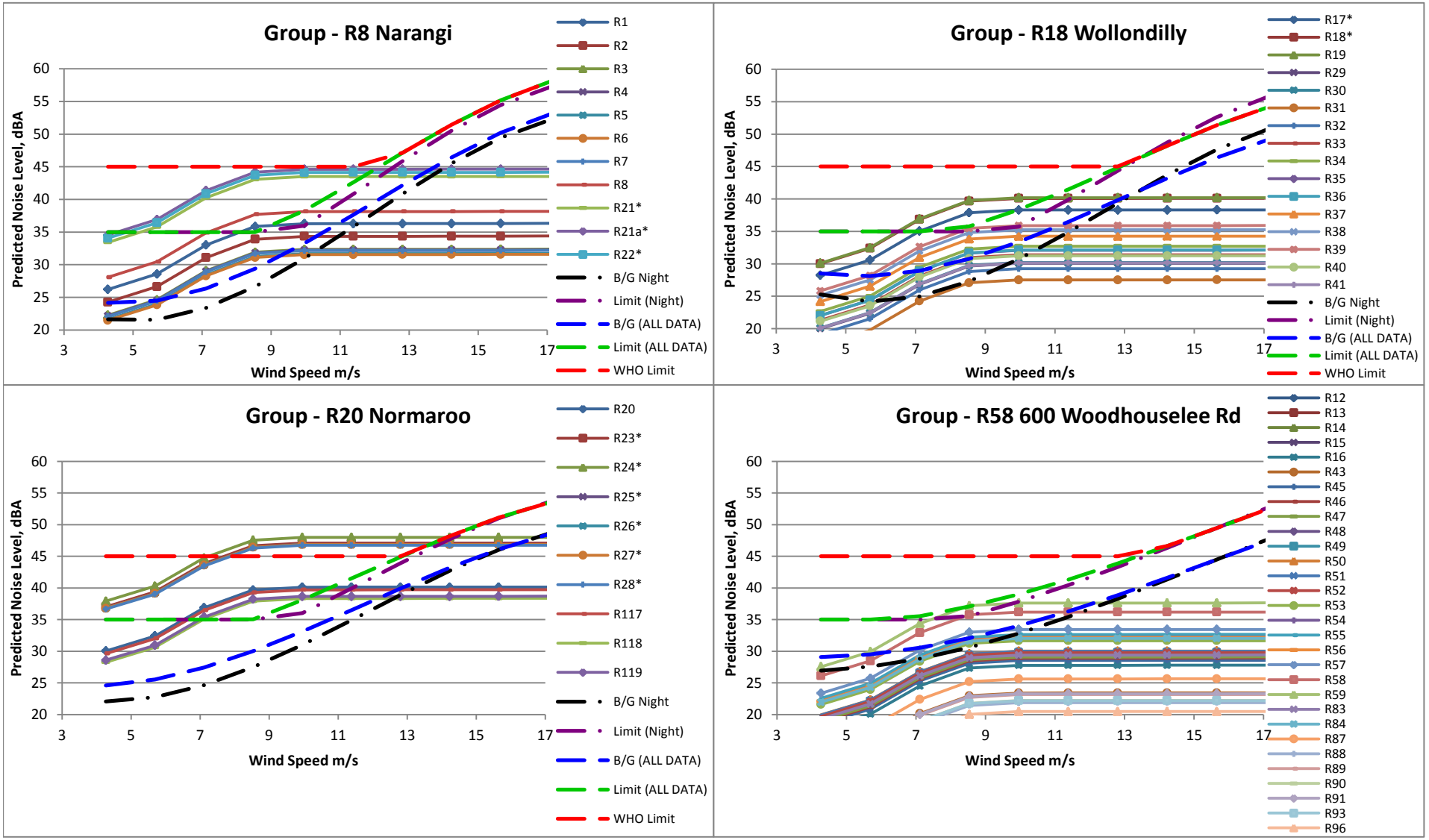
The further away receptors are positioned from WTGs the greater the variability in WTG noise level throughout the full operating range and a typical year. For some non-involved receptors, which are at greater distances from the wind farm (e.g. 1 km to 3 km), which have similar proximity to WTGs from multiple octant directions then the ISO9613 modelling approach is potentially overly conservative by 2 dBA to 3 dBA. That is to say that the highest predicted wind farm L_{eq} noise level is potentially up to 2 dBA to 3 dBA lower than that indicated by the ISO 9613 modelling. Furthermore, when considering combined effects of meteorological propagation enhancement, WTG directivity and WTG Sound Power Level the variation in wind farm noise levels can be up to 26 dBA lower than the highest predicted wind farm L_{eq}.

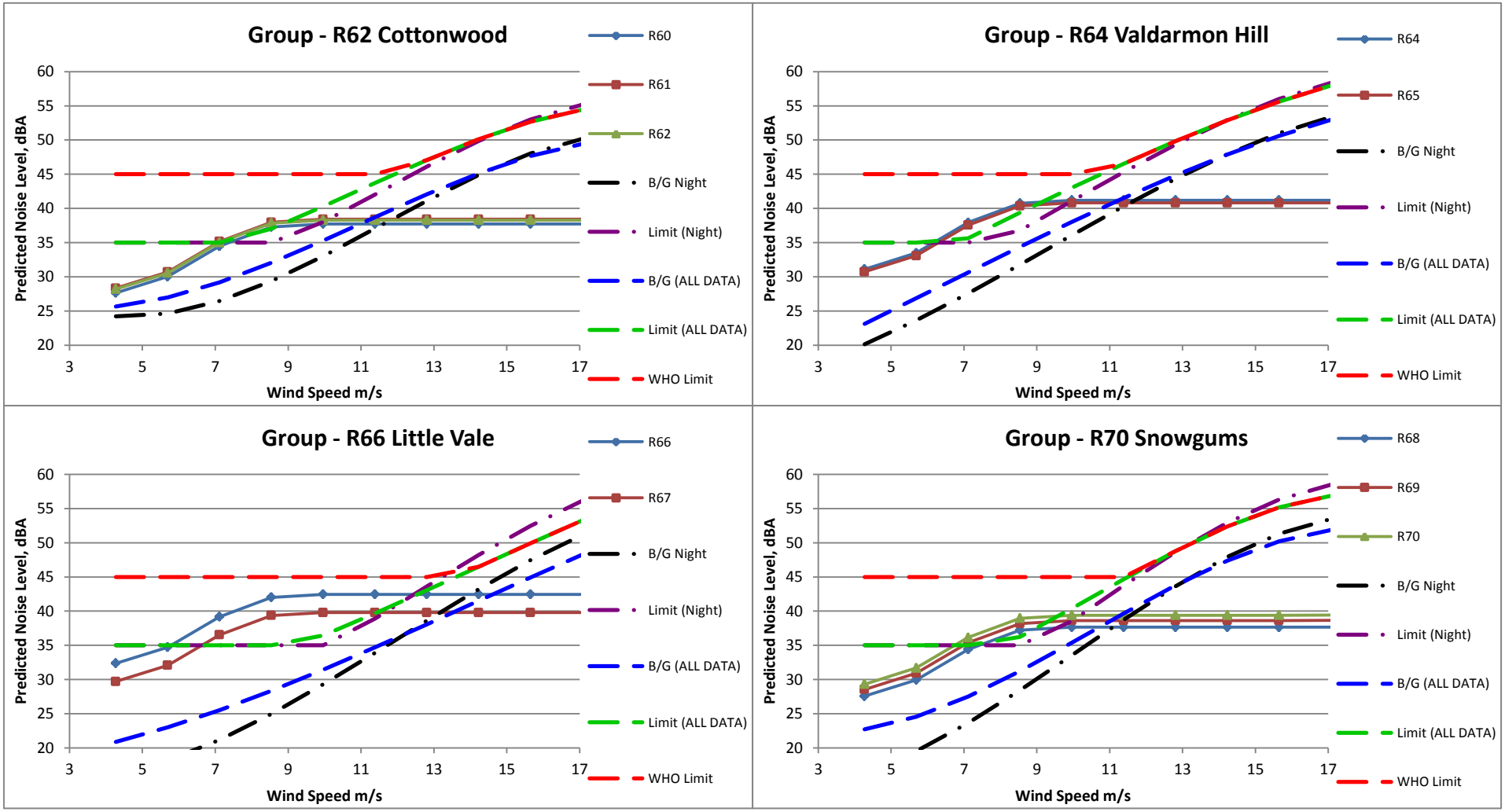
APPENDIX A - WIND FARM ASSESSMENT CURVES

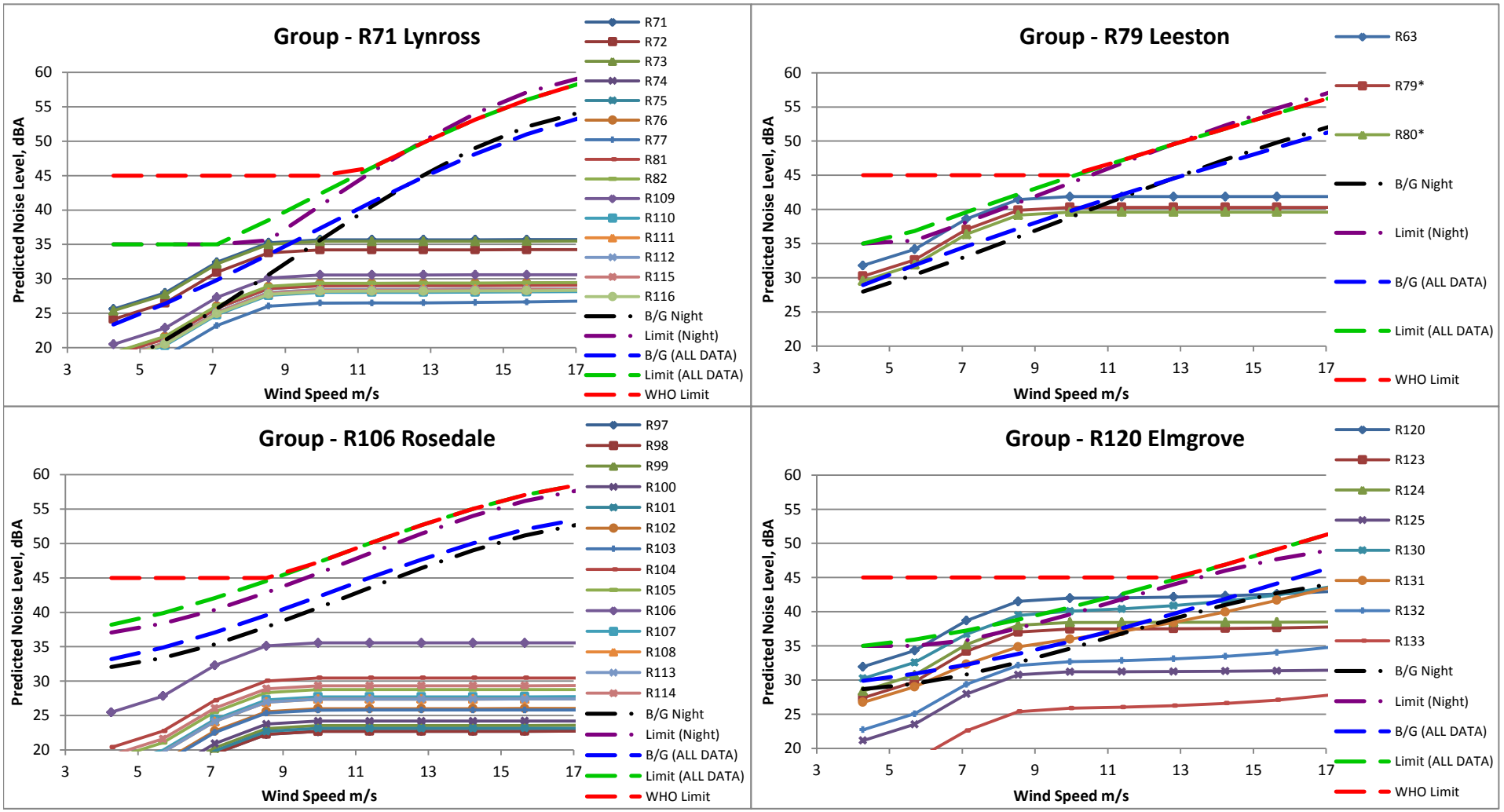

Group - R8 Narangi
Predicted Noise Level, dBA
Wind Speed m/s
R1
R2
R3
R4
R5
R6
R7
R8
R21*
R21a*
R22*
B/G Night
Limit (Night)
B/G (ALL DATA)
Limit (ALL DATA)
WHO Limit
Group - R18 Wollondilly
Predicted Noise Level, dBA
Wind Speed m/s
R17*
R18*
R19
R29
R30
R31
R32
R33
R34
R35
R36
R37
R38
R39
R40
R41
B/G Night
Limit (Night)
B/G (ALL DATA)
Limit (ALL DATA)
WHO Limit
Group - R20 Normaroo
Predicted Noise Level, dBA
Wind Speed m/s
R20
R23*
R24*
R25*
R26*
R27*
R28*
R117
R118
R119
B/G Night
Limit (Night)
B/G (ALL DATA)
Limit (ALL DATA)
WHO Limit
Group - R58 600 Woodhouselee Rd
Predicted Noise Level, dBA
Wind Speed m/s
R12
R13
R14
R15
R16
R43
R45
R46
R47
R48
R49
R50
R51
R52
R53
R54
R55
R56
R57
R58
R59
R83
R84
R87
R88
R89
R90
R91
R93
R96

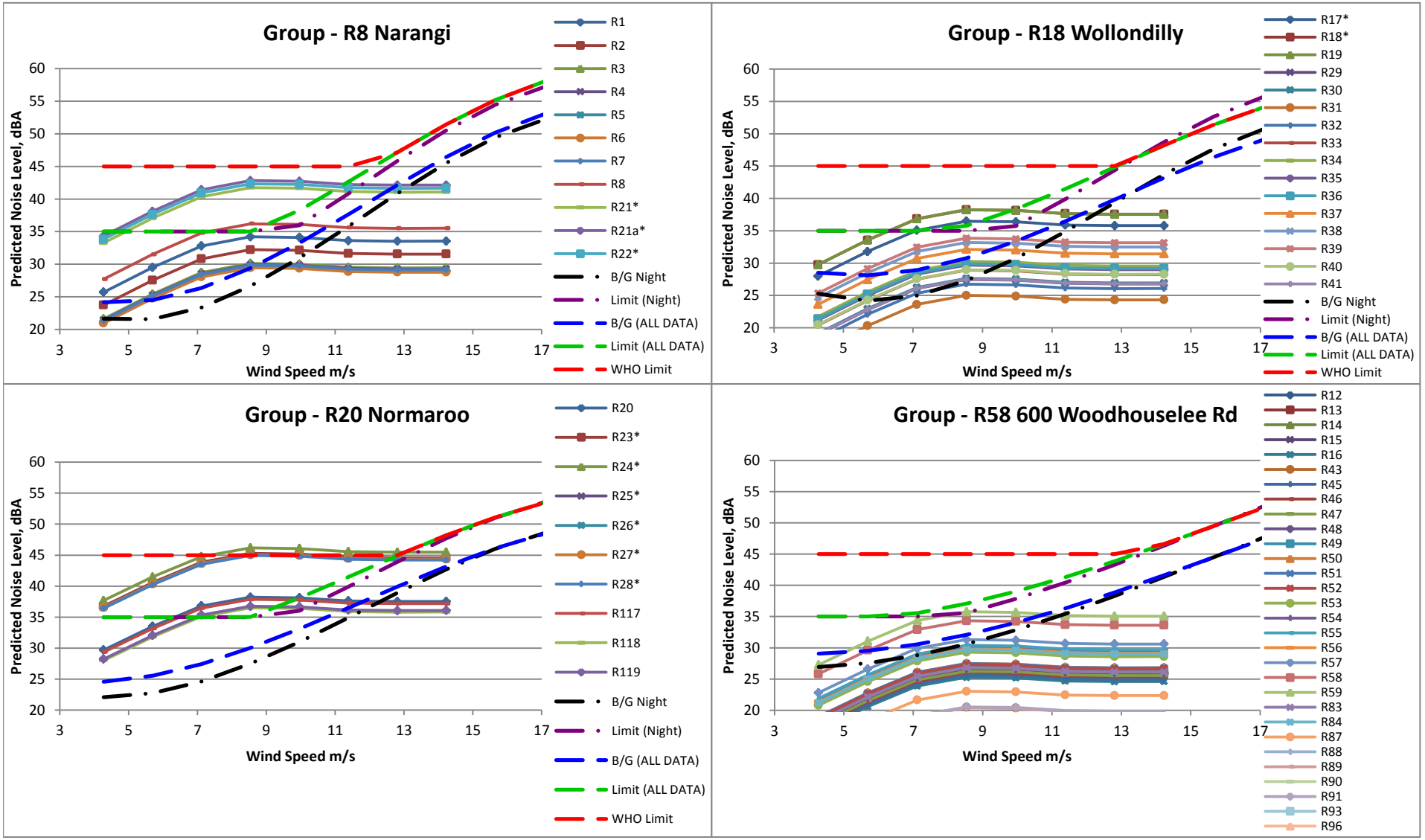

Group - R62 Cottonwood
Predicted Noise Level, dBA
Wind Speed m/s
R60
R61
R62
B/G Night
Limit (Night)
B/G (ALL DATA)
Limit (ALL DATA)
WHO Limit
Group - R64 Valdarmon Hill
Predicted Noise Level, dBA
Wind Speed m/s
R64
R65
B/G Night
Limit (Night)
B/G (ALL DATA)
Limit (ALL DATA)
WHO Limit
Group - R66 Little Vale
Predicted Noise Level, dBA
Wind Speed m/s
R66
R67
B/G Night
Limit (Night)
B/G (ALL DATA)
Limit (ALL DATA)
WHO Limit
Group - R70 Snowgums
Predicted Noise Level, dBA
Wind Speed m/s
R68
R69
R70
B/G Night
Limit (Night)
B/G (ALL DATA)
Limit (ALL DATA)
WHO Limit


Group - R71 Lynross
Predicted Noise Level, dBA
Wind Speed m/s
R71
R72
R73
R74
R75
R76
R77
R81
R82
R109
R110
R111
R112
R115
R116
B/G Night
Limit (Night)
B/G (ALL DATA)
Limit (ALL DATA)
WHO Limit
Group - R79 Leeston
Predicted Noise Level, dBA
Wind Speed m/s
R63
R79*
R80*
B/G Night
Limit (Night)
B/G (ALL DATA)
Limit (ALL DATA)
WHO Limit
Group - R106 Rosedale
Predicted Noise Level, dBA
Wind Speed m/s
R97
R98
R99
R100
R101
R102
R103
R104
R105
R106
R107
R108
R113
R114
B/G Night
Limit (Night)
B/G (ALL DATA)
Limit (ALL DATA)
WHO Limit
Group - R120 Elmgrove
Predicted Noise Level, dBA
Wind Speed m/s
R120
R123
R124
R125
R130
R131
R132
R133
B/G Night
Limit (Night)
B/G (ALL DATA)
Limit (ALL DATA)
WHO Limit


Group - R8 Narangi
Predicted Noise Level, dBA
Wind Speed m/s
R1
R2
R3
R4
R5
R6
R7
R8
R21*
R21a*
R22*
B/G Night
Limit (Night)
B/G (ALL DATA)
Limit (ALL DATA)
WHO Limit
Group - R18 Wollondilly
Predicted Noise Level, dBA
Wind Speed m/s
R17*
R18*
R19
R29
R30
R31
R32
R33
R34
R35
R36
R37
R38
R39
R40
R41
B/G Night
Limit (Night)
B/G (ALL DATA)
Limit (ALL DATA)
WHO Limit
Group - R20 Normaroo
Predicted Noise Level, dBA
Wind Speed m/s
R20
R23*
R24*
R25*
R26*
R27*
R28*
R117
R118
R119
B/G Night
Limit (Night)
B/G (ALL DATA)
Limit (ALL DATA)
WHO Limit
Group - R58 600 Woodhouselee Rd
Predicted Noise Level, dBA
Wind Speed m/s
R12
R13
R14
R15
R16
R43
R45
R46
R47
R48
R49
R50
R51
R52
R53
R54
R55
R56
R57
R58
R59
R83
R84
R87
R88
R89
R90
R91
R93
R96


Group - R62 Cottonwood
Predicted Noise Level, dBA
Wind Speed m/s
R60
R61
R62
B/G Night
Limit (Night)
B/G (ALL DATA)
Limit (ALL DATA)
WHO Limit
Group - R64 Valdarmon Hill
Predicted Noise Level, dBA
Wind Speed m/s
R64
R65
B/G Night
Limit (Night)
B/G (ALL DATA)
Limit (ALL DATA)
WHO Limit
Group - R66 Little Vale
Predicted Noise Level, dBA
Wind Speed m/s
R66
R67
B/G Night
Limit (Night)
B/G (ALL DATA)
Limit (ALL DATA)
WHO Limit
Group - R70 Snowgums
Predicted Noise Level, dBA
Wind Speed m/s
R68
R69
R70
B/G Night
Limit (Night)
B/G (ALL DATA)
Limit (ALL DATA)
WHO Limit


Group - R71 Lynross
Predicted Noise Level, dBA
Wind Speed m/s
R71
R72
R73
R74
R75
R76
R77
R81
R82
R109
R110
R111
R112
R115
R116
B/G Night
Limit (Night)
B/G (ALL DATA)
Limit (ALL DATA)
WHO Limit
Group - R79 Leeston
Predicted Noise Level, dBA
Wind Speed m/s
R63
R79*
R80*
B/G Night
Limit (Night)
B/G (ALL DATA)
Limit (ALL DATA)
WHO Limit
Group - R106 Rosedale
Predicted Noise Level, dBA
Wind Speed m/s
R97
R98
R99
R100
R101
R102
R103
R104
R105
R106
R107
R108
R113
R114
B/G Night
Limit (Night)
B/G (ALL DATA)
Limit (ALL DATA)
WHO Limit
Group - R120 Elmgrove
Predicted Noise Level, dBA
Wind Speed m/s
R120
R123
R124
R125
R130
R131
R132
R133
B/G Night
Limit (Night)
B/G (ALL DATA)
Limit (ALL DATA)
WHO Limit


Group - R8 Narangi
Predicted Noise Level, dBA
Wind Speed m/s
R1
R2
R3
R4
R5
R6
R7
R8
R21*
R21a*
R22*
B/G Night
Limit (Night)
B/G (ALL DATA)
Limit (ALL DATA)
WHO Limit
Group - R18 Wollondilly
Predicted Noise Level, dBA
Wind Speed m/s
R17*
R18*
R19
R29
R30
R31
R32
R33
R34
R35
R36
R37
R38
R39
R40
R41
B/G Night
Limit (Night)
B/G (ALL DATA)
Limit (ALL DATA)
WHO Limit
Group - R20 Normaroo
Predicted Noise Level, dBA
Wind Speed m/s
R20
R23*
R24*
R25*
R26*
R27*
R28*
R117
R118
R119
B/G Night
Limit (Night)
B/G (ALL DATA)
Limit (ALL DATA)
WHO Limit
Group - R58 600 Woodhouselee Rd
Predicted Noise Level, dBA
Wind Speed m/s
R12
R13
R14
R15
R16
R43
R45
R46
R47
R48
R49
R50
R51
R52
R53
R54
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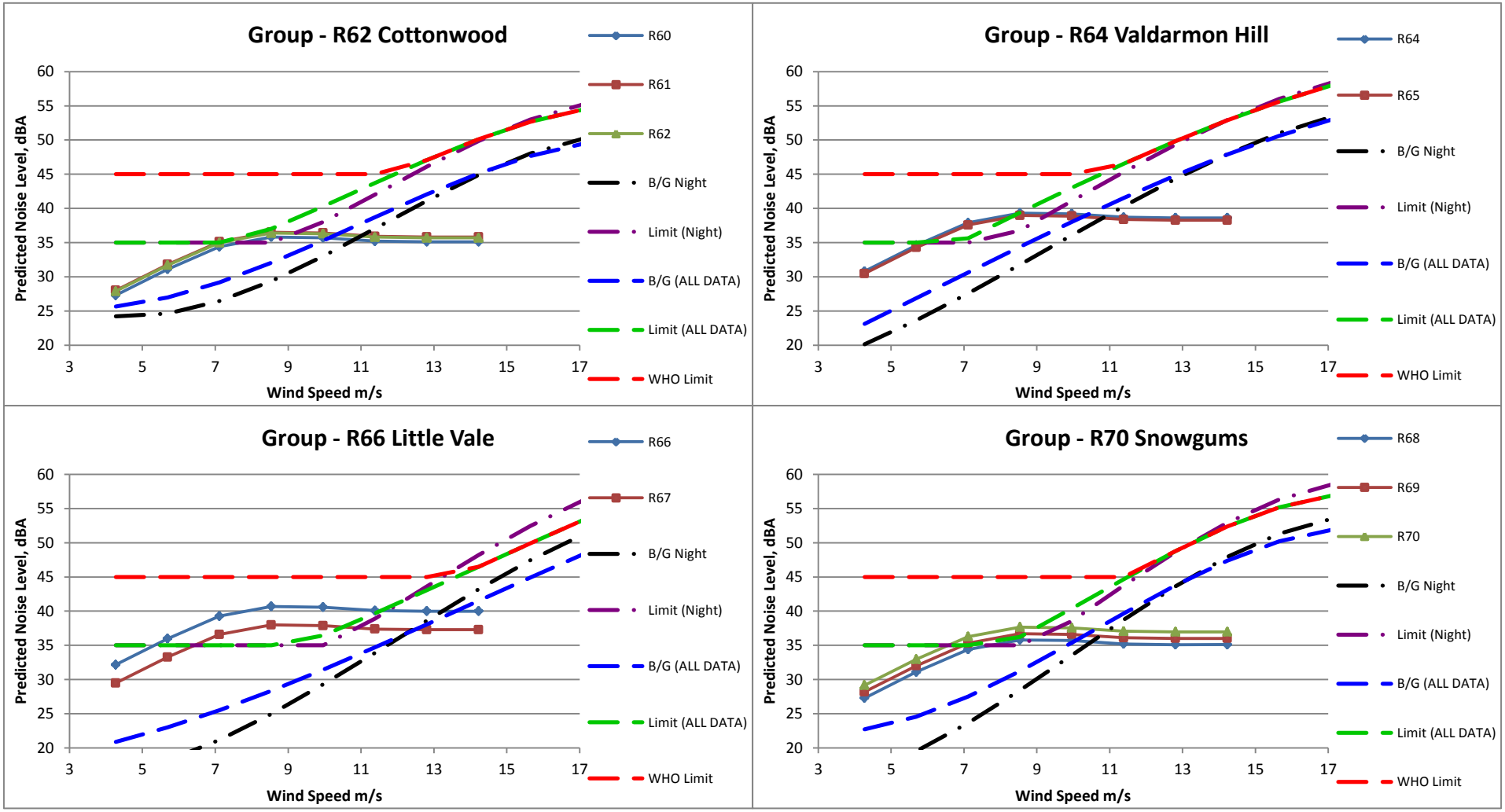
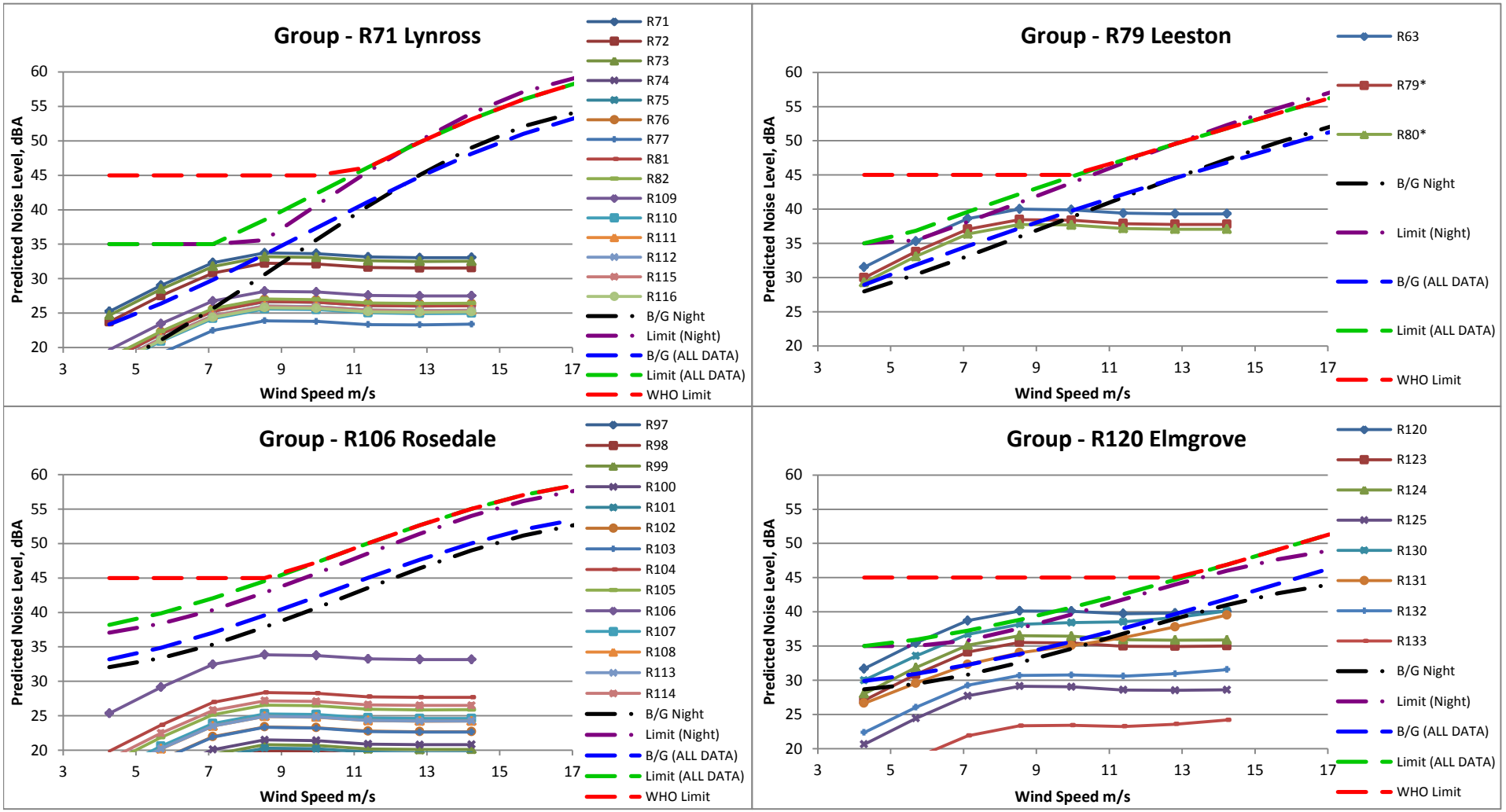
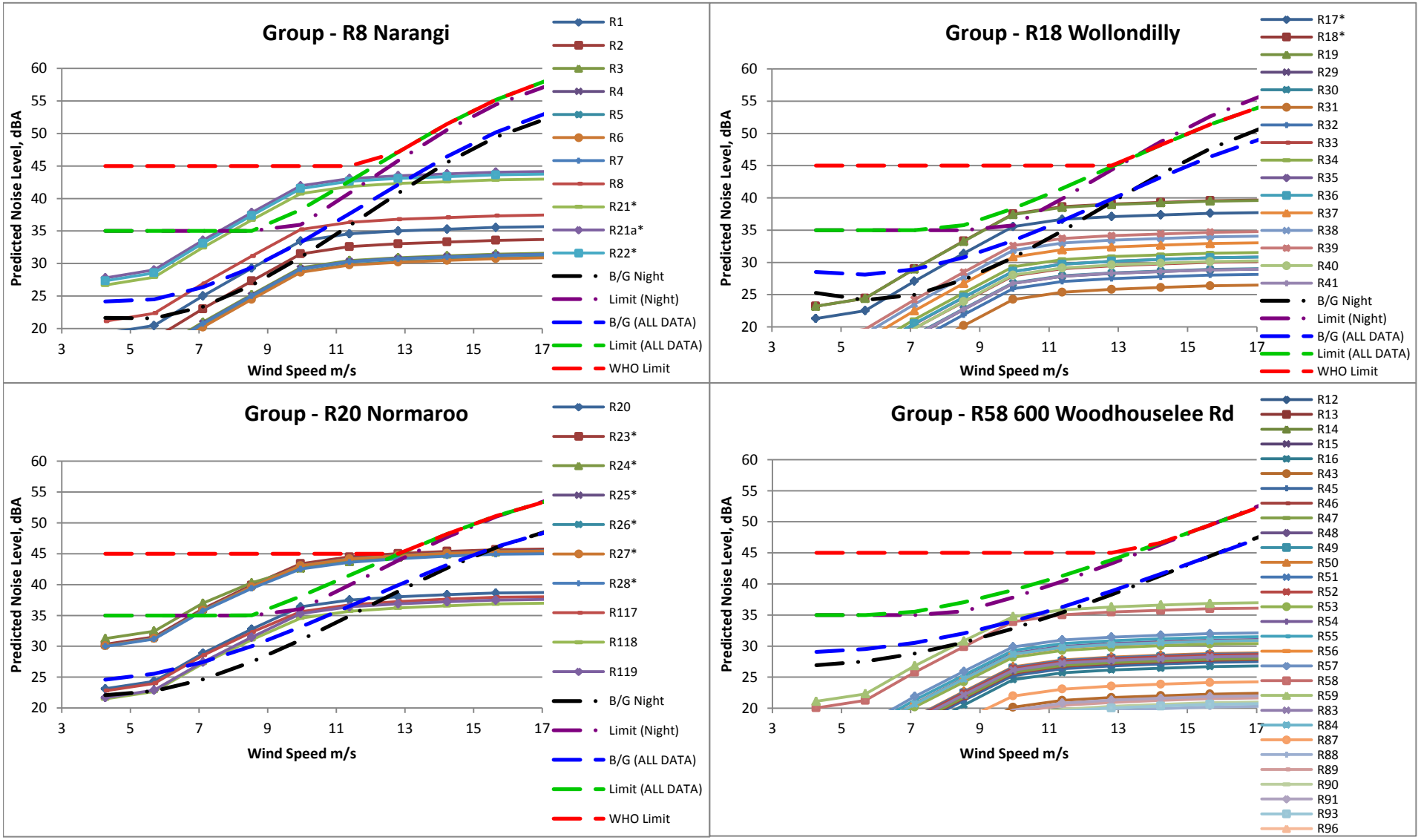

Group - R62 Cottonwood
Predicted Noise Level, dBA
Wind Speed m/s
R60
R61
R62
B/G Night
Limit (Night)
B/G (ALL DATA)
Limit (ALL DATA)
WHO Limit
Group - R64 Valdarmon Hill
Predicted Noise Level, dBA
Wind Speed m/s
R64
R65
B/G Night
Limit (Night)
B/G (ALL DATA)
Limit (ALL DATA)
WHO Limit
Group - R66 Little Vale
Predicted Noise Level, dBA
Wind Speed m/s
R66
R67
B/G Night
Limit (Night)
B/G (ALL DATA)
Limit (ALL DATA)
WHO Limit
Group - R70 Snowgums
Predicted Noise Level, dBA
Wind Speed m/s
R68
R69
R70
B/G Night
Limit (Night)
B/G (ALL DATA)
Limit (ALL DATA)
WHO Limit


Group - R71 Lynross
Predicted Noise Level, dBA
Wind Speed m/s
R71
R72
R73
R74
R75
R76
R77
R81
R82
R109
R110
R111
R112
R115
R116
B/G Night
Limit (Night)
B/G (ALL DATA)
Limit (ALL DATA)
WHO Limit
Group - R79 Leeston
Predicted Noise Level, dBA
Wind Speed m/s
R63
R79*
R80*
B/G Night
Limit (Night)
B/G (ALL DATA)
Limit (ALL DATA)
WHO Limit
Group - R106 Rosedale
Predicted Noise Level, dBA
Wind Speed m/s
R97
R98
R99
R100
R101
R102
R103
R104
R105
R106
R107
R108
R113
R114
B/G Night
Limit (Night)
B/G (ALL DATA)
Limit (ALL DATA)
WHO Limit
Group - R120 Elmgrove
Predicted Noise Level, dBA
Wind Speed m/s
R120
R123
R124
R125
R130
R131
R132
R133
B/G Night
Limit (Night)
B/G (ALL DATA)
Limit (ALL DATA)
WHO Limit


Group - R8 Narangi
Predicted Noise Level, dBA
Wind Speed m/s
R1
R2
R3
R4
R5
R6
R7
R8
R21*
R21a*
R22*
B/G Night
Limit (Night)
B/G (ALL DATA)
Limit (ALL DATA)
WHO Limit
Group - R18 Wollondilly
Predicted Noise Level, dBA
Wind Speed m/s
R17*
R18*
R19
R29
R30
R31
R32
R33
R34
R35
R36
R37
R38
R39
R40
R41
B/G Night
Limit (Night)
B/G (ALL DATA)
Limit (ALL DATA)
WHO Limit
Group - R20 Normaroo
Predicted Noise Level, dBA
Wind Speed m/s
R20
R23*
R24*
R25*
R26*
R27*
R28*
R117
R118
R119
B/G Night
Limit (Night)
B/G (ALL DATA)
Limit (ALL DATA)
WHO Limit
Group - R58 600 Woodhouselee Rd
Predicted Noise Level, dBA
Wind Speed m/s
R12
R13
R14
R15
R16
R43
R45
R46
R47
R48
R49
R50
R51
R52
R53
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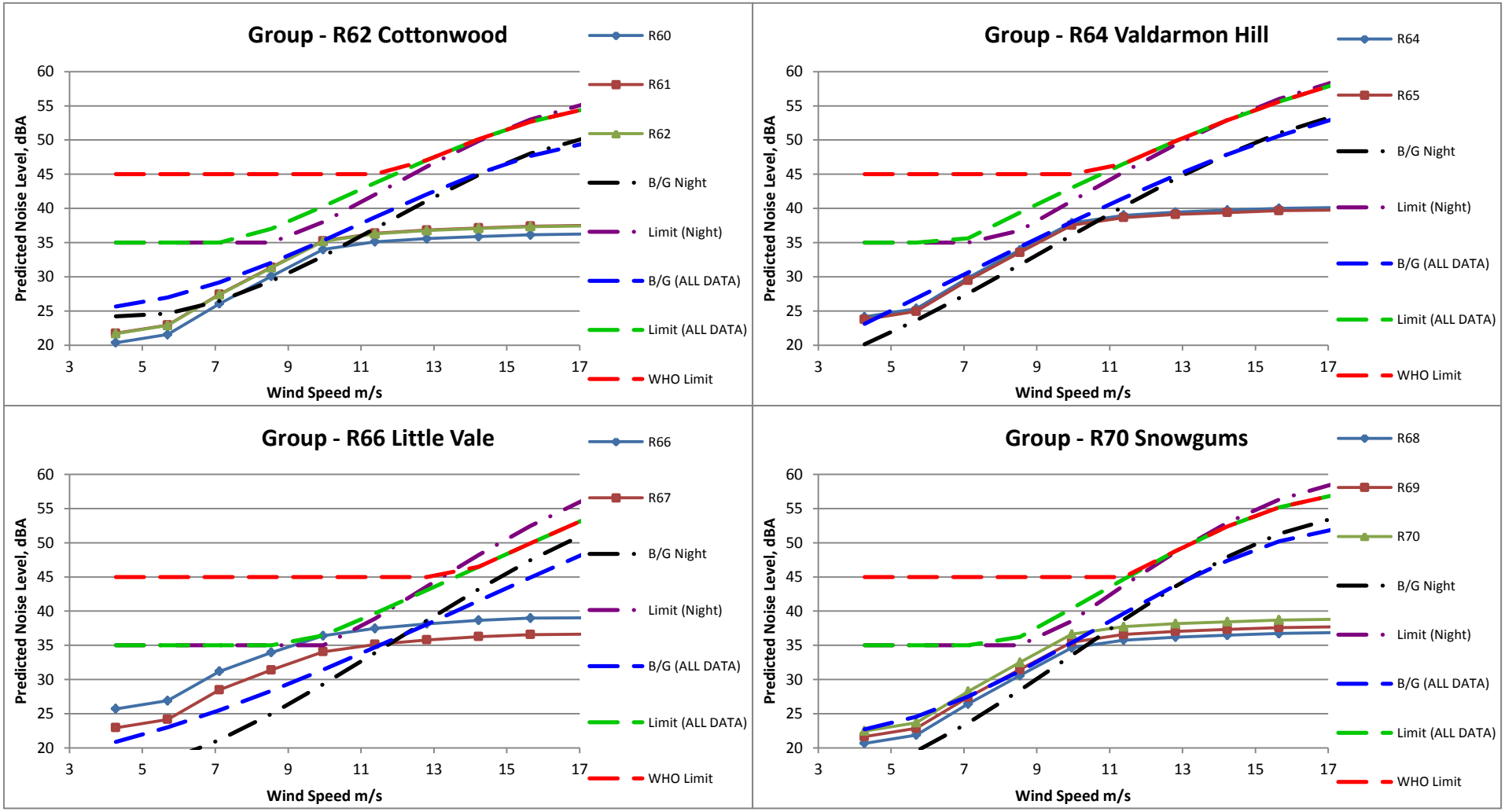
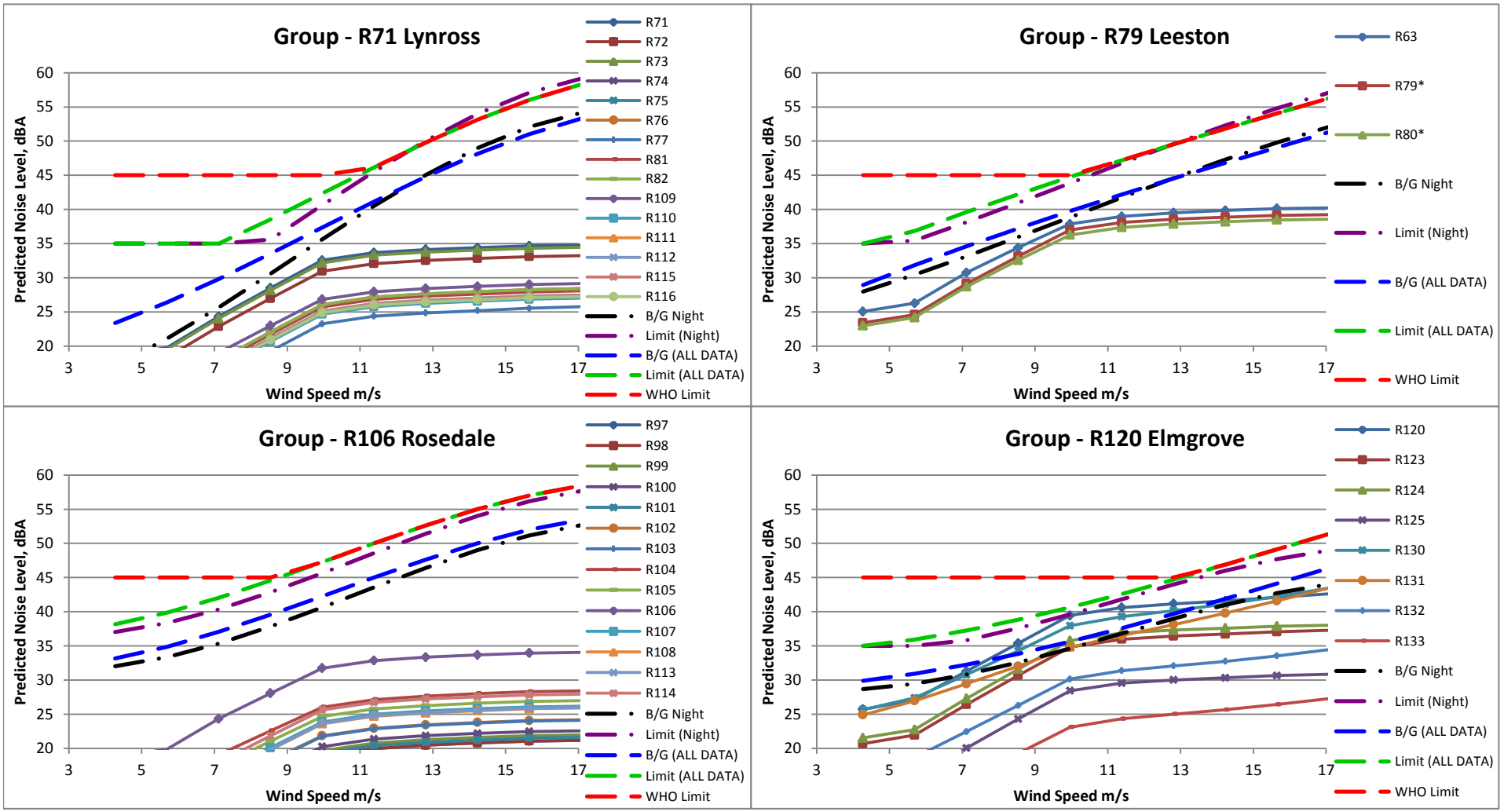
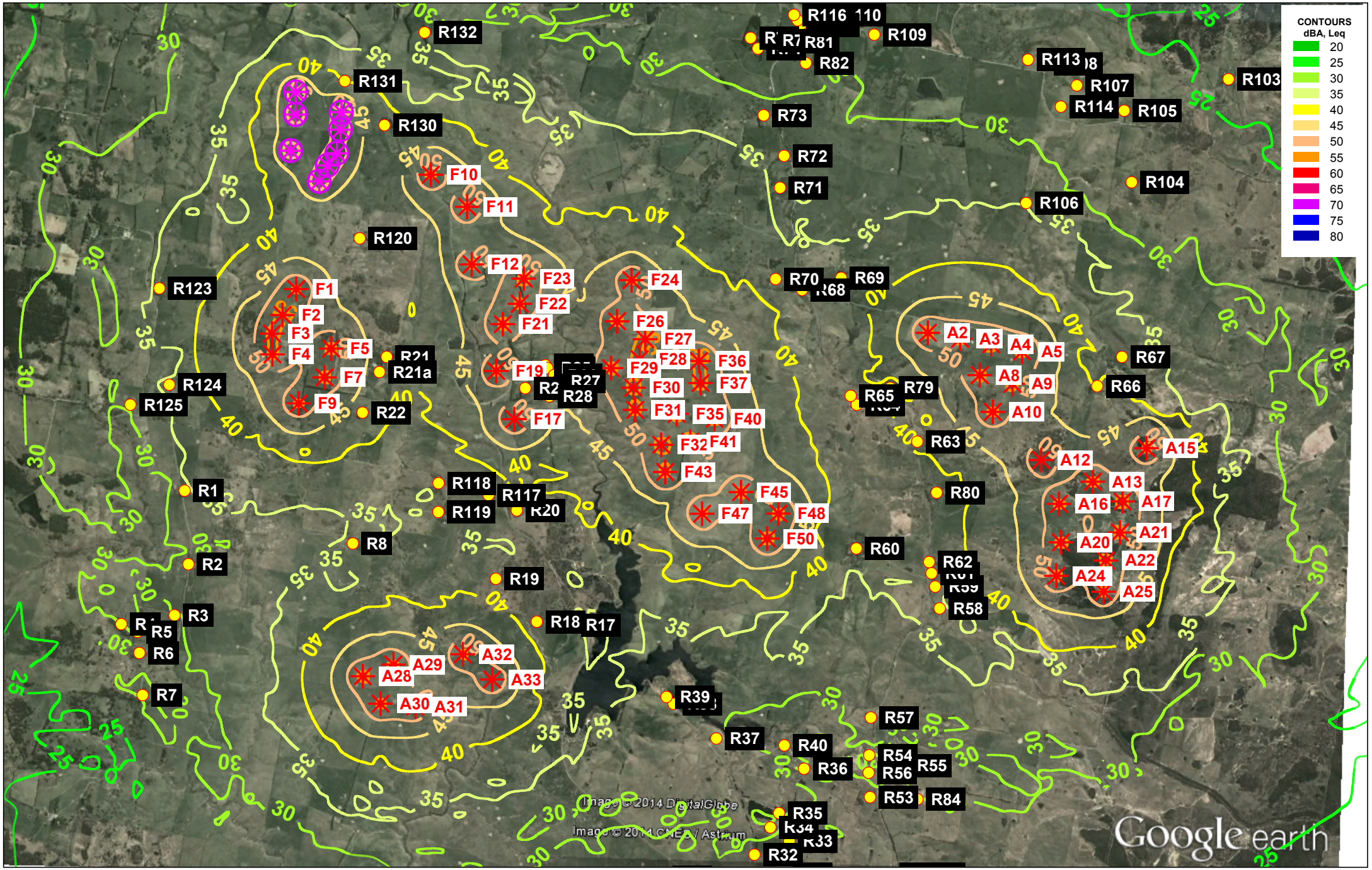

Group - R62 Cottonwood
Predicted Noise Level, dBA
Wind Speed m/s
R60
R61
R62
B/G Night
Limit (Night)
B/G (ALL DATA)
Limit (ALL DATA)
WHO Limit
Group - R64 Valdarmon Hill
Predicted Noise Level, dBA
Wind Speed m/s
R64
R65
B/G Night
Limit (Night)
B/G (ALL DATA)
Limit (ALL DATA)
WHO Limit
Group - R66 Little Vale
Predicted Noise Level, dBA
Wind Speed m/s
R66
R67
B/G Night
Limit (Night)
B/G (ALL DATA)
Limit (ALL DATA)
WHO Limit
Group - R70 Snowgums
Predicted Noise Level, dBA
Wind Speed m/s
R68
R69
R70
B/G Night
Limit (Night)
B/G (ALL DATA)
Limit (ALL DATA)
WHO Limit


Group - R71 Lynross
Predicted Noise Level, dBA
Wind Speed m/s
R71
R72
R73
R74
R75
R76
R77
R81
R82
R109
R110
R111
R112
R115
R116
B/G Night
Limit (Night)
B/G (ALL DATA)
Limit (ALL DATA)
WHO Limit
Group - R79 Leeston
Predicted Noise Level, dBA
Wind Speed m/s
R63
R79*
R80*
B/G Night
Limit (Night)
B/G (ALL DATA)
Limit (ALL DATA)
WHO Limit
Group - R106 Rosedale
Predicted Noise Level, dBA
Wind Speed m/s
R97
R98
R99
R100
R101
R102
R103
R104
R105
R106
R107
R108
R113
R114
B/G Night
Limit (Night)
B/G (ALL DATA)
Limit (ALL DATA)
WHO Limit
Group - R120 Elmgrove
Predicted Noise Level, dBA
Wind Speed m/s
R120
R123
R124
R125
R130
R131
R132
R133
B/G Night
Limit (Night)
B/G (ALL DATA)
Limit (ALL DATA)
WHO Limit

APPENDIX B – NOISE CONTOUR MAPS



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SCALE
0 0.2 0.4 0.8 1.2 1.6 2 2.4 km

ORIENTATION
N

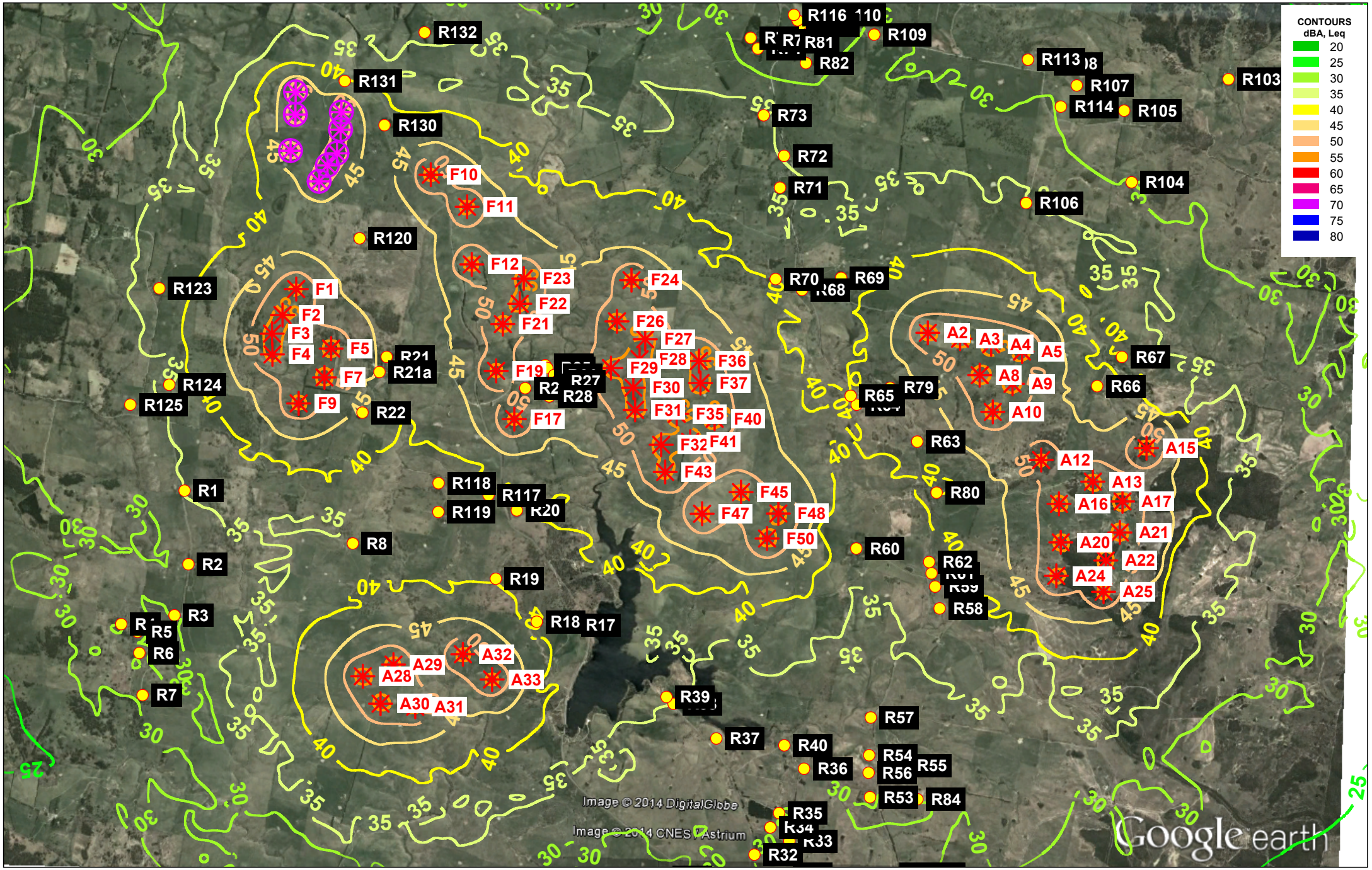
LEGEND
- CW2 and CW3 WTGs
- CW1 WTGs
- Receiver Location

PROJECT	Crookwell 2 & 3 Wind Farm
CLIENT	Crookwell Developments Pty Ltd
DESCRIPTION	Vestas V126 WTG Reference Wind Speed 8m/s, 10 m AGL

Date:	20-Sep-2016
Project No.:	640.11047
Report No.:	640.11047-R1R2
Prediction Method:	ISO 9613-2:1996
Prepared By:	DWW
Prediction Height:	1.5 m

APPENDIX
B

MAP NO.
001



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SCALE
0 0.2 0.4 0.8 1.2 1.6 2 2.4 km

ORIENTATION
N

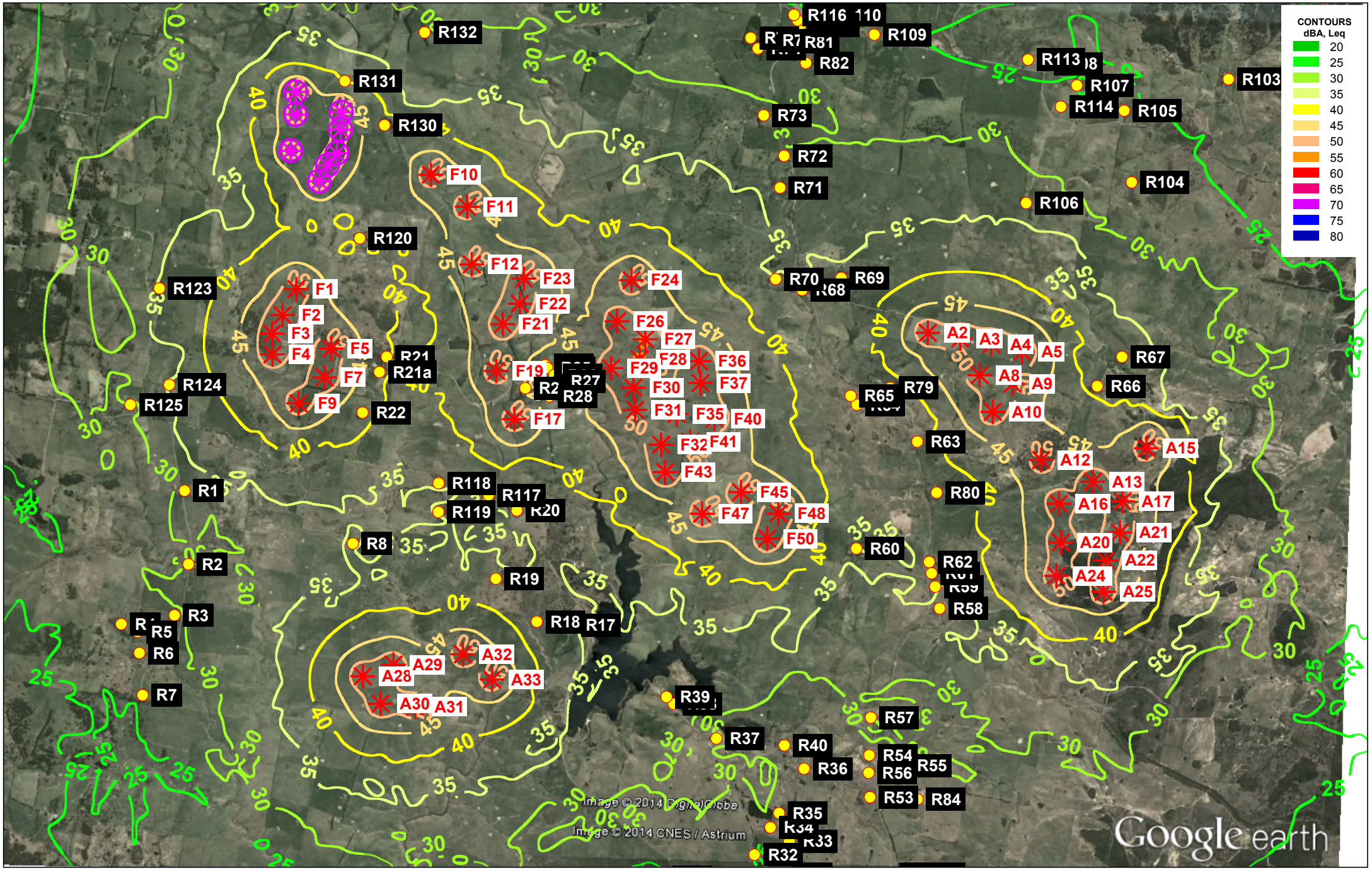
LEGEND
- CW2 and CW3 WTGs
- CW1 WTGs
- Receiver Location

PROJECT	Crookwell 2 & 3 Wind Farm
CLIENT	Crookwell Developments Pty Ltd
DESCRIPTION	GE 130 WTG Reference Wind Speed 8m/s, 10 m AGL

Date:	20-Sep-2016
Project No.:	640.11047
Report No.:	640.11047-R1R2
Prediction Method:	ISO 9613-2:1996
Prepared By:	DWW
Prediction Height:	1.5 m

APPENDIX
B

MAP NO.
002



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SCALE
0 0.2 0.4 0.8 1.2 1.6 2 2.4 km

ORIENTATION
N

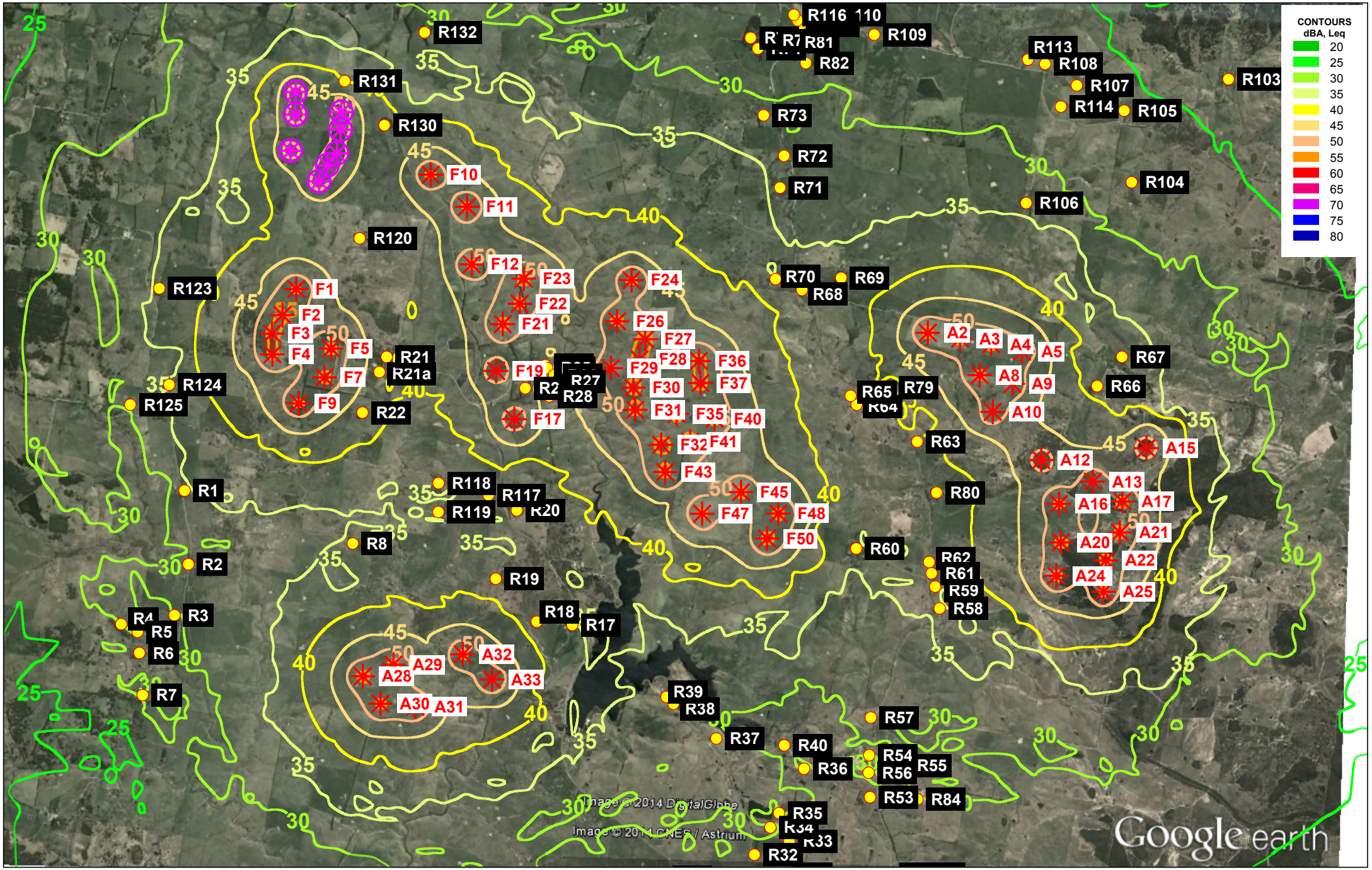
LEGEND
- CW2 and CW3 WTGs
- CW1 WTGs
- Receiver Location

PROJECT	Crookwell 2 & 3 Wind Farm
CLIENT	Crookwell Developments Pty Ltd
DESCRIPTION	Senvion M122 WTG Reference Wind Speed 8m/s, 10 m AGL

Date:	20-Sep-2016
Project No.:	640.11047
Report No.:	640.11047-R1R2
Prediction Method:	ISO 9613-2:1996
Prepared By:	DWW
Prediction Height:	1.5 m

APPENDIX
B

MAP NO.
003



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SCALE
0 0.2 0.4 0.8 1.2 1.6 2 2.4 km

ORIENTATION
N

LEGEND
- CW2 and CW3 WTGs
- CW1 WTGs
- Receiver Location

PROJECT	Crookwell 2 & 3 Wind Farm
CLIENT	Crookwell Developments Pty Ltd
DESCRIPTION	47 x Vestas V126 Mode 0, 4 x Vestas V126 Mode 3, 5 x Vestas V126 Mode 4, Reference Wind Speed 8m/s, 10 m AGL

Date:	26/09/2016
Project No.:	640.11047
Report No.:	640.11047-R1R2
Prediction Method:	ISO 9613-2:1996
Prepared By:	DWW
Prediction Height:	1.5 m

APPENDIX
B

MAP NO.
004

APPENDIX C – TABULATED ASSESSMENT RESULTS

	Windspeed at 10m AGL	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0
	Windspeed at Hub Height	**4.3**	**5.7**	**7.1**	**8.5**	**10.0**	**11.4**	**12.8**	**14.2**	**15.7**	**17.1**
Background Location:	**R8 Narangi**										
B/G Regression Line	-0.0201x^3 + 0.7209x^2 - 5.4402x + 35.805	24.2	24.5	26.4	29.4	33.3	37.6	42.1	46.4	50.2	53.0
SA EPA Criteria		35.0	35.0	35.0	35.0	38.3	42.6	47.1	51.4	55.2	58.0
NIGHT BG Regression Line	-0.0257x^3 + 0.9097x^2 - 7.1972x + 37.793	21.6	21.6	23.4	26.7	31.0	35.8	40.8	45.5	49.5	52.2
EPA Night Criteria		35.0	35.0	35.0	35.0	36.0	40.8	45.8	50.5	54.5	57.2
WHO Criteria		45.0	45.0	45.0	45.0	45.0	45.0	47.1	51.4	55.2	58.0
R1		19.3	20.5	25.0	29.4	33.6	34.7	35.1	35.4	35.7	35.8
R2		17.3	18.5	23.0	27.4	31.6	32.7	33.2	33.4	33.7	33.8
R3		15.2	16.4	21.0	25.3	29.6	30.7	31.1	31.4	31.6	31.8
R4		15.1	16.3	20.8	25.2	29.4	30.5	30.9	31.2	31.5	31.6
R5		14.6	15.8	20.3	24.7	28.9	30.0	30.5	30.7	31.0	31.1
R6		14.5	15.7	20.2	24.6	28.8	29.9	30.3	30.6	30.9	31.0
R7		15.0	16.2	20.8	25.1	29.4	30.5	30.9	31.2	31.4	31.5
R8		21.2	22.4	26.9	31.3	35.5	36.6	37.1	37.3	37.6	37.7
R21		26.7	27.9	32.5	36.8	41.0	42.2	42.6	42.8	43.1	43.2
R21a		27.8	29.0	33.6	37.9	42.2	43.3	43.7	44.0	44.2	44.3
R22		27.3	28.6	33.1	37.5	41.7	42.8	43.2	43.5	43.8	43.9
Background Location:	**R18 Wollondilly**										
B/G Regression Line	-0.0143x^3 + 0.5536x^2 - 4.7402x + 39.782	28.5	28.1	28.9	30.8	33.4	36.5	39.8	43.2	46.4	49.1
SA EPA Criteria		35.0	35.0	35.0	35.8	38.4	41.5	44.8	48.2	51.4	54.1
NIGHT BG Regression Line	-0.0229x^3 + 0.8605x^2 - 7.6186x + 43.885	25.3	24.2	25.0	27.3	30.7	34.9	39.3	43.7	47.6	50.7
EPA Night Criteria		35.0	35.0	35.0	35.0	35.7	39.9	44.3	48.7	52.6	55.7
WHO Criteria		45.0	45.0	45.0	45.0	45.0	45.0	45.0	48.2	51.4	54.1
R17		21.4	22.7	27.2	31.6	35.8	36.9	37.3	37.6	37.8	38.0
R18		23.2	24.5	29.0	33.4	37.6	38.7	39.1	39.4	39.7	39.8
R19		23.2	24.5	29.0	33.4	37.6	38.7	39.1	39.4	39.7	39.8
R29		12.9	14.1	18.7	23.0	27.3	28.4	28.8	29.1	29.3	29.4
R30		13.0	14.2	18.8	23.1	27.4	28.5	28.9	29.2	29.4	29.6
R31		10.4	11.6	16.1	20.5	24.7	25.8	26.3	26.5	26.8	26.9
R32		12.1	13.3	17.9	22.2	26.5	27.6	28.0	28.3	28.5	28.6
R33		14.2	15.4	20.0	24.3	28.5	29.6	30.1	30.3	30.6	30.7
R34		15.5	16.7	21.3	25.6	29.9	31.0	31.4	31.7	31.9	32.0
R35		14.9	16.1	20.7	25.0	29.3	30.4	30.8	31.1	31.3	31.4
R36		14.9	16.1	20.7	25.0	29.3	30.4	30.8	31.1	31.3	31.4
R37		17.1	18.3	22.9	27.2	31.5	32.6	33.0	33.3	33.5	33.6
R38		18.2	19.4	23.9	28.3	32.5	33.6	34.1	34.3	34.6	34.7
R39		18.8	20.0	24.6	28.9	33.2	34.3	34.7	35.0	35.2	35.3
R40		14.1	15.3	19.9	24.2	28.4	29.6	30.0	30.2	30.5	30.6
R41		13.0	14.2	18.8	23.1	27.3	28.4	28.9	29.1	29.4	29.5
Background Location:	**R20 Normaroo**										
B/G Regression Line	-0.0124x^3 + 0.4392x^2 - 2.7661x + 29.349	24.6	25.5	27.4	30.0	33.1	36.5	39.9	43.2	46.1	48.4
SA EPA Criteria		35.0	35.0	35.0	35.0	38.1	41.5	44.9	48.2	51.1	53.4
NIGHT BG Regression Line	-0.0166x^3 + 0.5896x^2 - 4.1646x + 30.403	22.1	22.7	24.6	27.5	31.0	34.9	38.9	42.7	46.0	48.6
EPA Night Criteria		35.0	35.0	35.0	35.0	36.0	39.9	43.9	47.7	51.0	53.6
WHO Criteria		45.0	45.0	45.0	45.0	45.0	45.0	45.0	48.2	51.1	53.4
R20		23.2	24.4	28.9	33.3	37.5	38.6	39.1	39.3	39.6	39.7
R23		30.3	31.5	36.1	40.4	44.7	45.8	46.2	46.5	46.7	46.8
R24		31.2	32.4	37.0	41.3	45.6	46.7	47.1	47.4	47.6	47.7
R25		30.1	31.3	35.9	40.2	44.5	45.6	46.0	46.2	46.5	46.6
R26		30.1	31.3	35.8	40.2	44.4	45.5	46.0	46.2	46.5	46.6
R27		30.0	31.3	35.8	40.2	44.4	45.5	45.9	46.2	46.5	46.6
R28		30.0	31.2	35.7	40.1	44.3	45.4	45.9	46.1	46.4	46.5
R117		22.8	24.0	28.5	32.9	37.1	38.2	38.7	38.9	39.2	39.3
R118		21.5	22.7	27.2	31.6	35.8	36.9	37.3	37.6	37.9	38.0
R119		21.7	22.9	27.5	31.8	36.0	37.1	37.6	37.8	38.1	38.2
Background Location:	**R58 600 Woodhouselee Rd**										
B/G Regression Line	-0.0045x^3 + 0.2194x^2 - 1.5322x + 31.956	29.1	29.5	30.5	32.1	34.0	36.3	38.9	41.6	44.5	47.4
SA EPA Criteria		35.0	35.0	35.5	37.1	39.0	41.3	43.9	46.6	49.5	52.4
NIGHT BG Regression Line	-0.0053x^3 + 0.2472x^2 - 1.6363x + 29.838	26.9	27.6	28.8	30.6	32.8	35.4	38.3	41.3	44.5	47.6
EPA Night Criteria		35.0	35.0	35.0	35.6	37.8	40.4	43.3	46.3	49.5	52.6
WHO Criteria		45.0	45.0	45.0	45.0	45.0	45.0	45.0	46.6	49.5	52.4
R12		12.2	13.4	17.9	22.3	26.5	27.6	28.1	28.3	28.6	28.7
R13		12.1	13.3	17.9	22.3	26.5	27.6	28.0	28.3	28.5	28.7
R14		12.5	13.7	18.3	22.6	26.9	28.0	28.4	28.7	28.9	29.0
R15		12.7	13.9	18.5	22.8	27.1	28.2	28.6	28.9	29.1	29.2
R16		10.6	11.9	16.4	20.8	25.0	26.1	26.5	26.8	27.1	27.2
R43		6.3	7.5	12.1	16.4	20.6	21.8	22.2	22.4	22.7	22.8
R45		11.4	12.6	17.2	21.5	25.7	26.9	27.3	27.5	27.8	27.9
R46		11.7	13.0	17.5	21.9	26.1	27.2	27.6	27.9	28.2	28.3
R47		11.9	13.1	17.7	22.0	26.3	27.4	27.8	28.1	28.3	28.4
R48		12.3	13.5	18.1	22.4	26.7	27.8	28.2	28.5	28.7	28.8
R49		12.6	13.8	18.3	22.7	26.9	28.0	28.5	28.7	29.0	29.1
R50		12.8	14.0	18.6	22.9	27.2	28.3	28.7	29.0	29.2	29.3
R51		12.8	14.0	18.5	22.9	27.1	28.2	28.7	28.9	29.2	29.3
R52		12.6	13.8	18.3	22.7	26.9	28.0	28.5	28.7	29.0	29.1
R53		14.5	15.7	20.3	24.6	28.8	30.0	30.4	30.6	30.9	31.0
R54		15.1	16.3	20.9	25.2	29.5	30.6	31.0	31.3	31.5	31.6
R55		15.5	16.7	21.3	25.6	29.9	31.0	31.4	31.7	31.9	32.0
R56		15.0	16.2	20.8	25.1	29.4	30.5	30.9	31.2	31.4	31.5
R57		16.3	17.5	22.0	26.4	30.6	31.7	32.2	32.4	32.7	32.8
R58		19.2	20.4	25.0	29.3	33.6	34.7	35.1	35.4	35.6	35.7
R59		20.6	21.9	26.4	30.8	35.0	36.1	36.5	36.8	37.1	37.2
R83		12.2	13.4	17.9	22.3	26.5	27.6	28.1	28.3	28.6	28.7
R84		14.8	16.0	20.6	25.0	29.2	30.3	30.7	31.0	31.2	31.3
R87		8.4	9.6	14.2	18.5	22.7	23.8	24.3	24.5	24.8	24.9

	Windspeed at 10m AGL	**3.0**	**4.0**	**5.0**	**6.0**	**7.0**	**8.0**	**9.0**	**10.0**	**11.0**	**12.0**
	Windspeed at Hub Height	**4.3**	**5.7**	**7.1**	**8.5**	**10.0**	**11.4**	**12.8**	**14.2**	**15.7**	**17.1**
R88		4.7	6.0	10.5	14.9	19.1	20.2	20.6	20.9	21.2	21.3
R89		6.1	7.3	11.8	16.2	20.4	21.5	22.0	22.2	22.5	22.6
R90		5.2	6.4	10.9	15.3	19.5	20.6	21.1	21.3	21.6	21.7
R91		6.2	7.4	12.0	16.3	20.5	21.6	22.1	22.3	22.6	22.7
R93		5.0	6.2	10.8	15.2	19.4	20.5	20.9	21.2	21.4	21.6
R96		3.5	4.7	9.2	13.6	17.8	18.9	19.4	19.6	19.9	20.0
Background Location:	**R62 Cottonwood**										
B/G Regression Line	-0.0135x^3 + 0.4454x^2 - 2.4834x + 29.187	25.7	27.0	29.2	32.0	35.3	38.7	42.1	45.1	47.7	49.4
SA EPA Criteria		35.0	35.0	35.0	37.0	40.3	43.7	47.1	50.1	52.7	54.4
NIGHT BG Regression Line	-0.0198x^3 + 0.6869x^2 - 5.0582x + 34.828	24.2	24.6	26.5	29.4	33.0	37.1	41.1	44.9	48.0	50.2
EPA Night Criteria		35.0	35.0	35.0	35.0	38.0	42.1	46.1	49.9	53.0	55.2
WHO Criteria		45.0	45.0	45.0	45.0	45.0	45.0	47.1	50.1	52.7	54.4
R60		20.8	22.0	26.6	30.9	35.1	36.3	36.7	36.9	37.2	37.3
R61		21.4	22.6	27.2	31.5	35.8	36.9	37.3	37.6	37.8	37.9
R62		21.3	22.5	27.1	31.4	35.7	36.8	37.2	37.5	37.7	37.8
Background Location:	**R64 Valdarmon Hill**										
B/G Regression Line	-0.0032x^3 + 0.0596x^2 + 2.2844x + 12.521	23.1	26.9	30.6	34.4	38.0	41.5	44.8	47.9	50.6	53.0
SA EPA Criteria		35.0	35.0	35.6	39.4	43.0	46.5	49.8	52.9	55.6	58.0
NIGHT BG Regression Line	-0.0093x^3 + 0.2628x^2 + 0.5447x + 13.759	20.1	23.7	27.6	31.8	36.1	40.3	44.3	47.9	51.0	53.4
EPA Night Criteria		35.0	35.0	35.0	36.8	41.1	45.3	49.3	52.9	56.0	58.4
WHO Criteria		45.0	45.0	45.0	45.0	45.0	46.5	49.8	52.9	55.6	58.0
R64		24.3	25.5	30.0	34.4	38.6	39.7	40.2	40.4	40.7	40.8
R65		23.9	25.1	29.7	34.0	38.3	39.4	39.8	40.0	40.3	40.4
Background Location:	**R66 Little Vale**										
B/G Regression Line	-0.0038x^3 + 0.1588x^2 + 0.201x + 17.442	20.9	23.0	25.5	28.4	31.4	34.7	38.1	41.5	44.9	48.3
SA EPA Criteria		35.0	35.0	35.0	35.0	36.4	39.7	43.1	46.5	49.9	53.3
NIGHT BG Regression Line	-0.0126x^3 + 0.4524x^2 - 2.0963x + 17.752	16.1	18.2	21.2	25.0	29.3	33.9	38.6	43.2	47.5	51.1
EPA Night Criteria		35.0	35.0	35.0	35.0	35.0	38.9	43.6	48.2	52.5	56.1
WHO Criteria		45.0	45.0	45.0	45.0	45.0	45.0	45.0	46.5	49.9	53.3
R66		25.6	26.8	31.4	35.8	40.0	41.1	41.5	41.8	42.0	42.1
R67		22.9	24.1	28.7	33.0	37.3	38.4	38.8	39.1	39.3	39.4
Background Location:	**R70 Snowgums**										
B/G Regression Line	-0.0182x^3 + 0.5772x^2 - 3.0782x + 26.75	22.7	24.6	27.5	31.2	35.4	39.7	43.8	47.4	50.2	51.9
SA EPA Criteria		35.0	35.0	35.0	36.2	40.4	44.7	48.8	52.4	55.2	56.9
NIGHT BG Regression Line	-0.0183x^3 + 0.5563x^2 - 1.9759x + 16.123	16.4	19.5	23.6	28.4	33.5	38.7	43.6	47.9	51.3	53.5
EPA Night Criteria		35.0	35.0	35.0	35.0	38.5	43.7	48.6	52.9	56.3	58.5
WHO Criteria		45.0	45.0	45.0	45.0	45.0	45.0	48.8	52.4	55.2	56.9
R68		20.7	21.9	26.5	30.8	35.1	36.2	36.6	36.9	37.1	37.2
R69		21.7	22.9	27.5	31.8	36.1	37.2	37.6	37.9	38.1	38.2
R70		22.5	23.7	28.3	32.6	36.9	38.0	38.4	38.7	38.9	39.0
Background Location:	**R71 Lynross**										
B/G Regression Line	-0.0083x^3 + 0.243x^2 + 0.3267x + 18.194	23.4	26.4	29.8	33.5	37.4	41.2	44.8	48.1	51.0	53.3
SA EPA Criteria		35.0	35.0	35.0	38.5	42.4	46.2	49.8	53.1	56.0	58.3
NIGHT BG Regression Line	-0.0136x^3 + 0.3747x^2 + 0.0985x + 10.908	17.1	21.1	25.7	30.6	35.6	40.5	45.1	49.0	52.1	54.1
EPA Night Criteria		35.0	35.0	35.0	35.6	40.6	45.5	50.1	54.0	57.1	59.1
WHO Criteria		45.0	45.0	45.0	45.0	45.0	46.2	49.8	53.1	56.0	58.3
R71		18.6	19.9	24.4	28.8	33.0	34.1	34.5	34.8	35.1	35.2
R72		17.2	18.4	23.0	27.3	31.5	32.7	33.1	33.3	33.6	33.7
R73		18.3	19.5	24.1	28.4	32.6	33.8	34.2	34.5	34.7	34.9
R74		12.2	13.4	17.9	22.3	26.5	27.6	28.0	28.3	28.6	28.8
R75		12.0	13.2	17.7	22.0	26.2	27.4	27.8	28.1	28.4	28.6
R76		12.2	13.5	18.0	22.3	26.5	27.6	28.1	28.4	28.7	28.8
R77		9.5	10.7	15.2	19.5	23.7	24.8	25.3	25.6	25.9	26.1
R81		11.9	13.2	17.7	22.0	26.2	27.4	27.8	28.1	28.4	28.5
R82		12.3	13.5	18.1	22.4	26.6	27.7	28.2	28.4	28.7	28.9
R109		13.4	14.6	19.2	23.5	27.7	28.8	29.3	29.5	29.8	29.9
R110		10.9	12.2	16.7	21.0	25.2	26.4	26.8	27.1	27.4	27.5
R111		11.4	12.6	17.1	21.4	25.7	26.8	27.2	27.5	27.8	27.9
R112		11.4	12.6	17.1	21.4	25.6	26.8	27.2	27.5	27.8	27.9
R115		11.3	12.5	17.0	21.3	25.6	26.7	27.1	27.4	27.7	27.8
R116		11.1	12.4	16.9	21.2	25.4	26.5	27.0	27.2	27.5	27.7
Background Location:	**R79 Leeston**										
B/G Regression Line	0.001x^3 - 0.053x^2 + 2.4941x + 19.177	28.9	31.8	34.6	37.2	39.7	42.2	44.5	46.8	49.1	51.3
SA EPA Criteria		35.0	36.8	39.6	42.2	44.7	47.2	49.5	51.8	54.1	56.3
NIGHT BG Regression Line	-0.0038x^3 + 0.1151x^2 + 0.878x + 22.436	28.0	30.5	33.1	36.0	38.8	41.7	44.6	47.3	49.8	52.1
EPA Night Criteria		35.0	35.5	38.1	41.0	43.8	46.7	49.6	52.3	54.8	57.1
WHO Criteria		45.0	45.0	45.0	45.0	45.0	47.2	49.5	51.8	54.1	56.3
R63		25.0	26.2	30.8	35.1	39.4	40.5	40.9	41.2	41.4	41.5
R79		23.4	24.6	29.2	33.6	37.8	38.9	39.3	39.6	39.8	40.0
R80		22.7	23.9	28.5	32.8	37.1	38.2	38.6	38.9	39.1	39.2
Background Location:	**R106 Rosedale**										
B/G Regression Line	-0.0085x^3 + 0.2644x^2 - 0.8076x + 32.476	33.2	34.9	37.1	39.6	42.3	45.0	47.6	50.0	52.0	53.5
SA EPA Criteria		38.2	39.9	42.1	44.6	47.3	50.0	52.6	55.0	57.0	58.5
NIGHT BG Regression Line	-0.0109x^3 + 0.3551x^2 - 1.7974x + 34.095	32.0	33.4	35.4	37.8	40.7	43.6	46.4	49.0	51.2	52.7
EPA Night Criteria		37.0	38.4	40.4	42.8	45.7	48.6	51.4	54.0	56.2	57.7
WHO Criteria		45.0	45.0	45.0	45.0	47.3	50.0	52.6	55.0	57.0	58.5
R97		5.6	6.8	11.4	15.7	20.0	21.1	21.5	21.8	22.0	22.1
R98		5.6	6.8	11.4	15.7	20.0	21.1	21.5	21.8	22.0	22.1
R99		6.4	7.7	12.2	16.6	20.8	21.9	22.3	22.6	22.9	23.0
R100		7.1	8.3	12.8	17.2	21.4	22.5	23.0	23.2	23.5	23.6

	Windspeed at 10m AGL	**3.0**	**4.0**	**5.0**	**6.0**	**7.0**	**8.0**	**9.0**	**10.0**	**11.0**	**12.0**
	Windspeed at Hub Height	**4.3**	**5.7**	**7.1**	**8.5**	**10.0**	**11.4**	**12.8**	**14.2**	**15.7**	**17.1**
R101		6.0	7.3	11.8	16.2	20.4	21.5	21.9	22.2	22.4	22.6
R102		8.9	10.1	14.7	19.0	23.2	24.4	24.8	25.0	25.3	25.4
R103		8.7	9.9	14.5	18.8	23.0	24.2	24.6	24.8	25.1	25.2
R104		13.4	14.6	19.2	23.5	27.8	28.9	29.3	29.6	29.8	29.9
R105		11.7	12.9	17.5	21.8	26.1	27.2	27.6	27.9	28.1	28.2
R106		18.7	19.9	24.4	28.8	33.0	34.1	34.6	34.8	35.1	35.2
R107		10.6	11.8	16.3	20.7	24.9	26.0	26.5	26.7	27.0	27.1
R108		10.2	11.5	16.0	20.3	24.6	25.7	26.1	26.4	26.7	26.8
R113		10.3	11.5	16.0	20.4	24.6	25.7	26.1	26.4	26.7	26.8
R114		12.3	13.5	18.1	22.4	26.6	27.7	28.2	28.4	28.7	28.8
Background Location:	**R120 Elmgrove**										
B/G Regression Line	-0.0023x^3 + 0.1114x^2 - 0.2106x + 28.947	29.9	30.9	32.3	33.8	35.6	37.6	39.7	41.9	44.1	46.4
SA EPA Criteria		35.0	35.9	37.3	38.8	40.6	42.6	44.7	46.9	49.1	51.4
NIGHT BG Regression Line	-0.0083x^3 + 0.2813x^2 - 1.6306x + 31.151	28.7	29.5	30.8	32.6	34.6	36.8	39.0	41.0	42.7	44.0
EPA Night Criteria		35.0	35.0	35.8	37.6	39.6	41.8	44.0	46.0	47.7	49.0
WHO Criteria		45.0	45.0	45.0	45.0	45.0	45.0	45.0	46.9	49.1	51.4
R120		25.7	27.1	31.3	35.4	39.5	40.7	41.2	41.7	42.2	42.7
R123		20.7	21.9	26.4	30.7	34.9	36.0	36.5	36.8	37.1	37.3
R124		21.5	22.8	27.3	31.6	35.9	37.0	37.4	37.7	37.9	38.1
R125		14.3	15.6	20.1	24.4	28.6	29.7	30.1	30.4	30.8	31.0
R130		25.7	27.4	30.8	34.3	38.0	39.3	40.2	41.1	42.2	43.5
R131		24.9	27.0	29.4	32.0	34.8	36.6	38.1	39.8	41.6	43.5
R132		17.1	18.7	22.5	26.3	30.3	31.5	32.2	32.8	33.6	34.5
R133		10.1	11.6	15.5	19.4	23.3	24.6	25.2	25.8	26.6	27.4

	Windspeed at 10m AGL	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0
	Windspeed at Hub Height	**4.3**	**5.7**	**7.1**	**8.5**	**10.0**	**11.4**	**12.8**	**14.2**	**15.7**	**17.1**
Background Location:	**R8 Narangi**										
B/G Regression Line	-0.0201x^3 + 0.7209x^2 - 5.4402x + 35.805	24.2	24.5	26.4	29.4	33.3	37.6	42.1	46.4	50.2	53.0
SA EPA Criteria		35.0	35.0	35.0	35.0	38.3	42.6	47.1	51.4	55.2	58.0
NIGHT BG Regression Line	-0.0257x^3 + 0.9097x^2 - 7.1972x + 37.793	21.6	21.6	23.4	26.7	31.0	35.8	40.8	45.5	49.5	52.2
EPA Night Criteria		35.0	35.0	35.0	35.0	36.0	40.8	45.8	50.5	54.5	57.2
WHO Criteria		45.0	45.0	45.0	45.0	45.0	45.0	47.1	51.4	55.2	58.0
R1		26.2	28.6	33.0	35.8	36.3	36.3	36.3	36.3	36.3	36.3
R2		24.3	26.6	31.1	33.9	34.3	34.3	34.3	34.4	34.4	34.4
R3		22.3	24.6	29.1	31.9	32.3	32.3	32.3	32.4	32.4	32.4
R4		22.2	24.5	29.0	31.8	32.2	32.2	32.2	32.2	32.3	32.3
R5		21.6	24.0	28.4	31.3	31.7	31.7	31.7	31.7	31.7	31.7
R6		21.5	23.8	28.3	31.1	31.5	31.5	31.6	31.6	31.6	31.6
R7		22.1	24.5	28.9	31.7	32.2	32.2	32.2	32.2	32.2	32.2
R8		28.1	30.4	34.9	37.7	38.1	38.1	38.1	38.2	38.2	38.2
R21		33.4	35.8	40.2	43.1	43.5	43.5	43.5	43.5	43.5	43.5
R21a		34.5	36.9	41.4	44.2	44.6	44.6	44.6	44.6	44.6	44.6
R22		34.1	36.4	40.9	43.7	44.1	44.1	44.1	44.1	44.1	44.2
Background Location:	**R18 Wollondilly**										
B/G Regression Line	-0.0143x^3 + 0.5536x^2 - 4.7402x + 39.782	28.5	28.1	28.9	30.8	33.4	36.5	39.8	43.2	46.4	49.1
SA EPA Criteria		35.0	35.0	35.0	35.8	38.4	41.5	44.8	48.2	51.4	54.1
NIGHT BG Regression Line	-0.0229x^3 + 0.8605x^2 - 7.6186x + 43.885	25.3	24.2	25.0	27.3	30.7	34.9	39.3	43.7	47.6	50.7
EPA Night Criteria		35.0	35.0	35.0	35.0	35.7	39.9	44.3	48.7	52.6	55.7
WHO Criteria		45.0	45.0	45.0	45.0	45.0	45.0	45.0	48.2	51.4	54.1
R17		28.2	30.6	35.0	37.9	38.3	38.3	38.3	38.3	38.3	38.3
R18		30.0	32.4	36.8	39.7	40.1	40.1	40.1	40.1	40.1	40.1
R19		30.1	32.5	36.9	39.8	40.2	40.2	40.2	40.2	40.2	40.2
R29		20.0	22.4	26.8	29.7	30.1	30.1	30.1	30.1	30.1	30.1
R30		20.1	22.5	26.9	29.8	30.2	30.2	30.2	30.2	30.2	30.2
R31		17.4	19.8	24.2	27.1	27.5	27.5	27.5	27.5	27.5	27.5
R32		19.2	21.5	26.0	28.8	29.2	29.2	29.2	29.2	29.2	29.3
R33		21.3	23.7	28.1	30.9	31.4	31.4	31.4	31.4	31.4	31.4
R34		22.6	25.0	29.5	32.3	32.7	32.7	32.7	32.7	32.7	32.7
R35		22.0	24.4	28.8	31.7	32.1	32.1	32.1	32.1	32.1	32.1
R36		22.0	24.4	28.8	31.7	32.1	32.1	32.1	32.1	32.1	32.1
R37		24.2	26.5	31.0	33.8	34.3	34.3	34.3	34.3	34.3	34.3
R38		25.2	27.5	32.0	34.8	35.2	35.2	35.2	35.3	35.3	35.3
R39		25.8	28.2	32.6	35.5	35.9	35.9	35.9	35.9	35.9	35.9
R40		21.2	23.5	28.0	30.8	31.2	31.2	31.2	31.2	31.2	31.2
R41		20.1	22.4	26.9	29.7	30.1	30.1	30.1	30.1	30.1	30.2
Background Location:	**R20 Normaroo**										
B/G Regression Line	-0.0124x^3 + 0.4392x^2 - 2.7661x + 29.349	24.6	25.5	27.4	30.0	33.1	36.5	39.9	43.2	46.1	48.4
SA EPA Criteria		35.0	35.0	35.0	35.0	38.1	41.5	44.9	48.2	51.1	53.4
NIGHT BG Regression Line	-0.0166x^3 + 0.5896x^2 - 4.1646x + 30.403	22.1	22.7	24.6	27.5	31.0	34.9	38.9	42.7	46.0	48.6
EPA Night Criteria		35.0	35.0	35.0	35.0	36.0	39.9	43.9	47.7	51.0	53.6
WHO Criteria		45.0	45.0	45.0	45.0	45.0	45.0	45.0	48.2	51.1	53.4
R20		30.0	32.4	36.9	39.7	40.1	40.1	40.1	40.1	40.1	40.1
R23		37.0	39.4	43.8	46.7	47.1	47.1	47.1	47.1	47.1	47.1
R24		37.9	40.3	44.7	47.6	48.0	48.0	48.0	48.0	48.0	48.0
R25		36.8	39.1	43.6	46.4	46.8	46.8	46.8	46.8	46.9	46.9
R26		36.8	39.1	43.6	46.4	46.8	46.8	46.8	46.8	46.8	46.8
R27		36.8	39.1	43.6	46.4	46.8	46.8	46.8	46.9	46.9	46.9
R28		36.7	39.0	43.5	46.3	46.7	46.7	46.7	46.7	46.7	46.7
R117		29.6	32.0	36.4	39.3	39.7	39.7	39.7	39.7	39.7	39.7
R118		28.3	30.6	35.1	37.9	38.3	38.3	38.3	38.4	38.4	38.4
R119		28.6	30.9	35.4	38.2	38.7	38.7	38.7	38.7	38.7	38.7
Background Location:	**R58 600 Woodhouselee Rd**										
B/G Regression Line	-0.0045x^3 + 0.2194x^2 - 1.5322x + 31.956	29.1	29.5	30.5	32.1	34.0	36.3	38.9	41.6	44.5	47.4
SA EPA Criteria		35.0	35.0	35.5	37.1	39.0	41.3	43.9	46.6	49.5	52.4
NIGHT BG Regression Line	-0.0053x^3 + 0.2472x^2 - 1.6363x + 29.838	26.9	27.6	28.8	30.6	32.8	35.4	38.3	41.3	44.5	47.6
EPA Night Criteria		35.0	35.0	35.0	35.6	37.8	40.4	43.3	46.3	49.5	52.6
WHO Criteria		45.0	45.0	45.0	45.0	45.0	45.0	45.0	46.6	49.5	52.4
R12		19.3	21.6	26.1	28.9	29.3	29.3	29.3	29.3	29.3	29.4
R13		19.2	21.6	26.1	28.9	29.3	29.3	29.3	29.3	29.3	29.3
R14		19.6	22.0	26.5	29.3	29.7	29.7	29.7	29.7	29.7	29.7
R15		19.8	22.2	26.7	29.5	29.9	29.9	29.9	29.9	29.9	29.9
R16		17.7	20.1	24.5	27.3	27.8	27.8	27.8	27.8	27.8	27.8
R43		13.3	15.7	20.1	23.0	23.4	23.4	23.4	23.4	23.4	23.4
R45		18.5	20.8	25.3	28.1	28.5	28.5	28.5	28.6	28.6	28.6
R46		18.8	21.2	25.6	28.5	28.9	28.9	28.9	28.9	28.9	28.9
R47		19.0	21.4	25.8	28.7	29.1	29.1	29.1	29.1	29.1	29.1
R48		19.4	21.8	26.2	29.1	29.5	29.5	29.5	29.5	29.5	29.5
R49		19.7	22.1	26.5	29.3	29.8	29.8	29.8	29.8	29.8	29.8
R50		19.9	22.3	26.8	29.6	30.0	30.0	30.0	30.0	30.0	30.0
R51		19.9	22.3	26.7	29.5	30.0	30.0	30.0	30.0	30.0	30.0
R52		19.7	22.1	26.5	29.3	29.8	29.8	29.8	29.8	29.8	29.8
R53		21.6	23.9	28.4	31.2	31.7	31.7	31.7	31.7	31.7	31.7
R54		22.2	24.5	29.0	31.8	32.3	32.3	32.3	32.3	32.3	32.3
R55		22.6	24.9	29.4	32.2	32.6	32.6	32.6	32.6	32.7	32.7
R56		22.1	24.5	28.9	31.7	32.2	32.2	32.2	32.2	32.2	32.2
R57		23.4	25.7	30.2	33.0	33.4	33.4	33.4	33.4	33.4	33.4
R58		26.1	28.5	32.9	35.7	36.2	36.2	36.2	36.2	36.2	36.2
R59		27.5	29.9	34.4	37.2	37.6	37.6	37.6	37.6	37.6	37.6
R83		19.3	21.7	26.1	29.0	29.4	29.4	29.4	29.4	29.4	29.4
R84		21.9	24.3	28.8	31.6	32.0	32.0	32.0	32.0	32.0	32.0
R87		15.5	17.9	22.4	25.2	25.6	25.6	25.6	25.6	25.6	25.6

	Windspeed at 10m AGL	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0
	Windspeed at Hub Height	4.3	5.7	7.1	8.5	10.0	11.4	12.8	14.2	15.7	17.1
R88		11.8	14.2	18.6	21.4	21.9	21.9	21.9	21.9	21.9	21.9
R89		13.1	15.4	19.9	22.7	23.1	23.1	23.1	23.2	23.2	23.2
R90		12.1	14.5	18.9	21.8	22.2	22.2	22.2	22.2	22.2	22.2
R91		13.2	15.6	20.0	22.8	23.3	23.3	23.3	23.3	23.3	23.3
R93		12.1	14.5	18.9	21.7	22.2	22.2	22.2	22.2	22.2	22.2
R96		10.4	12.7	17.2	20.0	20.5	20.5	20.5	20.5	20.5	20.5
Background Location:	**R62 Cottonwood**										
B/G Regression Line	-0.0135x^3 + 0.4454x^2 - 2.4834x + 29.187	25.7	27.0	29.2	32.0	35.3	38.7	42.1	45.1	47.7	49.4
SA EPA Criteria		35.0	35.0	35.0	37.0	40.3	43.7	47.1	50.1	52.7	54.4
NIGHT BG Regression Line	-0.0198x^3 + 0.6869x^2 - 5.0582x + 34.828	24.2	24.6	26.5	29.4	33.0	37.1	41.1	44.9	48.0	50.2
EPA Night Criteria		35.0	35.0	35.0	35.0	38.0	42.1	46.1	49.9	53.0	55.2
WHO Criteria		45.0	45.0	45.0	45.0	45.0	45.0	47.1	50.1	52.7	54.4
R60		27.7	30.0	34.5	37.3	37.7	37.7	37.7	37.7	37.7	37.7
R61		28.3	30.7	35.2	38.0	38.4	38.4	38.4	38.4	38.4	38.4
R62		28.2	30.6	35.0	37.9	38.3	38.3	38.3	38.3	38.3	38.3
Background Location:	**R64 Valdarmon Hill**										
B/G Regression Line	-0.0032x^3 + 0.0596x^2 + 2.2844x + 12.521	23.1	26.9	30.6	34.4	38.0	41.5	44.8	47.9	50.6	53.0
SA EPA Criteria		35.0	35.0	35.6	39.4	43.0	46.5	49.8	52.9	55.6	58.0
NIGHT BG Regression Line	-0.0093x^3 + 0.2628x^2 + 0.5447x + 13.759	20.1	23.7	27.6	31.8	36.1	40.3	44.3	47.9	51.0	53.4
EPA Night Criteria		35.0	35.0	35.0	36.8	41.1	45.3	49.3	52.9	56.0	58.4
WHO Criteria		45.0	45.0	45.0	45.0	45.0	46.5	49.8	52.9	55.6	58.0
R64		31.1	33.5	37.9	40.8	41.2	41.2	41.2	41.2	41.2	41.2
R65		30.7	33.1	37.5	40.4	40.8	40.8	40.8	40.8	40.8	40.8
Background Location:	**R66 Little Vale**										
B/G Regression Line	-0.0038x^3 + 0.1588x^2 + 0.201x + 17.442	20.9	23.0	25.5	28.4	31.4	34.7	38.1	41.5	44.9	48.3
SA EPA Criteria		35.0	35.0	35.0	35.0	36.4	39.7	43.1	46.5	49.9	53.3
NIGHT BG Regression Line	-0.0126x^3 + 0.4524x^2 - 2.0963x + 17.752	16.1	18.2	21.2	25.0	29.3	33.9	38.6	43.2	47.5	51.1
EPA Night Criteria		35.0	35.0	35.0	35.0	35.0	38.9	43.6	48.2	52.5	56.1
WHO Criteria		45.0	45.0	45.0	45.0	45.0	45.0	45.0	46.5	49.9	53.3
R66		32.4	34.7	39.2	42.0	42.4	42.4	42.4	42.4	42.4	42.4
R67		29.7	32.1	36.5	39.4	39.8	39.8	39.8	39.8	39.8	39.8
Background Location:	**R70 Snowgums**										
B/G Regression Line	-0.0182x^3 + 0.5772x^2 - 3.0782x + 26.75	22.7	24.6	27.5	31.2	35.4	39.7	43.8	47.4	50.2	51.9
SA EPA Criteria		35.0	35.0	35.0	36.2	40.4	44.7	48.8	52.4	55.2	56.9
NIGHT BG Regression Line	-0.0183x^3 + 0.5563x^2 - 1.9759x + 16.123	16.4	19.5	23.6	28.4	33.5	38.7	43.6	47.9	51.3	53.5
EPA Night Criteria		35.0	35.0	35.0	35.0	38.5	43.7	48.6	52.9	56.3	58.5
WHO Criteria		45.0	45.0	45.0	45.0	45.0	45.0	48.8	52.4	55.2	56.9
R68		27.6	29.9	34.4	37.2	37.7	37.7	37.7	37.7	37.7	37.7
R69		28.6	30.9	35.4	38.2	38.6	38.6	38.6	38.6	38.6	38.6
R70		29.3	31.7	36.1	39.0	39.4	39.4	39.4	39.4	39.4	39.4
Background Location:	**R71 Lynross**										
B/G Regression Line	-0.0083x^3 + 0.243x^2 + 0.3267x + 18.194	23.4	26.4	29.8	33.5	37.4	41.2	44.8	48.1	51.0	53.3
SA EPA Criteria		35.0	35.0	35.0	38.5	42.4	46.2	49.8	53.1	56.0	58.3
NIGHT BG Regression Line	-0.0136x^3 + 0.3747x^2 + 0.0985x + 10.908	17.1	21.1	25.7	30.6	35.6	40.5	45.1	49.0	52.1	54.1
EPA Night Criteria		35.0	35.0	35.0	35.6	40.6	45.5	50.1	54.0	57.1	59.1
WHO Criteria		45.0	45.0	45.0	45.0	45.0	46.2	49.8	53.1	56.0	58.3
R71		25.6	28.0	32.4	35.2	35.7	35.7	35.7	35.7	35.7	35.7
R72		24.1	26.5	31.0	33.8	34.2	34.2	34.2	34.2	34.2	34.3
R73		25.4	27.7	32.2	35.0	35.4	35.4	35.4	35.5	35.5	35.5
R74		19.2	21.6	26.0	28.8	29.3	29.3	29.3	29.3	29.4	29.4
R75		18.9	21.3	25.8	28.6	29.0	29.0	29.0	29.1	29.1	29.2
R76		19.2	21.6	26.0	28.9	29.3	29.3	29.3	29.3	29.4	29.4
R77		16.4	18.8	23.2	26.0	26.5	26.5	26.5	26.6	26.6	26.8
R81		18.9	21.3	25.8	28.6	29.0	29.0	29.0	29.0	29.1	29.1
R82		19.3	21.7	26.1	28.9	29.4	29.4	29.4	29.4	29.4	29.5
R109		20.5	22.9	27.3	30.1	30.6	30.6	30.6	30.6	30.6	30.6
R110		18.0	20.3	24.8	27.6	28.0	28.0	28.1	28.1	28.1	28.1
R111		18.4	20.7	25.2	28.0	28.4	28.4	28.5	28.5	28.5	28.5
R112		18.4	20.7	25.2	28.0	28.4	28.4	28.4	28.5	28.5	28.5
R115		18.3	20.6	25.1	27.9	28.3	28.4	28.4	28.4	28.4	28.5
R116		18.1	20.5	24.9	27.8	28.2	28.2	28.2	28.2	28.3	28.3
Background Location:	**R79 Leeston**										
B/G Regression Line	0.001x^3 - 0.053x^2 + 2.4941x + 19.177	28.9	31.8	34.6	37.2	39.7	42.2	44.5	46.8	49.1	51.3
SA EPA Criteria		35.0	36.8	39.6	42.2	44.7	47.2	49.5	51.8	54.1	56.3
NIGHT BG Regression Line	-0.0038x^3 + 0.1151x^2 + 0.878x + 22.436	28.0	30.5	33.1	36.0	38.8	41.7	44.6	47.3	49.8	52.1
EPA Night Criteria		35.0	35.5	38.1	41.0	43.8	46.7	49.6	52.3	54.8	57.1
WHO Criteria		45.0	45.0	45.0	45.0	45.0	47.2	49.5	51.8	54.1	56.3
R63		31.8	34.2	38.6	41.4	41.9	41.9	41.9	41.9	41.9	41.9
R79		30.2	32.6	37.1	39.9	40.3	40.3	40.3	40.3	40.3	40.3
R80		29.5	31.9	36.4	39.2	39.6	39.6	39.6	39.6	39.6	39.6
Background Location:	**R106 Rosedale**										
B/G Regression Line	-0.0085x^3 + 0.2644x^2 - 0.8076x + 32.476	33.2	34.9	37.1	39.6	42.3	45.0	47.6	50.0	52.0	53.5
SA EPA Criteria		38.2	39.9	42.1	44.6	47.3	50.0	52.6	55.0	57.0	58.5
NIGHT BG Regression Line	-0.0109x^3 + 0.3551x^2 - 1.7974x + 34.095	32.0	33.4	35.4	37.8	40.7	43.6	46.4	49.0	51.2	52.7
EPA Night Criteria		37.0	38.4	40.4	42.8	45.7	48.6	51.4	54.0	56.2	57.7
WHO Criteria		45.0	45.0	45.0	45.0	47.3	50.0	52.6	55.0	57.0	58.5
R97		12.6	15.0	19.5	22.3	22.7	22.7	22.7	22.7	22.7	22.7
R98		12.6	15.0	19.5	22.3	22.7	22.7	22.7	22.7	22.7	22.7
R99		13.5	15.8	20.3	23.1	23.6	23.6	23.6	23.6	23.6	23.6
R100		14.1	16.5	20.9	23.8	24.2	24.2	24.2	24.2	24.2	24.2

	Windspeed at 10m AGL	**3.0**	**4.0**	**5.0**	**6.0**	**7.0**	**8.0**	**9.0**	**10.0**	**11.0**	**12.0**
	Windspeed at Hub Height	**4.3**	**5.7**	**7.1**	**8.5**	**10.0**	**11.4**	**12.8**	**14.2**	**15.7**	**17.1**
R101		13.1	15.4	19.9	22.7	23.1	23.1	23.1	23.1	23.2	23.2
R102		15.9	18.3	22.7	25.6	26.0	26.0	26.0	26.0	26.0	26.0
R103		15.7	18.1	22.5	25.4	25.8	25.8	25.8	25.8	25.8	25.8
R104		20.4	22.7	27.2	30.0	30.5	30.5	30.5	30.5	30.5	30.5
R105		18.7	21.1	25.5	28.3	28.8	28.8	28.8	28.8	28.8	28.8
R106		25.5	27.8	32.3	35.1	35.5	35.5	35.5	35.5	35.6	35.6
R107		17.6	20.0	24.4	27.3	27.7	27.7	27.7	27.7	27.7	27.7
R108		17.3	19.7	24.1	27.0	27.4	27.4	27.4	27.4	27.4	27.4
R113		17.3	19.7	24.1	26.9	27.4	27.4	27.4	27.4	27.4	27.4
R114		19.2	21.6	26.1	28.9	29.3	29.3	29.3	29.3	29.3	29.3
Background Location:	**R120 Elmgrove**										
B/G Regression Line	-0.0023x^3 + 0.1114x^2 - 0.2106x + 28.947	29.9	30.9	32.3	33.8	35.6	37.6	39.7	41.9	44.1	46.4
SA EPA Criteria		35.0	35.9	37.3	38.8	40.6	42.6	44.7	46.9	49.1	51.4
NIGHT BG Regression Line	-0.0083x^3 + 0.2813x^2 - 1.6306x + 31.151	28.7	29.5	30.8	32.6	34.6	36.8	39.0	41.0	42.7	44.0
EPA Night Criteria		35.0	35.0	35.8	37.6	39.6	41.8	44.0	46.0	47.7	49.0
WHO Criteria		45.0	45.0	45.0	45.0	45.0	45.0	45.0	46.9	49.1	51.4
R120		32.0	34.3	38.7	41.5	42.0	42.0	42.2	42.3	42.6	43.0
R123		27.4	29.8	34.2	37.0	37.5	37.5	37.5	37.6	37.6	37.7
R124		28.4	30.7	35.2	38.0	38.4	38.4	38.5	38.5	38.5	38.5
R125		21.1	23.5	28.0	30.8	31.2	31.2	31.3	31.3	31.4	31.5
R130		30.2	32.6	36.7	39.5	40.1	40.4	40.9	41.5	42.5	43.6
R131		26.7	29.0	32.3	34.9	36.0	37.1	38.4	40.0	41.7	43.5
R132		22.7	25.1	29.4	32.2	32.7	32.8	33.1	33.5	34.0	34.8
R133		15.9	18.3	22.6	25.4	25.9	26.0	26.2	26.6	27.1	27.8

	Windspeed at 10m AGL	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0
	Windspeed at Hub Height	**4.3**	**5.7**	**7.1**	**8.5**	**10.0**	**11.4**	**12.8**	**14.2**	**15.7**	**17.1**
Background Location:	**R8 Narangi**										
B/G Regression Line	-0.0201x^3 + 0.7209x^2 - 5.4402x + 35.805	24.2	24.5	26.4	29.4	33.3	37.6	42.1	46.4	50.2	53.0
SA EPA Criteria		35.0	35.0	35.0	35.0	38.3	42.6	47.1	51.4	55.2	58.0
NIGHT BG Regression Line	-0.0257x^3 + 0.9097x^2 - 7.1972x + 37.793	21.6	21.6	23.4	26.7	31.0	35.8	40.8	45.5	49.5	52.2
EPA Night Criteria		35.0	35.0	35.0	35.0	36.0	40.8	45.8	50.5	54.5	57.2
WHO Criteria		45.0	45.0	45.0	45.0	45.0	45.0	47.1	51.4	55.2	58.0
R1		25.7	29.5	32.8	34.2	34.1	33.6	33.5	33.5	15.4	17.5
R2		23.7	27.5	30.8	32.2	32.1	31.6	31.6	31.6	12.8	14.9
R3		21.6	25.4	28.7	30.1	30.0	29.5	29.4	29.5	11.3	13.4
R4		21.4	25.2	28.5	29.9	29.8	29.3	29.3	29.3	10.4	12.5
R5		21.1	24.9	28.2	29.6	29.5	29.0	28.9	28.9	10.3	12.4
R6		21.0	24.8	28.1	29.5	29.4	28.9	28.8	28.8	9.9	12.0
R7		21.3	25.1	28.4	29.8	29.7	29.2	29.2	29.2	9.0	11.1
R8		27.7	31.5	34.8	36.2	36.1	35.6	35.5	35.5	14.0	16.1
R21		33.3	37.1	40.3	41.7	41.7	41.2	41.1	41.1	20.0	22.1
R21a		34.3	38.1	41.4	42.8	42.7	42.2	42.1	42.1	20.0	22.1
R22		33.8	37.6	40.9	42.3	42.2	41.7	41.6	41.7	20.0	22.1
Background Location:	**R18 Wollondilly**										
B/G Regression Line	-0.0143x^3 + 0.5536x^2 - 4.7402x + 39.782	28.5	28.1	28.9	30.8	33.4	36.5	39.8	43.2	46.4	49.1
SA EPA Criteria		35.0	35.0	35.0	35.8	38.4	41.5	44.8	48.2	51.4	54.1
NIGHT BG Regression Line	-0.0229x^3 + 0.8605x^2 - 7.6186x + 43.885	25.3	24.2	25.0	27.3	30.7	34.9	39.3	43.7	47.6	50.7
EPA Night Criteria		35.0	35.0	35.0	35.0	35.7	39.9	44.3	48.7	52.6	55.7
WHO Criteria		45.0	45.0	45.0	45.0	45.0	45.0	45.0	48.2	51.4	54.1
R17		28.0	31.8	35.1	36.5	36.4	35.9	35.8	35.8	9.6	11.7
R18		29.7	33.5	36.8	38.2	38.1	37.6	37.5	37.6	10.0	12.1
R19		29.8	33.6	36.9	38.3	38.2	37.7	37.6	37.6	11.7	13.8
R29		19.0	22.8	26.1	27.5	27.4	26.9	26.8	26.8	3.3	5.4
R30		19.1	22.9	26.2	27.6	27.5	27.0	26.9	26.9	3.6	5.7
R31		16.5	20.3	23.6	25.0	24.9	24.4	24.3	24.3	3.0	5.1
R32		18.3	22.1	25.4	26.8	26.7	26.2	26.1	26.1	4.3	6.4
R33		20.4	24.2	27.5	28.9	28.8	28.3	28.2	28.2	3.5	5.6
R34		21.7	25.5	28.8	30.2	30.1	29.6	29.6	29.6	4.9	7.0
R35		21.2	25.0	28.3	29.7	29.6	29.1	29.0	29.0	4.1	6.2
R36		21.4	25.2	28.5	29.9	29.8	29.3	29.2	29.2	4.9	7.0
R37		23.6	27.4	30.7	32.1	32.0	31.5	31.4	31.4	6.1	8.2
R38		24.7	28.5	31.8	33.2	33.1	32.6	32.5	32.5	7.2	9.3
R39		25.3	29.1	32.4	33.8	33.7	33.2	33.1	33.1	7.2	9.3
R40		20.5	24.3	27.6	29.0	28.9	28.4	28.3	28.3	4.8	6.9
R41		19.0	22.8	26.1	27.5	27.4	26.9	26.8	26.8	3.3	5.4
Background Location:	**R20 Normaroo**										
B/G Regression Line	-0.0124x^3 + 0.4392x^2 - 2.7661x + 29.349	24.6	25.5	27.4	30.0	33.1	36.5	39.9	43.2	46.1	48.4
SA EPA Criteria		35.0	35.0	35.0	35.0	38.1	41.5	44.9	48.2	51.1	53.4
NIGHT BG Regression Line	-0.0166x^3 + 0.5896x^2 - 4.1646x + 30.403	22.1	22.7	24.6	27.5	31.0	34.9	38.9	42.7	46.0	48.6
EPA Night Criteria		35.0	35.0	35.0	35.0	36.0	39.9	43.9	47.7	51.0	53.6
WHO Criteria		45.0	45.0	45.0	45.0	45.0	45.0	45.0	48.2	51.1	53.4
R20		29.7	33.5	36.8	38.2	38.1	37.6	37.5	37.5	13.5	15.6
R23		36.8	40.6	43.9	45.3	45.2	44.7	44.6	44.6	17.4	19.5
R24		37.7	41.5	44.8	46.2	46.1	45.6	45.5	45.5	17.3	19.4
R25		36.6	40.4	43.7	45.1	45.0	44.5	44.4	44.4	17.3	19.4
R26		36.5	40.3	43.6	45.0	44.9	44.4	44.4	44.4	16.8	18.9
R27		36.5	40.3	43.6	45.0	44.9	44.4	44.3	44.3	16.6	18.7
R28		36.4	40.2	43.5	44.9	44.8	44.3	44.2	44.2	16.3	18.4
R117		29.4	33.2	36.5	37.9	37.8	37.3	37.2	37.2	15.8	17.9
R118		28.0	31.8	35.1	36.5	36.4	35.9	35.8	35.8	16.7	18.8
R119		28.3	32.0	35.3	36.7	36.7	36.2	36.1	36.1	15.7	17.8
Background Location:	**R58 600 Woodhouselee Rd**										
B/G Regression Line	-0.0045x^3 + 0.2194x^2 - 1.5322x + 31.956	29.1	29.5	30.5	32.1	34.0	36.3	38.9	41.6	44.5	47.4
SA EPA Criteria		35.0	35.0	35.5	37.1	39.0	41.3	43.9	46.6	49.5	52.4
NIGHT BG Regression Line	-0.0053x^3 + 0.2472x^2 - 1.6363x + 29.838	26.9	27.6	28.8	30.6	32.8	35.4	38.3	41.3	44.5	47.6
EPA Night Criteria		35.0	35.0	35.0	35.6	37.8	40.4	43.3	46.3	49.5	52.6
WHO Criteria		45.0	45.0	45.0	45.0	45.0	45.0	45.0	46.6	49.5	52.4
R12		18.0	21.8	25.1	26.5	26.4	25.9	25.9	25.9	3.6	5.7
R13		18.0	21.8	25.1	26.5	26.4	25.9	25.8	25.8	3.7	5.8
R14		18.5	22.3	25.6	27.0	26.9	26.4	26.3	26.3	3.3	5.4
R15		18.7	22.5	25.8	27.2	27.1	26.6	26.5	26.5	3.2	5.3
R16		16.8	20.6	23.9	25.3	25.2	24.7	24.6	24.6	3.9	6.0
R43		12.0	15.8	19.1	20.5	20.4	19.9	19.8	19.8	0.2	2.3
R45		17.2	21.0	24.3	25.7	25.6	25.1	25.0	25.0	3.6	5.7
R46		17.6	21.4	24.7	26.1	26.0	25.5	25.4	25.4	3.6	5.7
R47		17.8	21.6	24.9	26.3	26.2	25.7	25.6	25.6	3.8	5.9
R48		18.2	22.0	25.3	26.7	26.6	26.1	26.0	26.1	3.8	5.9
R49		18.6	22.4	25.7	27.1	27.0	26.5	26.4	26.4	3.9	6.0
R50		19.0	22.8	26.1	27.5	27.4	26.9	26.8	26.8	3.9	6.0
R51		19.0	22.8	26.1	27.5	27.4	26.9	26.8	26.8	3.6	5.7
R52		18.8	22.6	25.9	27.3	27.2	26.7	26.6	26.6	2.8	4.9
R53		20.8	24.6	27.9	29.3	29.2	28.7	28.6	28.6	3.8	5.9
R54		21.6	25.4	28.7	30.1	30.0	29.5	29.4	29.4	3.7	5.8
R55		21.9	25.7	29.0	30.4	30.3	29.8	29.7	29.7	3.3	5.4
R56		21.3	25.1	28.4	29.8	29.7	29.2	29.1	29.2	3.6	5.7
R57		22.8	26.6	29.9	31.3	31.2	30.7	30.6	30.6	4.1	6.2
R58		25.8	29.6	32.9	34.3	34.2	33.7	33.6	33.6	4.5	6.6
R59		27.3	31.1	34.4	35.8	35.7	35.2	35.1	35.1	4.8	6.9
R83		18.3	22.1	25.4	26.8	26.7	26.2	26.1	26.1	2.8	4.9

	Windspeed at 10m AGL	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0
	Windspeed at Hub Height	4.3	5.7	7.1	8.5	10.0	11.4	12.8	14.2	15.7	17.1
R84		21.2	25.0	28.3	29.7	29.6	29.1	29.0	29.0	3.1	5.2
R87		14.5	18.3	21.6	23.0	22.9	22.4	22.3	22.3	-2.8	-0.7
R88		10.5	14.3	17.6	19.0	18.9	18.4	18.3	18.3	-3.3	-1.2
R89		11.9	15.7	19.0	20.4	20.3	19.8	19.7	19.7	-2.8	-0.7
R90		10.9	14.7	18.0	19.4	19.3	18.8	18.7	18.7	-2.9	-0.8
R91		12.0	15.8	19.1	20.5	20.4	19.9	19.9	19.9	-2.2	-0.1
R93		10.9	14.7	18.0	19.4	19.3	18.8	18.7	18.7	-3.5	-1.4
R96		8.9	12.7	16.0	17.4	17.3	16.8	16.7	16.7	-3.3	-1.2
Background Location:	**R62 Cottonwood**										
B/G Regression Line	-0.0135x^3 + 0.4454x^2 - 2.4834x + 29.187	25.7	27.0	29.2	32.0	35.3	38.7	42.1	45.1	47.7	49.4
SA EPA Criteria		35.0	35.0	35.0	37.0	40.3	43.7	47.1	50.1	52.7	54.4
NIGHT BG Regression Line	-0.0198x^3 + 0.6869x^2 - 5.0582x + 34.828	24.2	24.6	26.5	29.4	33.0	37.1	41.1	44.9	48.0	50.2
EPA Night Criteria		35.0	35.0	35.0	35.0	38.0	42.1	46.1	49.9	53.0	55.2
WHO Criteria		45.0	45.0	45.0	45.0	45.0	45.0	47.1	50.1	52.7	54.4
R60		27.3	31.1	34.4	35.8	35.7	35.2	35.1	35.1	6.5	8.6
R61		28.0	31.8	35.1	36.5	36.4	35.9	35.8	35.8	5.0	7.1
R62		27.9	31.7	35.0	36.4	36.3	35.8	35.7	35.7	5.1	7.2
Background Location:	**R64 Valdarmon Hill**										
B/G Regression Line	-0.0032x^3 + 0.0596x^2 + 2.2844x + 12.521	23.1	26.9	30.6	34.4	38.0	41.5	44.8	47.9	50.6	53.0
SA EPA Criteria		35.0	35.0	35.6	39.4	43.0	46.5	49.8	52.9	55.6	58.0
NIGHT BG Regression Line	-0.0093x^3 + 0.2628x^2 + 0.5447x + 13.759	20.1	23.7	27.6	31.8	36.1	40.3	44.3	47.9	51.0	53.4
EPA Night Criteria		35.0	35.0	35.0	36.8	41.1	45.3	49.3	52.9	56.0	58.4
WHO Criteria		45.0	45.0	45.0	45.0	45.0	46.5	49.8	52.9	55.6	58.0
R64		30.8	34.6	37.9	39.3	39.2	38.7	38.6	38.6	8.2	10.3
R65		30.5	34.3	37.6	39.0	38.9	38.4	38.3	38.3	8.5	10.6
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Background Location:	**R66 Little Vale**	0	0	0	0	0	0	0	0	0	0
B/G Regression Line	-0.0038x^3 + 0.1588x^2 + 0.201x + 17.442	20.9	23.0	25.5	28.4	31.4	34.7	38.1	41.5	44.9	48.3
SA EPA Criteria		35.0	35.0	35.0	35.0	36.4	39.7	43.1	46.5	49.9	53.3
NIGHT BG Regression Line	-0.0126x^3 + 0.4524x^2 - 2.0963x + 17.752	16.1	18.2	21.2	25.0	29.3	33.9	38.6	43.2	47.5	51.1
EPA Night Criteria		35.0	35.0	35.0	35.0	35.0	38.9	43.6	48.2	52.5	56.1
WHO Criteria		45.0	45.0	45.0	45.0	45.0	45.0	45.0	46.5	49.9	53.3
R66		32.2	36.0	39.3	40.7	40.6	40.1	40.0	40.0	3.8	5.9
R67		29.5	33.3	36.6	38.0	37.9	37.4	37.3	37.3	3.7	5.8
Background Location:	**R70 Snowgums**										
B/G Regression Line	-0.0182x^3 + 0.5772x^2 - 3.0782x + 26.75	22.7	24.6	27.5	31.2	35.4	39.7	43.8	47.4	50.2	51.9
SA EPA Criteria		35.0	35.0	35.0	36.2	40.4	44.7	48.8	52.4	55.2	56.9
NIGHT BG Regression Line	-0.0183x^3 + 0.5563x^2 - 1.9759x + 16.123	16.4	19.5	23.6	28.4	33.5	38.7	43.6	47.9	51.3	53.5
EPA Night Criteria		35.0	35.0	35.0	35.0	38.5	43.7	48.6	52.9	56.3	58.5
WHO Criteria		45.0	45.0	45.0	45.0	45.0	45.0	48.8	52.4	55.2	56.9
R68		27.3	31.1	34.4	35.8	35.7	35.2	35.1	35.1	10.7	12.8
R69		28.2	32.0	35.3	36.7	36.6	36.1	36.0	36.0	9.8	11.9
R70		29.2	33.0	36.3	37.7	37.6	37.1	37.0	37.0	13.0	15.1
Background Location:	**R71 Lynross**										
B/G Regression Line	-0.0083x^3 + 0.243x^2 + 0.3267x + 18.194	23.4	26.4	29.8	33.5	37.4	41.2	44.8	48.1	51.0	53.3
SA EPA Criteria		35.0	35.0	35.0	38.5	42.4	46.2	49.8	53.1	56.0	58.3
NIGHT BG Regression Line	-0.0136x^3 + 0.3747x^2 + 0.0985x + 10.908	17.1	21.1	25.7	30.6	35.6	40.5	45.1	49.0	52.1	54.1
EPA Night Criteria		35.0	35.0	35.0	35.6	40.6	45.5	50.1	54.0	57.1	59.1
WHO Criteria		45.0	45.0	45.0	45.0	45.0	46.2	49.8	53.1	56.0	58.3
R71		25.2	29.0	32.3	33.7	33.6	33.1	33.0	33.1	12.0	14.1
R72		23.7	27.5	30.8	32.2	32.1	31.6	31.5	31.6	12.0	14.1
R73		24.7	28.5	31.8	33.2	33.1	32.6	32.5	32.5	13.9	16.0
R74		18.4	22.2	25.5	26.9	26.8	26.4	26.3	26.3	13.5	15.6
R75		18.2	22.0	25.3	26.7	26.6	26.1	26.0	26.1	13.6	15.7
R76		18.5	22.3	25.6	27.0	26.9	26.4	26.3	26.4	12.7	14.8
R77		15.4	19.2	22.5	23.9	23.8	23.3	23.3	23.4	12.9	15.0
R81		18.2	22.0	25.3	26.7	26.6	26.1	26.0	26.1	11.4	13.5
R82		18.6	22.4	25.7	27.1	27.0	26.5	26.4	26.4	11.1	13.2
R109		19.7	23.5	26.8	28.2	28.1	27.6	27.5	27.5	9.1	11.2
R110		17.1	20.9	24.2	25.6	25.5	25.0	25.0	25.0	10.2	12.3
R111		17.5	21.3	24.6	26.0	25.9	25.5	25.4	25.4	11.0	13.1
R112		17.5	21.3	24.6	26.0	25.9	25.4	25.4	25.4	11.0	13.1
R115		17.5	21.2	24.5	25.9	25.9	25.4	25.3	25.3	11.1	13.2
R116		17.3	21.1	24.4	25.8	25.7	25.2	25.1	25.2	11.2	13.3
Background Location:	**R79 Leeston**										
B/G Regression Line	0.001x^3 - 0.053x^2 + 2.4941x + 19.177	28.9	31.8	34.6	37.2	39.7	42.2	44.5	46.8	49.1	51.3
SA EPA Criteria		35.0	36.8	39.6	42.2	44.7	47.2	49.5	51.8	54.1	56.3
NIGHT BG Regression Line	-0.0038x^3 + 0.1151x^2 + 0.878x + 22.436	28.0	30.5	33.1	36.0	38.8	41.7	44.6	47.3	49.8	52.1
EPA Night Criteria		35.0	35.5	38.1	41.0	43.8	46.7	49.6	52.3	54.8	57.1
WHO Criteria		45.0	45.0	45.0	45.0	45.0	47.2	49.5	51.8	54.1	56.3
R63		31.5	35.3	38.6	40.0	39.9	39.4	39.3	39.3	6.6	8.7
R79		30.0	33.8	37.1	38.5	38.4	37.9	37.8	37.8	7.7	9.8
R80		29.3	33.1	36.4	37.8	37.7	37.2	37.1	37.1	5.8	7.9
Background Location:	**R106 Rosedale**										
B/G Regression Line	-0.0085x^3 + 0.2644x^2 - 0.8076x + 32.476	33.2	34.9	37.1	39.6	42.3	45.0	47.6	50.0	52.0	53.5
SA EPA Criteria		38.2	39.9	42.1	44.6	47.3	50.0	52.6	55.0	57.0	58.5
NIGHT BG Regression Line	-0.0109x^3 + 0.3551x^2 - 1.7974x + 34.095	32.0	33.4	35.4	37.8	40.7	43.6	46.4	49.0	51.2	52.7
EPA Night Criteria		37.0	38.4	40.4	42.8	45.7	48.6	51.4	54.0	56.2	57.7
WHO Criteria		45.0	45.0	45.0	45.0	47.3	50.0	52.6	55.0	57.0	58.5

	Windspeed at 10m AGL	**3.0**	**4.0**	**5.0**	**6.0**	**7.0**	**8.0**	**9.0**	**10.0**	**11.0**	**12.0**
	Windspeed at Hub Height	**4.3**	**5.7**	**7.1**	**8.5**	**10.0**	**11.4**	**12.8**	**14.2**	**15.7**	**17.1**
R97		11.4	15.2	18.5	19.9	19.8	19.3	19.2	19.2	-1.0	1.1
R98		11.4	15.2	18.5	19.9	19.8	19.3	19.2	19.2	-1.0	1.1
R99		12.3	16.1	19.4	20.8	20.7	20.2	20.1	20.1	-0.4	1.7
R100		13.0	16.8	20.1	21.5	21.4	20.9	20.8	20.8	-0.2	1.9
R101		11.8	15.6	18.9	20.3	20.2	19.7	19.6	19.6	-0.1	2.0
R102		14.9	18.7	22.0	23.4	23.3	22.8	22.7	22.7	1.3	3.4
R103		14.8	18.6	21.9	23.3	23.2	22.7	22.6	22.6	2.3	4.4
R104		19.9	23.7	27.0	28.4	28.3	27.8	27.7	27.7	3.9	6.0
R105		18.1	21.9	25.2	26.6	26.5	26.0	25.9	25.9	4.0	6.1
R106		25.4	29.2	32.5	33.9	33.8	33.3	33.2	33.2	5.9	8.0
R107		16.8	20.6	23.9	25.3	25.2	24.7	24.6	24.6	4.8	6.9
R108		16.4	20.2	23.5	24.9	24.8	24.3	24.2	24.2	5.4	7.5
R113		16.4	20.2	23.5	24.9	24.8	24.3	24.2	24.2	5.7	7.8
R114		18.7	22.5	25.8	27.2	27.1	26.6	26.5	26.5	5.1	7.2
Background Location:	**R120 Elmgrove**										
B/G Regression Line	-0.0023x^3 + 0.1114x^2 - 0.2106x + 28.947	29.9	30.9	32.3	33.8	35.6	37.6	39.7	41.9	44.1	46.4
SA EPA Criteria		35.0	35.9	37.3	38.8	40.6	42.6	44.7	46.9	49.1	51.4
NIGHT BG Regression Line	-0.0083x^3 + 0.2813x^2 - 1.6306x + 31.151	28.7	29.5	30.8	32.6	34.6	36.8	39.0	41.0	42.7	44.0
EPA Night Criteria		35.0	35.0	35.8	37.6	39.6	41.8	44.0	46.0	47.7	49.0
WHO Criteria		45.0	45.0	45.0	45.0	45.0	45.0	45.0	46.9	49.1	51.4
R120		31.7	35.4	38.7	40.1	40.1	39.7	39.8	40.1	34.3	36.4
R123		27.0	30.8	34.1	35.5	35.4	35.0	34.9	35.0	24.1	26.2
R124		28.0	31.8	35.1	36.5	36.4	35.9	35.9	35.9	18.9	21.0
R125		20.6	24.4	27.7	29.1	29.0	28.6	28.5	28.6	17.1	19.2
R130		30.0	33.5	36.7	38.2	38.4	38.5	39.2	40.1	39.4	41.5
R131		26.6	29.5	32.3	34.0	35.1	36.2	37.8	39.5	41.0	43.1
R132		22.4	26.0	29.3	30.7	30.8	30.6	30.9	31.6	29.0	31.1
R133		15.0	18.7	21.9	23.3	23.4	23.2	23.6	24.2	21.6	23.7

	Windspeed at 10m AGL	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0
	Windspeed at Hub Height	**4.3**	**5.7**	**7.1**	**8.5**	**10.0**	**11.4**	**12.8**	**14.2**	**15.7**	**17.1**
Background Location:	**R8 Narangi**										
B/G Regression Line	-0.0201x^3 + 0.7209x^2 - 5.4402x + 35.805	24.2	24.5	26.4	29.4	33.3	37.6	42.1	46.4	50.2	53.0
SA EPA Criteria		35.0	35.0	35.0	35.0	38.3	42.6	47.1	51.4	55.2	58.0
NIGHT BG Regression Line	-0.0257x^3 + 0.9097x^2 - 7.1972x + 37.793	21.6	21.6	23.4	26.7	31.0	35.8	40.8	45.5	49.5	52.2
EPA Night Criteria		35.0	35.0	35.0	35.0	36.0	40.8	45.8	50.5	54.5	57.2
WHO Criteria		45.0	45.0	45.0	45.0	45.0	45.0	47.1	51.4	55.2	58.0
R1		19.3	20.5	25.0	29.3	33.5	34.6	35.0	35.3	35.6	35.7
R2		17.3	18.5	23.0	27.3	31.5	32.6	33.0	33.3	33.6	33.7
R3		15.2	16.4	21.0	25.2	29.3	30.5	30.9	31.2	31.5	31.6
R4		15.0	16.3	20.8	25.1	29.2	30.3	30.8	31.0	31.3	31.4
R5		14.6	15.8	20.3	24.6	28.8	29.9	30.3	30.6	30.9	31.0
R6		14.5	15.7	20.2	24.5	28.7	29.8	30.2	30.5	30.7	30.9
R7		15.0	16.2	20.8	25.0	29.2	30.3	30.7	31.0	31.3	31.4
R8		21.1	22.4	26.9	31.1	35.2	36.3	36.8	37.1	37.3	37.5
R21		26.7	27.9	32.5	36.7	40.7	41.9	42.3	42.6	42.9	43.0
R21a		27.8	29.0	33.6	37.8	41.9	43.1	43.5	43.8	44.0	44.2
R22		27.3	28.6	33.1	37.4	41.5	42.6	43.1	43.4	43.6	43.7
Background Location:	**R18 Wollondilly**										
B/G Regression Line	-0.0143x^3 + 0.5536x^2 - 4.7402x + 39.782	28.5	28.1	28.9	30.8	33.4	36.5	39.8	43.2	46.4	49.1
SA EPA Criteria		35.0	35.0	35.0	35.8	38.4	41.5	44.8	48.2	51.4	54.1
NIGHT BG Regression Line	-0.0229x^3 + 0.8605x^2 - 7.6186x + 43.885	25.3	24.2	25.0	27.3	30.7	34.9	39.3	43.7	47.6	50.7
EPA Night Criteria		35.0	35.0	35.0	35.0	35.7	39.9	44.3	48.7	52.6	55.7
WHO Criteria		45.0	45.0	45.0	45.0	45.0	45.0	45.0	48.2	51.4	54.1
R17		21.3	22.5	27.1	31.4	35.6	36.7	37.1	37.4	37.6	37.7
R18		23.2	24.4	29.0	33.3	37.5	38.6	39.1	39.3	39.6	39.7
R19		23.2	24.4	29.0	33.3	37.4	38.5	39.0	39.2	39.5	39.6
R29		12.8	14.0	18.6	22.7	26.7	27.8	28.3	28.6	28.8	29.0
R30		13.0	14.2	18.7	22.8	26.8	27.9	28.4	28.7	28.9	29.0
R31		10.3	11.5	16.0	20.2	24.3	25.4	25.8	26.1	26.4	26.5
R32		12.0	13.2	17.7	21.9	25.9	27.0	27.5	27.8	28.0	28.2
R33		14.0	15.2	19.8	23.9	27.9	29.0	29.5	29.8	30.0	30.1
R34		15.4	16.6	21.1	25.3	29.3	30.4	30.9	31.2	31.4	31.5
R35		14.7	15.9	20.5	24.6	28.6	29.7	30.2	30.4	30.7	30.8
R36		14.8	16.0	20.5	24.6	28.6	29.7	30.2	30.5	30.7	30.8
R37		16.7	17.9	22.5	26.7	30.8	32.0	32.4	32.7	32.9	33.0
R38		17.7	19.0	23.5	27.8	31.9	33.0	33.4	33.7	34.0	34.1
R39		18.4	19.7	24.2	28.5	32.6	33.7	34.1	34.4	34.7	34.8
R40		14.0	15.2	19.7	23.9	28.0	29.1	29.6	29.9	30.1	30.2
R41		12.9	14.1	18.6	22.7	26.7	27.9	28.3	28.6	28.9	29.0
Background Location:	**R20 Normaroo**										
B/G Regression Line	-0.0124x^3 + 0.4392x^2 - 2.7661x + 29.349	24.6	25.5	27.4	30.0	33.1	36.5	39.9	43.2	46.1	48.4
SA EPA Criteria		35.0	35.0	35.0	35.0	38.1	41.5	44.9	48.2	51.1	53.4
NIGHT BG Regression Line	-0.0166x^3 + 0.5896x^2 - 4.1646x + 30.403	22.1	22.7	24.6	27.5	31.0	34.9	38.9	42.7	46.0	48.6
EPA Night Criteria		35.0	35.0	35.0	35.0	36.0	39.9	43.9	47.7	51.0	53.6
WHO Criteria		45.0	45.0	45.0	45.0	45.0	45.0	45.0	48.2	51.1	53.4
R20		23.1	24.3	28.9	32.8	36.4	37.5	38.0	38.4	38.6	38.7
R23		30.3	31.5	36.1	39.9	43.4	44.5	45.0	45.4	45.7	45.8
R24		31.2	32.5	37.0	40.3	42.7	43.7	44.4	45.0	45.3	45.4
R25		30.1	31.3	35.9	39.7	43.1	44.2	44.7	45.1	45.4	45.5
R26		30.1	31.3	35.8	39.6	43.1	44.2	44.7	45.1	45.4	45.4
R27		30.1	31.3	35.8	39.6	43.1	44.2	44.7	45.1	45.3	45.4
R28		30.0	31.2	35.7	39.4	42.5	43.6	44.2	44.6	44.9	45.0
R117		22.8	24.0	28.5	32.3	35.6	36.7	37.3	37.7	37.9	38.0
R118		21.5	22.7	27.2	31.1	34.6	35.7	36.2	36.6	36.9	37.0
R119		21.7	22.9	27.4	31.5	35.3	36.4	36.9	37.2	37.5	37.6
Background Location:	**R58 600 Woodhouselee Rd**										
B/G Regression Line	-0.0045x^3 + 0.2194x^2 - 1.5322x + 31.956	29.1	29.5	30.5	32.1	34.0	36.3	38.9	41.6	44.5	47.4
SA EPA Criteria		35.0	35.0	35.5	37.1	39.0	41.3	43.9	46.6	49.5	52.4
NIGHT BG Regression Line	-0.0053x^3 + 0.2472x^2 - 1.6363x + 29.838	26.9	27.6	28.8	30.6	32.8	35.4	38.3	41.3	44.5	47.6
EPA Night Criteria		35.0	35.0	35.0	35.6	37.8	40.4	43.3	46.3	49.5	52.6
WHO Criteria		45.0	45.0	45.0	45.0	45.0	45.0	45.0	46.6	49.5	52.4
R12		12.2	13.4	17.9	22.0	26.0	27.1	27.6	27.9	28.1	28.2
R13		12.1	13.3	17.9	22.0	26.0	27.1	27.6	27.8	28.1	28.2
R14		12.5	13.7	18.2	22.3	26.4	27.5	27.9	28.2	28.5	28.6
R15		12.7	13.9	18.4	22.5	26.6	27.7	28.1	28.4	28.7	28.8
R16		10.5	11.8	16.3	20.5	24.6	25.7	26.2	26.4	26.7	26.8
R43		6.3	7.6	12.1	16.2	20.2	21.3	21.7	22.0	22.3	22.4
R45		11.4	12.6	17.1	21.3	25.3	26.4	26.8	27.1	27.4	27.5
R46		11.8	13.0	17.5	21.6	25.6	26.7	27.2	27.5	27.7	27.8
R47		11.9	13.2	17.7	21.8	25.8	26.9	27.3	27.6	27.9	28.0

	Windspeed at 10m AGL	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0
	Windspeed at Hub Height	**4.3**	**5.7**	**7.1**	**8.5**	**10.0**	**11.4**	**12.8**	**14.2**	**15.7**	**17.1**
R48		12.3	13.5	18.1	22.2	26.2	27.3	27.8	28.0	28.3	28.4
R49		12.6	13.8	18.3	22.4	26.4	27.6	28.0	28.3	28.6	28.7
R50		12.9	14.1	18.6	22.7	26.7	27.8	28.2	28.5	28.8	28.9
R51		12.8	14.0	18.5	22.6	26.5	27.7	28.1	28.4	28.7	28.8
R52		12.6	13.8	18.4	22.4	26.4	27.5	28.0	28.3	28.5	28.6
R53		14.5	15.7	20.2	24.2	28.2	29.3	29.8	30.0	30.3	30.4
R54		15.0	16.2	20.7	24.8	28.9	30.0	30.4	30.7	31.0	31.1
R55		15.6	16.8	21.3	25.3	29.3	30.4	30.9	31.2	31.4	31.5
R56		15.0	16.2	20.7	24.7	28.6	29.8	30.2	30.5	30.8	30.9
R57		16.2	17.4	21.9	25.9	29.9	31.0	31.5	31.7	32.0	32.1
R58		20.1	21.3	25.8	29.9	33.9	35.0	35.5	35.8	36.0	36.1
R59		21.1	22.3	26.8	30.8	34.7	35.8	36.3	36.6	36.9	37.0
R83		12.3	13.5	18.0	22.1	26.1	27.3	27.7	28.0	28.3	28.4
R84		14.9	16.2	20.7	24.7	28.7	29.8	30.2	30.5	30.8	30.9
R87		8.6	9.8	14.2	18.1	22.0	23.1	23.6	23.9	24.1	24.2
R88		4.9	6.1	10.6	14.3	18.0	19.1	19.6	19.9	20.2	20.3
R89		6.2	7.4	11.9	15.6	19.3	20.4	20.9	21.3	21.5	21.6
R90		5.3	6.5	11.0	14.9	18.7	19.8	20.3	20.6	20.9	21.0
R91		6.4	7.6	12.0	15.9	19.7	20.8	21.3	21.6	21.9	22.0
R93		5.1	6.4	10.8	14.7	18.4	19.6	20.0	20.4	20.6	20.7
R96		3.6	4.8	9.3	13.1	16.9	18.0	18.5	18.8	19.1	19.2
Background Location:	**R62 Cottonwood**										
B/G Regression Line	-0.0135x^3 + 0.4454x^2 - 2.4834x + 29.187	25.7	27.0	29.2	32.0	35.3	38.7	42.1	45.1	47.7	49.4
SA EPA Criteria		35.0	35.0	35.0	37.0	40.3	43.7	47.1	50.1	52.7	54.4
NIGHT BG Regression Line	-0.0198x^3 + 0.6869x^2 - 5.0582x + 34.828	24.2	24.6	26.5	29.4	33.0	37.1	41.1	44.9	48.0	50.2
EPA Night Criteria		35.0	35.0	35.0	35.0	38.0	42.1	46.1	49.9	53.0	55.2
WHO Criteria		45.0	45.0	45.0	45.0	45.0	45.0	47.1	50.1	52.7	54.4
R60		20.4	21.6	26.1	30.1	34.0	35.1	35.6	35.9	36.1	36.2
R61		21.7	23.0	27.5	31.4	35.3	36.4	36.8	37.1	37.4	37.5
R62		21.7	22.9	27.4	31.3	35.2	36.3	36.8	37.1	37.3	37.4
Background Location:	**R64 Valdarmon Hill**										
B/G Regression Line	-0.0032x^3 + 0.0596x^2 + 2.2844x + 12.521	23.1	26.9	30.6	34.4	38.0	41.5	44.8	47.9	50.6	53.0
SA EPA Criteria		35.0	35.0	35.6	39.4	43.0	46.5	49.8	52.9	55.6	58.0
NIGHT BG Regression Line	-0.0093x^3 + 0.2628x^2 + 0.5447x + 13.759	20.1	23.7	27.6	31.8	36.1	40.3	44.3	47.9	51.0	53.4
EPA Night Criteria		35.0	35.0	35.0	36.8	41.1	45.3	49.3	52.9	56.0	58.4
WHO Criteria		45.0	45.0	45.0	45.0	45.0	46.5	49.8	52.9	55.6	58.0
R64		24.1	25.3	29.9	33.9	37.9	39.0	39.4	39.7	40.0	40.1
R65		23.8	25.0	29.5	33.6	37.5	38.7	39.1	39.4	39.7	39.8
Background Location:	**R66 Little Vale**										
B/G Regression Line	-0.0038x^3 + 0.1588x^2 + 0.201x + 17.442	20.9	23.0	25.5	28.4	31.4	34.7	38.1	41.5	44.9	48.3
SA EPA Criteria		35.0	35.0	35.0	35.0	36.4	39.7	43.1	46.5	49.9	53.3
NIGHT BG Regression Line	-0.0126x^3 + 0.4524x^2 - 2.0963x + 17.752	16.1	18.2	21.2	25.0	29.3	33.9	38.6	43.2	47.5	51.1
EPA Night Criteria		35.0	35.0	35.0	35.0	35.0	38.9	43.6	48.2	52.5	56.1
WHO Criteria		45.0	45.0	45.0	45.0	45.0	45.0	45.0	46.5	49.9	53.3
R66		25.7	26.9	31.2	34.0	36.4	37.5	38.2	38.7	39.0	39.0
R67		23.0	24.2	28.5	31.4	34.1	35.1	35.8	36.3	36.6	36.6
Background Location:	**R70 Snowgums**										
B/G Regression Line	-0.0182x^3 + 0.5772x^2 - 3.0782x + 26.75	22.7	24.6	27.5	31.2	35.4	39.7	43.8	47.4	50.2	51.9
SA EPA Criteria		35.0	35.0	35.0	36.2	40.4	44.7	48.8	52.4	55.2	56.9
NIGHT BG Regression Line	-0.0183x^3 + 0.5563x^2 - 1.9759x + 16.123	16.4	19.5	23.6	28.4	33.5	38.7	43.6	47.9	51.3	53.5
EPA Night Criteria		35.0	35.0	35.0	35.0	38.5	43.7	48.6	52.9	56.3	58.5
WHO Criteria		45.0	45.0	45.0	45.0	45.0	45.0	48.8	52.4	55.2	56.9
R68		20.7	21.9	26.4	30.6	34.6	35.8	36.2	36.5	36.7	36.9
R69		21.7	22.9	27.4	31.5	35.5	36.6	37.0	37.3	37.6	37.7
R70		22.5	23.7	28.2	32.5	36.6	37.7	38.2	38.4	38.7	38.8
Background Location:	**R71 Lynross**										
B/G Regression Line	-0.0083x^3 + 0.243x^2 + 0.3267x + 18.194	23.4	26.4	29.8	33.5	37.4	41.2	44.8	48.1	51.0	53.3
SA EPA Criteria		35.0	35.0	35.0	38.5	42.4	46.2	49.8	53.1	56.0	58.3
NIGHT BG Regression Line	-0.0136x^3 + 0.3747x^2 + 0.0985x + 10.908	17.1	21.1	25.7	30.6	35.6	40.5	45.1	49.0	52.1	54.1
EPA Night Criteria		35.0	35.0	35.0	35.6	40.6	45.5	50.1	54.0	57.1	59.1
WHO Criteria		45.0	45.0	45.0	45.0	45.0	46.2	49.8	53.1	56.0	58.3
R71		18.6	19.8	24.3	28.5	32.6	33.7	34.1	34.4	34.7	34.8
R72		17.1	18.4	22.9	27.0	31.0	32.1	32.5	32.8	33.1	33.2
R73		18.3	19.5	24.0	28.2	32.2	33.3	33.8	34.0	34.3	34.4
R74		12.2	13.4	17.9	22.0	26.0	27.2	27.6	27.9	28.2	28.4
R75		12.0	13.2	17.7	21.8	25.8	26.9	27.4	27.7	28.0	28.2
R76		12.2	13.5	17.9	22.1	26.1	27.2	27.7	28.0	28.3	28.4
R77		9.5	10.7	15.2	19.3	23.3	24.4	24.9	25.2	25.5	25.8
R81		11.9	13.2	17.7	21.7	25.7	26.8	27.3	27.6	27.9	28.1

	Windspeed at 10m AGL	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0
	Windspeed at Hub Height	**4.3**	**5.7**	**7.1**	**8.5**	**10.0**	**11.4**	**12.8**	**14.2**	**15.7**	**17.1**
R82		12.3	13.5	18.0	22.1	26.1	27.2	27.7	28.0	28.3	28.4
R109		13.4	14.6	19.1	23.0	26.8	28.0	28.4	28.7	29.0	29.1
R110		10.9	12.2	16.6	20.7	24.7	25.8	26.3	26.6	26.9	27.0
R111		11.3	12.6	17.1	21.1	25.1	26.2	26.7	27.0	27.3	27.5
R112		11.3	12.6	17.1	21.1	25.1	26.2	26.7	27.0	27.3	27.5
R115		11.3	12.5	17.0	21.1	25.0	26.2	26.6	26.9	27.2	27.4
R116		11.1	12.3	16.8	20.9	24.9	26.0	26.5	26.8	27.1	27.2
Background Location:	**R79 Leeston**										
B/G Regression Line	0.001x^3 - 0.053x^2 + 2.4941x + 19.177	28.9	31.8	34.6	37.2	39.7	42.2	44.5	46.8	49.1	51.3
SA EPA Criteria		35.0	36.8	39.6	42.2	44.7	47.2	49.5	51.8	54.1	56.3
NIGHT BG Regression Line	-0.0038x^3 + 0.1151x^2 + 0.878x + 22.436	28.0	30.5	33.1	36.0	38.8	41.7	44.6	47.3	49.8	52.1
EPA Night Criteria		35.0	35.5	38.1	41.0	43.8	46.7	49.6	52.3	54.8	57.1
WHO Criteria		45.0	45.0	45.0	45.0	45.0	47.2	49.5	51.8	54.1	56.3
R63		25.1	26.3	30.7	34.4	37.9	39.0	39.5	39.9	40.1	40.2
R79		23.4	24.6	29.1	33.1	37.0	38.1	38.6	38.9	39.1	39.2
R80		23.0	24.2	28.7	32.6	36.3	37.4	37.9	38.2	38.5	38.6
Background Location:	**R106 Rosedale**										
B/G Regression Line	-0.0085x^3 + 0.2644x^2 - 0.8076x + 32.476	33.2	34.9	37.1	39.6	42.3	45.0	47.6	50.0	52.0	53.5
SA EPA Criteria		38.2	39.9	42.1	44.6	47.3	50.0	52.6	55.0	57.0	58.5
NIGHT BG Regression Line	-0.0109x^3 + 0.3551x^2 - 1.7974x + 34.095	32.0	33.4	35.4	37.8	40.7	43.6	46.4	49.0	51.2	52.7
EPA Night Criteria		37.0	38.4	40.4	42.8	45.7	48.6	51.4	54.0	56.2	57.7
WHO Criteria		45.0	45.0	45.0	45.0	47.3	50.0	52.6	55.0	57.0	58.5
R97		5.7	6.9	11.4	15.2	18.9	20.0	20.5	20.8	21.1	21.2
R98		5.7	6.9	11.4	15.2	18.9	20.0	20.5	20.8	21.1	21.2
R99		6.5	7.8	12.2	16.0	19.7	20.8	21.3	21.6	21.9	22.0
R100		7.2	8.4	12.8	16.6	20.3	21.4	21.9	22.2	22.5	22.6
R101		6.1	7.3	11.8	15.6	19.3	20.4	20.9	21.2	21.5	21.6
R102		9.0	10.2	14.6	18.3	21.8	22.9	23.5	23.8	24.1	24.2
R103		8.8	10.0	14.4	18.1	21.8	22.9	23.4	23.7	24.0	24.1
R104		13.5	14.7	19.1	22.6	26.0	27.1	27.7	28.0	28.3	28.4
R105		11.8	13.0	17.4	21.1	24.7	25.8	26.3	26.6	26.9	27.0
R106		18.7	19.9	24.3	28.1	31.7	32.9	33.4	33.7	33.9	34.0
R107		10.6	11.8	16.3	20.1	23.9	25.0	25.5	25.8	26.1	26.2
R108		10.3	11.5	15.9	19.8	23.6	24.7	25.2	25.5	25.8	25.9
R113		10.3	11.5	16.0	19.9	23.7	24.8	25.3	25.6	25.9	26.0
R114		12.3	13.5	18.0	21.8	25.6	26.7	27.2	27.5	27.8	27.9
Background Location:	**R120 Elmgrove**										
B/G Regression Line	-0.0023x^3 + 0.1114x^2 - 0.2106x + 28.947	29.9	30.9	32.3	33.8	35.6	37.6	39.7	41.9	44.1	46.4
SA EPA Criteria		35.0	35.9	37.3	38.8	40.6	42.6	44.7	46.9	49.1	51.4
NIGHT BG Regression Line	-0.0083x^3 + 0.2813x^2 - 1.6306x + 31.151	28.7	29.5	30.8	32.6	34.6	36.8	39.0	41.0	42.7	44.0
EPA Night Criteria		35.0	35.0	35.8	37.6	39.6	41.8	44.0	46.0	47.7	49.0
WHO Criteria		45.0	45.0	45.0	45.0	45.0	45.0	45.0	46.9	49.1	51.4
R120		25.7	27.1	31.3	35.4	39.4	40.6	41.2	41.6	42.1	42.6
R123		20.7	21.9	26.4	30.7	34.8	36.0	36.4	36.7	37.1	37.3
R124		21.5	22.7	27.3	31.6	35.8	36.9	37.3	37.6	37.9	38.0
R125		14.3	15.6	20.0	24.3	28.4	29.6	30.0	30.3	30.6	30.9
R130		25.7	27.4	30.8	34.3	37.9	39.3	40.2	41.1	42.2	43.5
R131		24.9	27.0	29.4	32.0	34.8	36.5	38.1	39.8	41.6	43.5
R132		17.1	18.7	22.5	26.3	30.1	31.4	32.1	32.7	33.6	34.5
R133		10.1	11.6	15.4	19.3	23.1	24.3	25.0	25.7	26.4	27.3