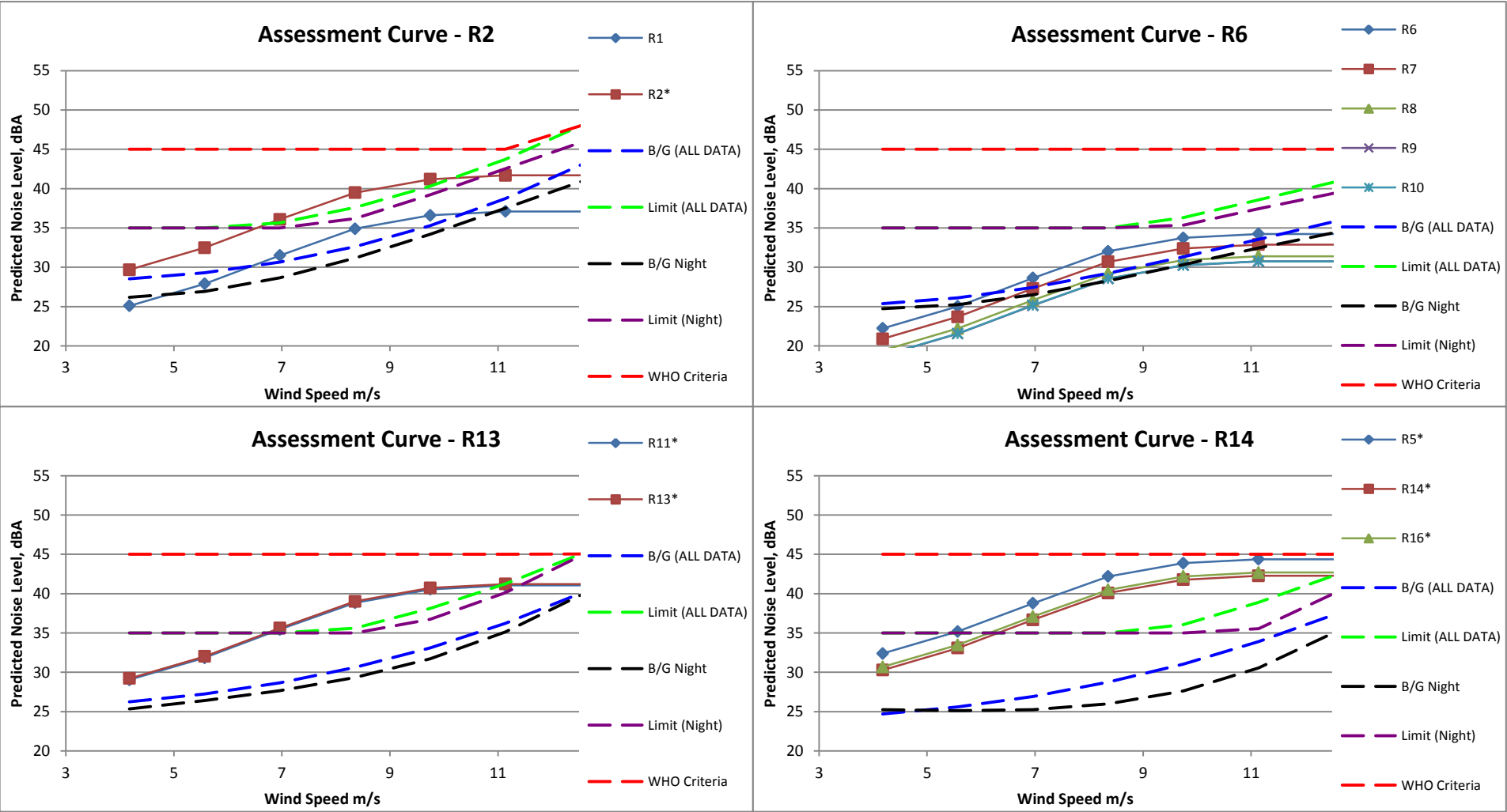
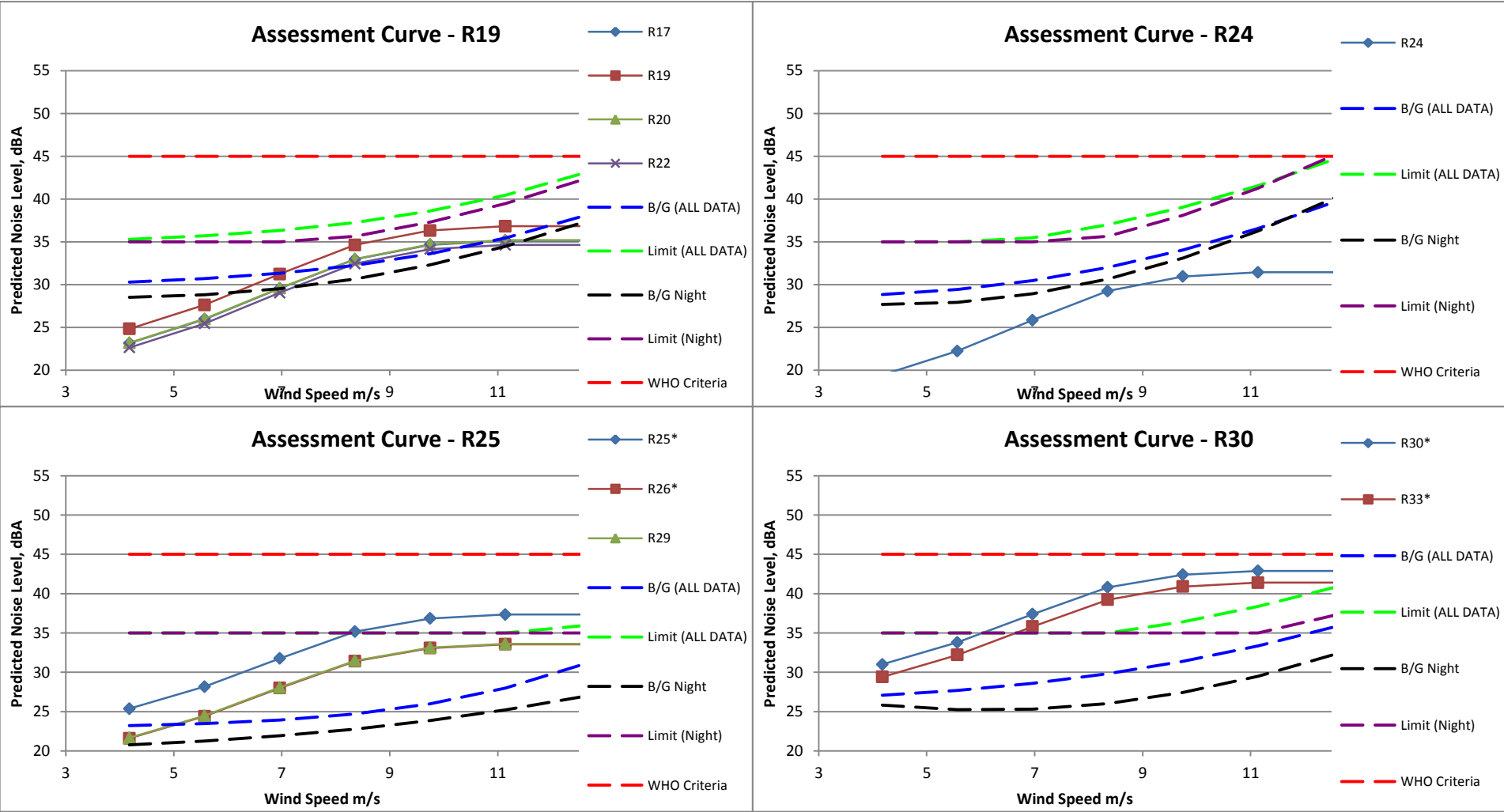
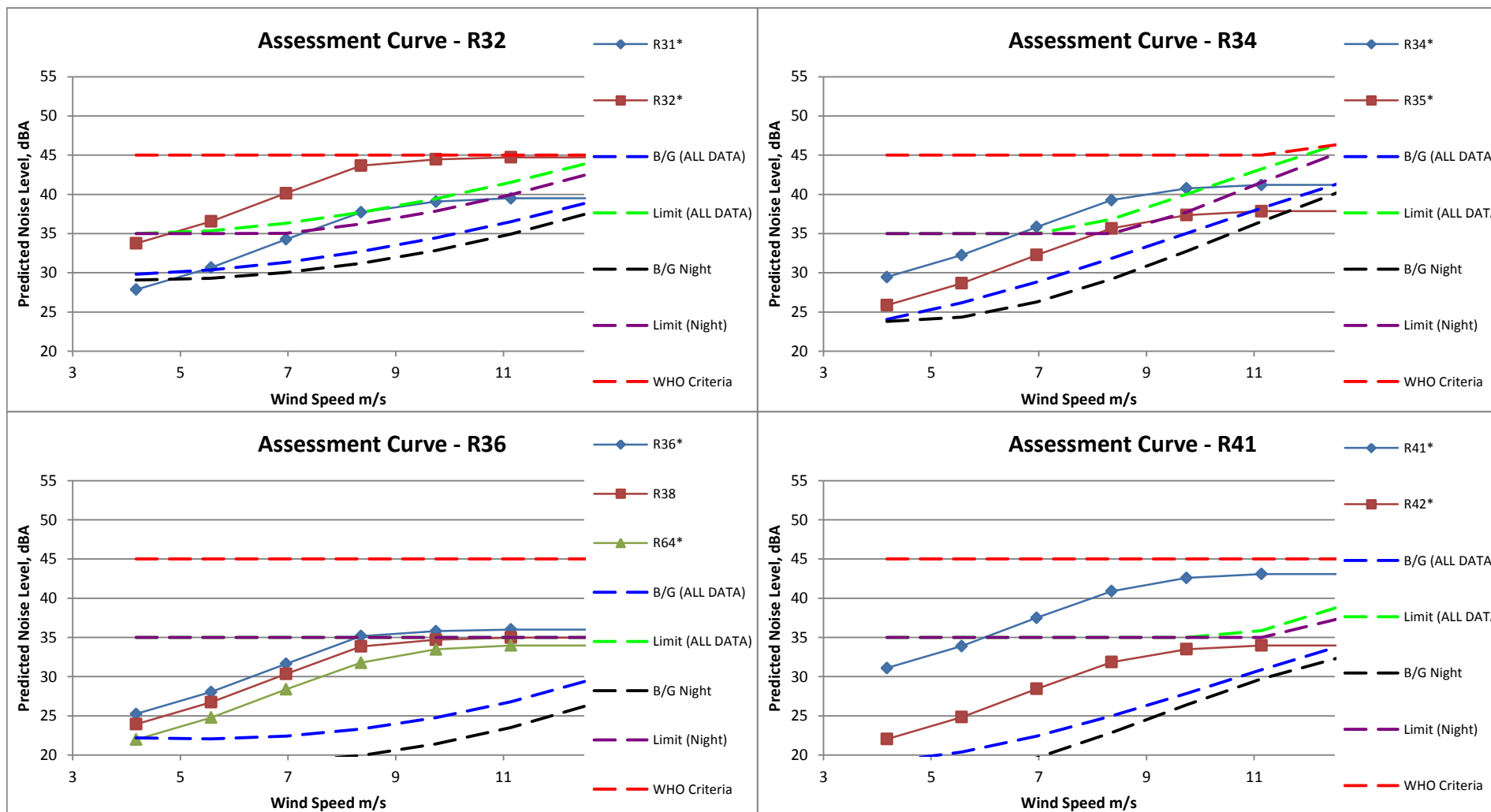
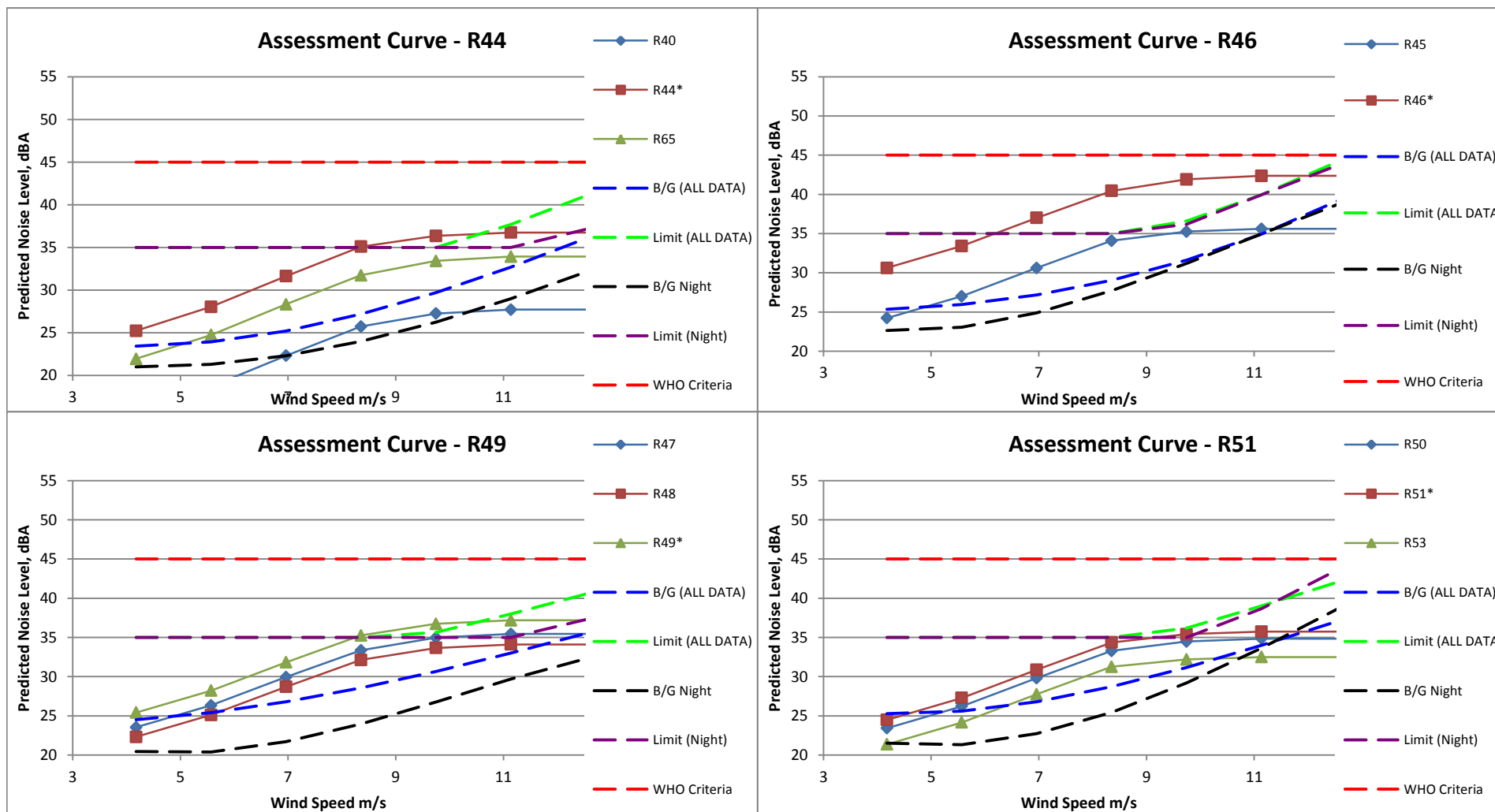
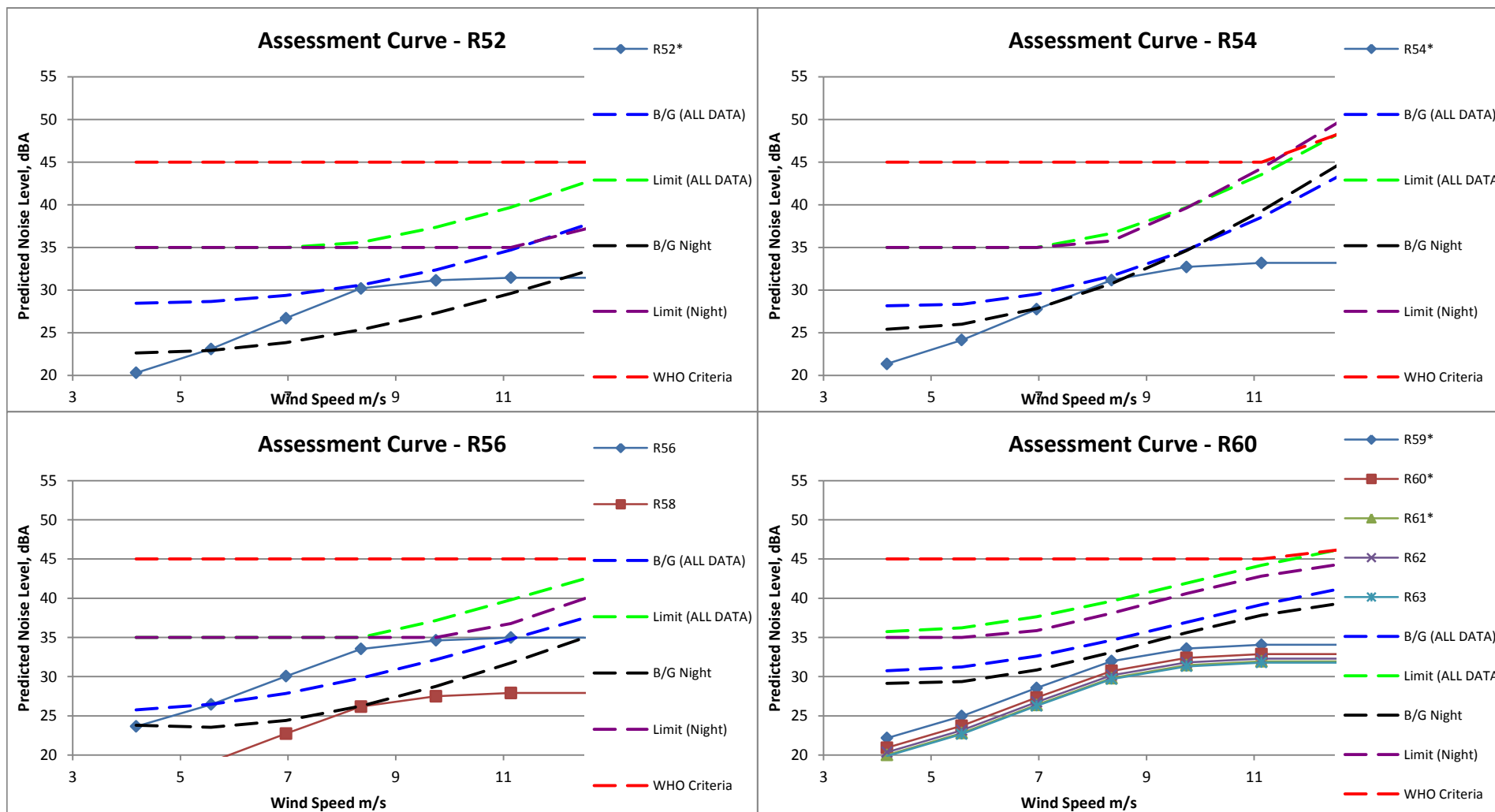












Appendix A3 – Predicted Noise Levels (Layout Rev5a)

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Background Location = R2		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	$0.0039x^3 + 0.0826x^2 - 0.533x + 29.031$	29	29	31	33	36	40	44	50	57	64
SA EPA Criteria		35	35	36	38	41	45	49	55	62	69
NIGHT BG Regression Line	$-0.0146x^3 + 0.5005x^2 - 3.2897x + 32.238$	26	27	29	32	35	38	42	45	48	49
EPA Night Criteria		35	35	35	37	40	43	47	50	53	54
WHO Criteria		45	45	45	45	45	45	49	55	62	69
<i>Wind Speed (Hub Height)</i>		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
R1		25.1	27.9	31.5	34.9	36.6	37.1	37.1	37.1	37.1	37.1
R2*		29.7	32.5	36.1	39.5	41.2	41.7	41.7	41.7	41.7	41.7
Background Location = R6		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	$-0.0091x^3 + 0.3063x^2 - 1.804x + 28.225$	25	26	28	30	32	34	36	39	40	42
SA EPA Criteria		35	35	35	35	37	39	41	44	45	47
NIGHT BG Regression Line	$-0.0145x^3 + 0.4377x^2 - 2.8665x + 30.122$	25	25	27	29	31	33	35	36	37	37
EPA Night Criteria		35	35	35	35	36	38	40	41	42	42
WHO Criteria		45	45	45	45	45	45	45	45	45	47
<i>Wind Speed (Hub Height)</i>		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
R6	22.2	22.2	25.0	28.6	32.0	33.7	34.2	34.2	34.2	34.2	34.2
R7	20.9	20.9	23.7	27.3	30.7	32.4	32.9	32.9	32.9	32.9	32.9
R8	19.4	19.4	22.2	25.8	29.2	30.9	31.4	31.4	31.4	31.4	31.4
R9	18.8	18.8	21.6	25.2	28.6	30.3	30.8	30.8	30.8	30.8	30.8
R10	18.8	18.8	21.6	25.2	28.6	30.3	30.8	30.8	30.8	30.8	30.8

Appendix A3 – Predicted Noise Levels (Layout Rev5a)

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Background Location = R13		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	$0.0038x^3 + 0.0503x^2 - 0.0495x + 25.298$	26	27	29	31	34	37	41	46	52	59
SA EPA Criteria		35	35	35	36	39	42	46	51	57	64
NIGHT BG Regression Line	$0.0176x^3 - 0.2545x^2 + 1.994x + 20.174$	25	27	28	30	32	36	41	48	57	69
EPA Night Criteria		35	35	35	35	37	41	46	53	62	74
WHO Criteria		45	45	45	45	45	45	46	51	57	64
Wind Speed (Hub Height)		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
R11*		29.0	31.8	35.4	38.8	40.5	41.0	41.0	41.0	41.0	41.0
R13*		29.2	32.0	35.6	39.0	40.7	41.2	41.2	41.2	41.2	41.2

Background Location = R14		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	$0.0021x^3 + 0.0772x^2 - 0.2551x + 24.263$	25	26	27	29	32	35	38	43	48	53
SA EPA Criteria		35	35	35	35	37	40	43	48	53	58
NIGHT BG Regression Line	$0.02x^3 - 0.2626x^2 + 1.0216x + 24.109$	25	25	25	26	28	31	37	44	53	66
EPA Night Criteria		35	35	35	35	35	36	42	49	58	71
WHO Criteria		45	45	45	45	45	45	45	48	53	58
Wind Speed (Hub Height)		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
R5*		32.4	35.2	38.8	42.2	43.9	44.4	44.4	44.4	44.4	44.4
R14*		30.3	33.1	36.7	40.1	41.8	42.3	42.3	42.3	42.3	42.3
R16*		30.7	33.5	37.1	40.5	42.2	42.7	42.7	42.7	42.7	42.7

Appendix A3 – Predicted Noise Levels (Layout Rev5a)

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Background Location = R19		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	$0.0063x^3 - 0.0518x^2 + 0.3486x + 29.281$	30	31	31	32	34	36	39	42	47	52
SA EPA Criteria		35	36	36	37	39	41	44	47	52	57
NIGHT BG Regression Line	$0.0022x^3 + 0.0703x^2 - 0.6383x + 29.799$	29	29	30	31	33	35	38	42	46	51
EPA Night Criteria		35	35	35	36	38	40	43	47	51	56
WHO Criteria		45	45	45	45	45	45	45	47	52	57
<i>Wind Speed (Hub Height)</i>		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
R17		23.1	25.9	29.5	32.9	34.6	35.1	35.1	35.1	35.1	35.1
R19		24.8	27.6	31.2	34.6	36.3	36.8	36.8	36.8	36.8	36.8
R20		23.2	26.0	29.6	33.0	34.7	35.2	35.2	35.2	35.2	35.2
R22		22.6	25.4	29.0	32.4	34.1	34.6	34.6	34.6	34.6	34.6

Background Location = R24		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	$0.0006x^3 + 0.1121x^2 - 0.721x + 29.856$	29	30	31	32	35	37	41	44	49	54
SA EPA Criteria		35	35	36	37	40	42	46	49	54	59
NIGHT BG Regression Line	$-0.0012x^3 + 0.2153x^2 - 1.8413x + 31.706$	28	28	29	31	34	37	41	46	52	58
EPA Night Criteria		35	35	35	36	39	42	46	51	57	63
WHO Criteria		45	45	45	45	45	45	46	49	54	59
<i>Wind Speed (Hub Height)</i>		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
R24		19.4	22.2	25.8	29.2	30.9	31.4	31.4	31.4	31.4	31.4

Appendix A3 – Predicted Noise Levels (Layout Rev5a)

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Background Location = R25		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	$0.0114x^3 - 0.1507x^2 + 0.8519x + 21.455$	23	24	24	25	26	29	32	36	42	50
SA EPA Criteria		35	35	35	35	35	35	37	41	47	55
NIGHT BG Regression Line	$0.0022x^3 + 0.0046x^2 + 0.1516x + 19.907$	21	21	22	23	24	26	27	30	32	35
EPA Night Criteria		35	35	35	35	35	35	35	35	37	40
WHO Criteria		45	45	45	45	45	45	45	45	47	55
<i>Wind Speed (Hub Height)</i>		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
R25*		25.4	28.2	31.8	35.2	36.9	37.4	37.4	37.4	37.4	37.4
R26*		21.6	24.4	28.0	31.4	33.1	33.6	33.6	33.6	33.6	33.6
R29		21.7	24.5	28.1	31.5	33.2	33.7	33.7	33.7	33.7	33.7

Background Location = R30		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	$0.0021x^3 + 0.0379x^2 - 0.071x + 26.561$	27	28	29	30	32	34	36	40	43	47
SA EPA Criteria		35	35	35	35	37	39	41	45	48	52
NIGHT BG Regression Line	$8E-05x^3 + 0.1703x^2 - 2.0978x + 31.624$	26	25	25	26	28	30	33	37	41	46
EPA Night Criteria		35	35	35	35	35	35	38	42	46	51
WHO Criteria		45	45	45	45	45	45	45	45	48	52
<i>Wind Speed (Hub Height)</i>		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
R30*		31.0	33.8	37.4	40.8	42.5	43.0	43.0	43.0	43.0	43.0
R33*		29.4	32.2	35.8	39.2	40.9	41.4	41.4	41.4	41.4	41.4

Appendix A3 – Predicted Noise Levels (Layout Rev5a)

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Background Location = R32		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	$-0.002x^3 + 0.1453x^2 - 0.8862x + 31.129$	30	30	32	33	35	37	40	42	45	49
SA EPA Criteria		35	35	37	38	40	42	45	47	50	54
NIGHT BG Regression Line	$-0.0001x^3 + 0.121x^2 - 0.9889x + 31.088$	29	29	30	31	33	36	38	42	45	49
EPA Night Criteria		35	35	35	36	38	41	43	47	50	54
WHO Criteria		45	45	45	45	45	45	45	47	50	54
Wind Speed (Hub Height)		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
R31*		27.9	30.7	34.3	37.7	39.4	39.9	39.9	39.9	39.9	39.9
R32*		33.7	36.5	40.1	43.5	45.2	45.7	45.7	45.7	45.7	45.7

Background Location = R34		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	$-0.0104x^3 + 0.3096x^2 - 0.7489x + 22.545$	24	26	29	32	36	39	42	45	47	48
SA EPA Criteria		35	35	35	37	41	44	47	50	52	53
NIGHT BG Regression Line	$-0.0233x^3 + 0.7447x^2 - 5.1951x + 34.199$	24	25	27	30	34	37	41	44	46	47
EPA Night Criteria		35	35	35	35	39	42	46	49	51	52
WHO Criteria		45	45	45	45	45	45	47	50	52	53
Wind Speed (Hub Height)		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
R34*		29.4	32.2	35.8	39.2	40.9	41.4	41.4	41.4	41.4	41.4
R35*		25.8	28.6	32.2	35.6	37.3	37.8	37.8	37.8	37.8	37.8

Appendix A3 – Predicted Noise Levels (Layout Rev5a)

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Background Location = R36		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	$0.0018x^3 + 0.0976x^2 - 1.1709x + 25.238$	22	22	23	24	25	27	30	34	38	43
SA EPA Criteria		35	35	35	35	35	35	35	39	43	48
NIGHT BG Regression Line	$-6E-05x^3 + 0.1693x^2 - 2.0032x + 24.906$	19	19	19	20	22	24	27	31	35	40
EPA Night Criteria		35	35	35	35	35	35	35	36	40	45
WHO Criteria		45	45	45	45	45	45	45	45	45	48
<i>Wind Speed (Hub Height)</i>		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
R36*		25.2	28.0	31.6	35.0	36.7	37.2	37.2	37.2	37.2	37.2
R38		24.0	26.8	30.4	33.8	35.5	36.0	36.0	36.0	36.0	36.0
R64*		22.0	24.8	28.4	31.8	33.5	34.0	34.0	34.0	34.0	34.0

Background Location = R41		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	$-0.0129x^3 + 0.408x^2 - 2.1358x + 21.869$	19	21	23	25	29	32	35	37	39	40
SA EPA Criteria		35	35	35	35	35	37	40	42	44	45
NIGHT BG Regression Line	$-0.0324x^3 + 0.894x^2 - 5.6692x + 26.728$	16	18	20	24	27	30	33	34	33	29
EPA Night Criteria		35	35	35	35	35	35	38	39	38	35
WHO Criteria		45	45	45	45	45	45	45	45	45	45
<i>Wind Speed (Hub Height)</i>		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
R41*		31.1	33.9	37.5	40.9	42.6	43.1	43.1	43.1	43.1	43.1
R42*		22.1	24.9	28.5	31.9	33.6	34.1	34.1	34.1	34.1	34.1

Appendix A3 – Predicted Noise Levels (Layout Rev5a)

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Background Location = R44		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	$-0.0064x^3 + 0.3077x^2 - 2.1782x + 27.62$	23	24	25	28	30	33	37	41	45	49
SA EPA Criteria		35	35	35	35	35	38	42	46	50	54
NIGHT BG Regression Line	$-0.0051x^3 + 0.2755x^2 - 2.1163x + 25.414$	21	21	23	24	27	30	33	37	41	45
EPA Night Criteria		35	35	35	35	35	35	38	42	46	50
WHO Criteria		45	45	45	45	45	45	45	46	50	54
<i>Wind Speed (Hub Height)</i>		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
R40		15.9	18.7	22.3	25.7	27.4	27.9	27.9	27.9	27.9	27.9
R44*		25.2	28.0	31.6	35.0	36.7	37.2	37.2	37.2	37.2	37.2
R65		21.9	24.7	28.3	31.7	33.4	33.9	33.9	33.9	33.9	33.9

Background Location = R46		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	$0.0034x^3 + 0.0984x^2 - 0.7685x + 26.6$	25	26	27	29	32	36	40	46	52	60
SA EPA Criteria		35	35	35	35	37	41	45	51	57	65
NIGHT BG Regression Line	$-0.0223x^3 + 0.7267x^2 - 5.1643x + 33.143$	23	23	25	28	32	36	40	43	45	46
EPA Night Criteria		35	35	35	35	37	41	45	48	50	51
WHO Criteria		45	45	45	45	45	45	45	51	57	65
<i>Wind Speed (Hub Height)</i>		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
R45		24.2	27.0	30.6	34.0	35.7	36.2	36.2	36.2	36.2	36.2
R46*		30.7	33.5	37.1	40.5	42.2	42.7	42.7	42.7	42.7	42.7

Appendix A3 – Predicted Noise Levels (Layout Rev5a)

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Background Location = R49		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	$-0.0042x^3 + 0.1889x^2 - 0.8856x + 25.226$	25	26	27	29	31	34	36	39	42	45
SA EPA Criteria		35	35	35	35	36	39	41	44	47	50
NIGHT BG Regression Line	$-0.0258x^3 + 0.7838x^2 - 5.8263x + 32.991$	20	20	22	24	27	30	33	35	35	33
EPA Night Criteria		35	35	35	35	35	35	38	40	40	38
WHO Criteria		45	45	45	45	45	45	45	45	47	50
<i>Wind Speed (Hub Height)</i>		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
R47		23.5	26.3	29.9	33.3	35.0	35.5	35.5	35.5	35.5	35.5
R48		22.3	25.1	28.7	32.1	33.8	34.3	34.3	34.3	34.3	34.3
R49*		25.4	28.2	31.8	35.2	36.9	37.4	37.4	37.4	37.4	37.4

Background Location = R51		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	$-0.0112x^3 + 0.4204x^2 - 3.0804x + 31.643$	25	26	27	29	32	35	38	41	44	46
SA EPA Criteria		35	35	35	35	37	40	43	46	49	51
NIGHT BG Regression Line	$-0.018x^3 + 0.7135x^2 - 5.7973x + 34.583$	21	21	23	26	30	35	40	45	50	54
EPA Night Criteria		35	35	35	35	35	40	45	50	55	59
WHO Criteria		45	45	45	45	45	45	45	46	49	51
<i>Wind Speed (Hub Height)</i>		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
R50		23.4	26.2	29.8	33.2	34.9	35.4	35.4	35.4	35.4	35.4
R51*		24.5	27.3	30.9	34.3	36.0	36.5	36.5	36.5	36.5	36.5
R53		21.4	24.2	27.8	31.2	32.9	33.4	33.4	33.4	33.4	33.4

Appendix A3 – Predicted Noise Levels (Layout Rev5a)

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Background Location = R52		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	$0.0016x^3 + 0.1009x^2 - 0.9471x + 30.519$	28	29	30	31	33	35	39	42	47	52
SA EPA Criteria		35	35	35	36	38	40	44	47	52	57
NIGHT BG Regression Line	$-0.0062x^3 + 0.2728x^2 - 2.0066x + 26.692$	23	23	24	26	28	30	33	36	39	41
EPA Night Criteria		35	35	35	35	35	35	38	41	44	46
WHO Criteria		45	45	45	45	45	45	45	47	52	57
Wind Speed (Hub Height)		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
R52*		20.3	23.1	26.7	30.1	31.8	32.3	32.3	32.3	32.3	32.3

Background Location = R54		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	$-0.0033x^3 + 0.3137x^2 - 2.6897x + 34.152$	28	28	30	32	35	40	45	50	57	64
SA EPA Criteria		35	35	35	37	40	45	50	55	62	69
NIGHT BG Regression Line	$-0.0094x^3 + 0.4771x^2 - 3.5489x + 32.598$	25	26	28	31	36	40	46	52	58	65
EPA Night Criteria		35	35	35	36	41	45	51	57	63	70
WHO Criteria		45	45	45	45	45	45	50	55	62	69
Wind Speed (Hub Height)		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
R54*		21.6	24.4	28.0	31.4	33.1	33.6	33.6	33.6	33.6	33.6

Appendix A3 – Predicted Noise Levels (Layout Rev5a)

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Background Location = R56		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	$-0.0086x^3 + 0.321x^2 - 2.0034x + 29.155$	26	27	28	30	33	35	38	41	44	46
SA EPA Criteria		35	35	35	35	38	40	43	46	49	51
NIGHT BG Regression Line	$-0.0136x^3 + 0.5228x^2 - 4.3054x + 33.647$	24	24	25	27	29	33	36	39	42	45
EPA Night Criteria		35	35	35	35	35	38	41	44	47	50
WHO Criteria		45	45	45	45	45	45	45	46	49	51
<i>Wind Speed (Hub Height)</i>		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
R56		27.8	30.6	34.2	37.6	39.3	39.8	39.8	39.8	39.8	39.8
R58		17.1	19.9	23.5	26.9	28.6	29.1	29.1	29.1	29.1	29.1
Background Location = R60		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	$-0.0195x^3 + 0.5635x^2 - 3.7504x + 38.008$	31	31	33	35	37	40	42	43	43	41
SA EPA Criteria		36	36	38	40	42	45	47	48	48	46
NIGHT BG Regression Line	$-0.0316x^3 + 0.8557x^2 - 5.917x + 41.243$	29	29	31	34	36	38	39	39	37	32
EPA Night Criteria		35	35	36	39	41	43	44	44	42	37
WHO Criteria		45	45	45	45	45	45	47	48	48	46
<i>Wind Speed (Hub Height)</i>		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
R59*		22.2	25.0	28.6	32.0	33.7	34.2	34.2	34.2	34.2	34.2
R60*		21.0	23.8	27.4	30.8	32.5	33.0	33.0	33.0	33.0	33.0
R61*		20.1	22.9	26.5	29.9	31.6	32.1	32.1	32.1	32.1	32.1
R62		20.4	23.2	26.8	30.2	31.9	32.4	32.4	32.4	32.4	32.4
R63		19.9	22.7	26.3	29.7	31.4	31.9	31.9	31.9	31.9	31.9

Appendix A4 – Predicted Noise Levels (Mitigated Layout)

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Background Location = R2		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	$0.0039x^3 + 0.0826x^2 - 0.533x + 29.031$	29	29	31	33	36	40	44	50	57	64
SA EPA Criteria		35	35	36	38	41	45	49	55	62	69
NIGHT BG Regression Line	$-0.0146x^3 + 0.5005x^2 - 3.2897x + 32.238$	26	27	29	32	35	38	42	45	48	49
EPA Night Criteria		35	35	35	37	40	43	47	50	53	54
WHO Criteria		45	45	45	45	45	45	49	55	62	69
<i>Wind Speed (Hub Height)</i>		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
R1		25.1	27.9	31.5	34.9	36.6	37.1	37.1	37.1	37.1	37.1
R2*		29.7	32.5	36.1	39.5	41.2	41.7	41.7	41.7	41.7	41.7
Background Location = R6		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	$-0.0091x^3 + 0.3063x^2 - 1.804x + 28.225$	25	26	28	30	32	34	36	39	40	42
SA EPA Criteria		35	35	35	35	37	39	41	44	45	47
NIGHT BG Regression Line	$-0.0145x^3 + 0.4377x^2 - 2.8665x + 30.122$	25	25	27	29	31	33	35	36	37	37
EPA Night Criteria		35	35	35	35	36	38	40	41	42	42
WHO Criteria		45	45	45	45	45	45	45	45	45	47
<i>Wind Speed (Hub Height)</i>		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
R6	22.2	22.2	25.0	28.6	32.0	33.7	34.2	34.2	34.2	34.2	34.2
R7	20.9	20.9	23.7	27.3	30.7	32.4	32.9	32.9	32.9	32.9	32.9
R8	19.4	19.4	22.2	25.8	29.2	30.9	31.4	31.4	31.4	31.4	31.4
R9	18.8	18.7	21.5	25.1	28.5	30.2	30.7	30.7	30.7	30.7	30.7
R10	18.8	18.8	21.6	25.2	28.6	30.3	30.8	30.8	30.8	30.8	30.8

Appendix A4 – Predicted Noise Levels (Mitigated Layout)

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Background Location = R13		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	$0.0038x^3 + 0.0503x^2 - 0.0495x + 25.298$	26	27	29	31	34	37	41	46	52	59
SA EPA Criteria		35	35	35	36	39	42	46	51	57	64
NIGHT BG Regression Line	$0.0176x^3 - 0.2545x^2 + 1.994x + 20.174$	25	27	28	30	32	36	41	48	57	69
EPA Night Criteria		35	35	35	35	37	41	46	53	62	74
WHO Criteria		45	45	45	45	45	45	46	51	57	64
Wind Speed (Hub Height)		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
R11*		29.0	31.8	35.4	38.8	40.5	41.0	41.0	41.0	41.0	41.0
R13*		29.2	32.0	35.6	39.0	40.7	41.2	41.2	41.2	41.2	41.2

Background Location = R14		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	$0.0021x^3 + 0.0772x^2 - 0.2551x + 24.263$	25	26	27	29	32	35	38	43	48	53
SA EPA Criteria		35	35	35	35	37	40	43	48	53	58
NIGHT BG Regression Line	$0.02x^3 - 0.2626x^2 + 1.0216x + 24.109$	25	25	25	26	28	31	37	44	53	66
EPA Night Criteria		35	35	35	35	35	36	42	49	58	71
WHO Criteria		45	45	45	45	45	45	45	48	53	58
Wind Speed (Hub Height)		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
R5*		32.4	35.2	38.8	42.2	43.9	44.4	44.4	44.4	44.4	44.4
R14*		30.3	33.1	36.7	40.1	41.8	42.3	42.3	42.3	42.3	42.3
R16*		30.7	33.5	37.1	40.5	42.2	42.7	42.7	42.7	42.7	42.7

Appendix A4 – Predicted Noise Levels (Mitigated Layout)

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Background Location = R19		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	$0.0063x^3 - 0.0518x^2 + 0.3486x + 29.281$	30	31	31	32	34	36	39	42	47	52
SA EPA Criteria		35	36	36	37	39	41	44	47	52	57
NIGHT BG Regression Line	$0.0022x^3 + 0.0703x^2 - 0.6383x + 29.799$	29	29	30	31	33	35	38	42	46	51
EPA Night Criteria		35	35	35	36	38	40	43	47	51	56
WHO Criteria		45	45	45	45	45	45	45	47	52	57
<i>Wind Speed (Hub Height)</i>		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
R17		23.1	25.9	29.5	32.9	34.6	35.1	35.1	35.1	35.1	35.1
R19		24.8	27.6	31.2	34.6	36.3	36.8	36.8	36.8	36.8	36.8
R20		23.2	26.0	29.6	33.0	34.7	35.2	35.2	35.2	35.2	35.2
R22		22.6	25.4	29.0	32.4	34.1	34.6	34.6	34.6	34.6	34.6
Background Location = R24		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	$0.0006x^3 + 0.1121x^2 - 0.721x + 29.856$	29	30	31	32	35	37	41	44	49	54
SA EPA Criteria		35	35	36	37	40	42	46	49	54	59
NIGHT BG Regression Line	$-0.0012x^3 + 0.2153x^2 - 1.8413x + 31.706$	28	28	29	31	34	37	41	46	52	58
EPA Night Criteria		35	35	35	36	39	42	46	51	57	63
WHO Criteria		45	45	45	45	45	45	46	49	54	59
<i>Wind Speed (Hub Height)</i>		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
R24		19.4	22.2	25.8	29.2	30.9	31.4	31.4	31.4	31.4	31.4

Appendix A4 – Predicted Noise Levels (Mitigated Layout)

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Background Location = R25		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	$0.0114x^3 - 0.1507x^2 + 0.8519x + 21.455$	23	24	24	25	26	29	32	36	42	50
SA EPA Criteria		35	35	35	35	35	35	37	41	47	55
NIGHT BG Regression Line	$0.0022x^3 + 0.0046x^2 + 0.1516x + 19.907$	21	21	22	23	24	26	27	30	32	35
EPA Night Criteria		35	35	35	35	35	35	35	35	37	40
WHO Criteria		45	45	45	45	45	45	45	45	47	55
<i>Wind Speed (Hub Height)</i>		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
R25*		25.4	28.2	31.8	35.2	36.9	37.4	37.4	37.4	37.4	37.4
R26*		21.6	24.4	28.0	31.4	33.1	33.6	33.6	33.6	33.6	33.6
R29		21.7	24.5	28.1	31.5	33.1	33.6	33.6	33.6	33.6	33.6

Background Location = R30		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	$0.0021x^3 + 0.0379x^2 - 0.071x + 26.561$	27	28	29	30	32	34	36	40	43	47
SA EPA Criteria		35	35	35	35	37	39	41	45	48	52
NIGHT BG Regression Line	$8E-05x^3 + 0.1703x^2 - 2.0978x + 31.624$	26	25	25	26	28	30	33	37	41	46
EPA Night Criteria		35	35	35	35	35	35	38	42	46	51
WHO Criteria		45	45	45	45	45	45	45	45	48	52
<i>Wind Speed (Hub Height)</i>		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
R30*		31.0	33.8	37.4	40.8	42.4	42.9	42.9	42.9	42.9	42.9
R33*		29.4	32.2	35.8	39.2	40.9	41.4	41.4	41.4	41.4	41.4

Appendix A4 – Predicted Noise Levels (Mitigated Layout)

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Background Location = R32		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	$-0.002x^3 + 0.1453x^2 - 0.8862x + 31.129$	30	30	32	33	35	37	40	42	45	49
SA EPA Criteria		35	35	37	38	40	42	45	47	50	54
NIGHT BG Regression Line	$-0.0001x^3 + 0.121x^2 - 0.9889x + 31.088$	29	29	30	31	33	36	38	42	45	49
EPA Night Criteria		35	35	35	36	38	41	43	47	50	54
WHO Criteria		45	45	45	45	45	45	45	47	50	54
Wind Speed (Hub Height)		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
R31*		27.9	30.7	34.3	37.7	39.1	39.5	39.5	39.5	39.5	39.5
R32*		33.7	36.5	40.1	43.7	44.5	44.7	44.7	44.7	44.7	44.7

Background Location = R34		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	$-0.0104x^3 + 0.3096x^2 - 0.7489x + 22.545$	24	26	29	32	36	39	42	45	47	48
SA EPA Criteria		35	35	35	37	41	44	47	50	52	53
NIGHT BG Regression Line	$-0.0233x^3 + 0.7447x^2 - 5.1951x + 34.199$	24	25	27	30	34	37	41	44	46	47
EPA Night Criteria		35	35	35	35	39	42	46	49	51	52
WHO Criteria		45	45	45	45	45	45	47	50	52	53
Wind Speed (Hub Height)		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
R34*		29.5	32.3	35.9	39.3	40.8	41.2	41.2	41.2	41.2	41.2
R35*		25.9	28.7	32.3	35.7	37.4	37.8	37.8	37.8	37.8	37.8

Appendix A4 – Predicted Noise Levels (Mitigated Layout)

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Background Location = R36		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	$0.0018x^3 + 0.0976x^2 - 1.1709x + 25.238$	22	22	23	24	25	27	30	34	38	43
SA EPA Criteria		35	35	35	35	35	35	35	39	43	48
NIGHT BG Regression Line	$-6E-05x^3 + 0.1693x^2 - 2.0032x + 24.906$	19	19	19	20	22	24	27	31	35	40
EPA Night Criteria		35	35	35	35	35	35	35	36	40	45
WHO Criteria		45	45	45	45	45	45	45	45	45	48
Wind Speed (Hub Height)		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
R36*		25.2	28.0	31.6	35.2	35.8	36.0	36.0	36.0	36.0	36.0
R38		23.9	26.7	30.3	33.9	34.7	35.0	35.0	35.0	35.0	35.0
R64*		22.0	24.8	28.4	31.8	33.5	34.0	34.0	34.0	34.0	34.0

Background Location = R41		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	$-0.0129x^3 + 0.408x^2 - 2.1358x + 21.869$	19	21	23	25	29	32	35	37	39	40
SA EPA Criteria		35	35	35	35	35	37	40	42	44	45
NIGHT BG Regression Line	$-0.0324x^3 + 0.894x^2 - 5.6692x + 26.728$	16	18	20	24	27	30	33	34	33	29
EPA Night Criteria		35	35	35	35	35	35	38	39	38	35
WHO Criteria		45	45	45	45	45	45	45	45	45	45
Wind Speed (Hub Height)		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
R41*		31.1	33.9	37.5	40.9	42.6	43.1	43.1	43.1	43.1	43.1
R42*		22.0	24.8	28.4	31.9	33.5	34.0	34.0	34.0	34.0	34.0

Appendix A4 – Predicted Noise Levels (Mitigated Layout)

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Background Location = R44		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	$-0.0064x^3 + 0.3077x^2 - 2.1782x + 27.62$	23	24	25	28	30	33	37	41	45	49
SA EPA Criteria		35	35	35	35	35	38	42	46	50	54
NIGHT BG Regression Line	$-0.0051x^3 + 0.2755x^2 - 2.1163x + 25.414$	21	21	23	24	27	30	33	37	41	45
EPA Night Criteria		35	35	35	35	35	35	38	42	46	50
WHO Criteria		45	45	45	45	45	45	45	46	50	54
Wind Speed (Hub Height)		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
R40		15.9	18.7	22.3	25.7	27.3	27.7	27.7	27.7	27.7	27.7
R44*		25.2	28.0	31.6	35.1	36.4	36.7	36.7	36.7	36.7	36.7
R65		21.9	24.7	28.3	31.7	33.4	33.9	33.9	33.9	33.9	33.9

Background Location = R46		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	$0.0034x^3 + 0.0984x^2 - 0.7685x + 26.6$	25	26	27	29	32	36	40	46	52	60
SA EPA Criteria		35	35	35	35	37	41	45	51	57	65
NIGHT BG Regression Line	$-0.0223x^3 + 0.7267x^2 - 5.1643x + 33.143$	23	23	25	28	32	36	40	43	45	46
EPA Night Criteria		35	35	35	35	37	41	45	48	50	51
WHO Criteria		45	45	45	45	45	45	45	51	57	65
Wind Speed (Hub Height)		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
R45		24.2	27.0	30.6	34.1	35.2	35.6	35.6	35.6	35.6	35.6
R46*		30.6	33.4	37.0	40.4	41.9	42.4	42.4	42.4	42.4	42.4

Appendix A4 – Predicted Noise Levels (Mitigated Layout)

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Background Location = R49		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	$-0.0042x^3 + 0.1889x^2 - 0.8856x + 25.226$	25	26	27	29	31	34	36	39	42	45
SA EPA Criteria		35	35	35	35	36	39	41	44	47	50
NIGHT BG Regression Line	$-0.0258x^3 + 0.7838x^2 - 5.8263x + 32.991$	20	20	22	24	27	30	33	35	35	33
EPA Night Criteria		35	35	35	35	35	35	38	40	40	38
WHO Criteria		45	45	45	45	45	45	45	45	47	50
Wind Speed (Hub Height)		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
R47		23.5	26.3	29.9	33.4	35.0	35.4	35.4	35.4	35.4	35.4
R48		22.3	25.1	28.7	32.1	33.7	34.1	34.1	34.1	34.1	34.1
R49*		25.4	28.2	31.8	35.2	36.7	37.2	37.2	37.2	37.2	37.2
Background Location = R51		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	$-0.0112x^3 + 0.4204x^2 - 3.0804x + 31.643$	25	26	27	29	32	35	38	41	44	46
SA EPA Criteria		35	35	35	35	37	40	43	46	49	51
NIGHT BG Regression Line	$-0.018x^3 + 0.7135x^2 - 5.7973x + 34.583$	21	21	23	26	30	35	40	45	50	54
EPA Night Criteria		35	35	35	35	35	40	45	50	55	59
WHO Criteria		45	45	45	45	45	45	45	46	49	51
Wind Speed (Hub Height)		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
R50		23.4	26.2	29.8	33.3	34.5	34.9	34.9	34.9	34.9	34.9
R51*		24.5	27.3	30.9	34.4	35.4	35.7	35.7	35.7	35.7	35.7
R53		21.4	24.2	27.8	31.3	32.2	32.5	32.5	32.5	32.5	32.5

Appendix A4 – Predicted Noise Levels (Mitigated Layout)

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Background Location = R52		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	$0.0016x^3 + 0.1009x^2 - 0.9471x + 30.519$	28	29	30	31	33	35	39	42	47	52
SA EPA Criteria		35	35	35	36	38	40	44	47	52	57
NIGHT BG Regression Line	$-0.0062x^3 + 0.2728x^2 - 2.0066x + 26.692$	23	23	24	26	28	30	33	36	39	41
EPA Night Criteria		35	35	35	35	35	35	38	41	44	46
WHO Criteria		45	45	45	45	45	45	45	47	52	57
Wind Speed (Hub Height)		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
R52*		20.3	23.1	26.7	30.2	31.1	31.5	31.5	31.5	31.5	31.5

Background Location = R54		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	$-0.0033x^3 + 0.3137x^2 - 2.6897x + 34.152$	28	28	30	32	35	40	45	50	57	64
SA EPA Criteria		35	35	35	37	40	45	50	55	62	69
NIGHT BG Regression Line	$-0.0094x^3 + 0.4771x^2 - 3.5489x + 32.598$	25	26	28	31	36	40	46	52	58	65
EPA Night Criteria		35	35	35	36	41	45	51	57	63	70
WHO Criteria		45	45	45	45	45	45	50	55	62	69
Wind Speed (Hub Height)		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
R54*		21.3	24.1	27.7	31.2	32.7	33.2	33.2	33.2	33.2	33.2

Appendix A4 – Predicted Noise Levels (Mitigated Layout)

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Background Location = R56		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	$-0.0086x^3 + 0.321x^2 - 2.0034x + 29.155$	26	27	28	30	33	35	38	41	44	46
SA EPA Criteria		35	35	35	35	38	40	43	46	49	51
NIGHT BG Regression Line	$-0.0136x^3 + 0.5228x^2 - 4.3054x + 33.647$	24	24	25	27	29	33	36	39	42	45
EPA Night Criteria		35	35	35	35	35	38	41	44	47	50
WHO Criteria		45	45	45	45	45	45	45	46	49	51
Wind Speed (Hub Height)		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
R56		23.7	26.5	30.1	33.5	34.6	35.0	35.0	35.0	35.0	35.0
R58		16.3	19.1	22.7	26.2	27.5	27.9	27.9	27.9	27.9	27.9
Background Location = R60		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	$-0.0195x^3 + 0.5635x^2 - 3.7504x + 38.008$	31	31	33	35	37	40	42	43	43	41
SA EPA Criteria		36	36	38	40	42	45	47	48	48	46
NIGHT BG Regression Line	$-0.0316x^3 + 0.8557x^2 - 5.917x + 41.243$	29	29	31	34	36	38	39	39	37	32
EPA Night Criteria		35	35	36	39	41	43	44	44	42	37
WHO Criteria		45	45	45	45	45	45	47	48	48	46
Wind Speed (Hub Height)		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
R59*		22.2	25.0	28.6	32.0	33.6	34.1	34.1	34.1	34.1	34.1
R60*		20.9	23.7	27.3	30.7	32.4	32.9	32.9	32.9	32.9	32.9
R61*		20.0	22.8	26.4	29.8	31.5	32.0	32.0	32.0	32.0	32.0
R62		20.4	23.2	26.8	30.2	31.8	32.3	32.3	32.3	32.3	32.3
R63		19.9	22.7	26.3	29.7	31.3	31.8	31.8	31.8	31.8	31.8

Highlight closer than		Receiver R1	R2*	R6	R7	R8	R9	R10	R11*	R24	R13*	R14*	R16*	R17	R19	R20	R22	R25*	R26*	R29	R30*	
6		Easting	677513.8	678095.1	681483.8	681916.8	682339.5	682517	682842.1	679649.7	674876.9	678848.4	677806.9	677297	676127.1	676412.1	676129.7	676094.5	677075.1	676523	676434.2	682494.8
km's away		Northing	6187097	6185733	6184020	6183967	6183864	6183838	6183767	6183618	6183534	6183498	6183115	6181991	6181740	6181665	6181544	6181037	6178323	6178178	6177903	6177218
Closest Turbine distance			1.1	0.6	1.4	1.5	1.6	1.7	1.9	0.7	2.2	1.1	0.8	0.7	1.9	1.7	2.0	2.2	1.2	1.7	1.8	0.7
Count how many are less than 6			22	31	40	39	34	34	33	43	28	43	43	44	43	43	43	43	43	40	39	37
RYP_1	676563.7	6186549	1.1	1.7	5.5	5.9	6.4	6.5	6.9	4.3	3.5	3.8	3.7	4.6	4.8	4.9	5.0	5.5	8.2	8.4	8.6	11.1
RYP_2	676472.4	6186222	1.4	1.7	5.5	5.9	6.3	6.5	6.8	4.1	3.1	3.6	3.4	4.3	4.5	4.6	4.7	5.2	7.9	8.0	8.3	10.8
RYP_3	676314	6185896	1.7	1.8	5.5	5.9	6.4	6.5	6.9	4.0	2.8	3.5	3.2	4.0	4.2	4.2	4.4	4.9	7.6	7.7	8.0	10.7
RYP_4	676329.7	6185493	2.0	1.8	5.4	5.8	6.2	6.4	6.7	3.8	2.4	3.2	2.8	3.6	3.8	3.8	4.0	4.5	7.2	7.3	7.6	10.3
RYP_5	677768.3	6185211	1.9	0.6	3.9	4.3	4.8	4.9	5.3	2.5	3.3	2.0	2.1	3.3	3.8	3.8	4.0	4.5	6.9	7.1	7.4	9.3
RYP_6	676386	6185127	2.3	1.8	5.2	5.7	6.1	6.3	6.6	3.6	2.2	3.0	2.5	3.3	3.4	3.5	3.6	4.1	6.8	7.0	7.2	10.0
RYP_7	677495.4	6184969	2.1	1.0	4.1	4.5	5.0	5.1	5.5	2.5	3.0	2.0	1.9	3.0	3.5	3.5	3.7	4.2	6.7	6.9	7.1	9.2
RYP_9	677400.6	6184643	2.5	1.3	4.1	4.6	5.0	5.2	5.5	2.5	2.8	1.8	1.6	2.7	3.2	3.1	3.3	3.8	6.3	6.5	6.8	9.0
RYP_11	677311	6184316	2.8	1.6	4.2	4.6	5.0	5.2	5.6	2.4	2.6	1.7	1.3	2.3	2.8	2.8	3.0	3.5	6.0	6.2	6.5	8.8
RYP_12	677295.7	6183710	3.4	2.2	4.2	4.6	5.0	5.2	5.5	2.4	2.4	1.6	0.8	1.7	2.3	2.2	2.5	2.9	5.4	5.6	5.9	8.3
RYP_15	679837.5	6182935	4.8	3.3	2.0	2.3	2.7	2.8	3.1	0.7	5.0	1.1	2.0	2.7	3.9	3.7	4.0	4.2	5.4	5.8	6.1	6.3
RYP_16	677935.8	6182341	4.8	3.4	3.9	4.3	4.7	4.8	5.1	2.1	3.3	1.5	0.8	0.7	1.9	1.7	2.0	2.3	4.1	4.4	4.7	6.9
RYP_17	681366	6182613	5.9	4.5	1.4	1.5	1.6	1.7	1.9	2.0	6.6	2.7	3.6	4.1	5.3	5.0	5.3	5.5	6.1	6.6	6.8	5.5
RYP_18	678373.6	6182450	4.7	3.3	3.5	3.9	4.2	4.4	4.7	1.7	3.7	1.2	0.9	1.2	2.4	2.1	2.4	2.7	4.3	4.7	4.9	6.7
RYP_19	679786.8	6182460	5.2	3.7	2.3	2.6	2.9	3.1	3.3	1.2	5.0	1.4	2.1	2.5	3.7	3.5	3.8	4.0	4.9	5.4	5.7	5.9
RYP_20	681023	6182340	5.9	4.5	1.7	1.9	2.0	2.1	2.3	1.9	6.3	2.5	3.3	3.7	4.9	4.7	5.0	5.1	5.6	6.1	6.4	5.3
RYP_21	678367	6182056	5.1	3.7	3.7	4.0	4.4	4.5	4.8	2.0	3.8	1.5	1.2	1.1	2.3	2.0	2.3	2.5	4.0	4.3	4.6	6.4
RYP_22	679549	6181988	5.5	4.0	2.8	3.1	3.4	3.5	3.7	1.6	4.9	1.7	2.1	2.3	3.431	3.154	3.4	3.6	4.4	4.9	5.1	5.6
RYP_23	680763.1	6182056	6.0	4.5	2.1	2.2	2.4	2.5	2.7	1.9	6.1	2.4	3.1	3.5	4.647	4.369	4.7	4.8	5.2	5.7	6.0	5.1
RYP_24	678328.1	6181719	5.4	4.0	3.9	4.2	4.5	4.7	5.0	2.3	3.9	1.9	1.5	1.1	2.201	1.917	2.2	2.3	3.6	4.0	4.3	6.1
RYP_25	679389.7	6181590	5.8	4.3	3.2	3.5	3.7	3.9	4.1	2.0	4.9	2.0	2.2	2.1	3.3	3.0	3.3	3.3	4.0	4.5	4.7	5.4
RYP_26	678532.8	6181400	5.8	4.4	3.9	4.2	4.5	4.7	4.9	2.5	4.2	2.1	1.9	1.4	2.4	2.1	2.4	2.5	3.4	3.8	4.1	5.8
RYP_27	679405.2	6181226	6.2	4.7	3.5	3.7	3.9	4.1	4.3	2.4	5.1	2.3	2.5	2.2	3.3	3.0	3.3	3.3	3.7	4.2	4.5	5.1
RYP_28	678461.7	6181063	6.1	4.7	4.2	4.5	4.8	4.9	5.1	2.8	4.4	2.5	2.2	1.5	2.4	2.1	2.4	2.4	3.1	3.5	3.8	5.6
RYP_29	678285.8	6180743	6.4	5.0	4.6	4.9	5.1	5.2	5.5	3.2	4.4	2.8	2.4	1.6	2.4	2.1	2.3	2.2	2.7	3.1	3.4	5.5
RYP_30	678946.9	6180723	6.5	5.1	4.2	4.4	4.6	4.7	4.9	3.0	4.9	2.8	2.7	2.1	2.998	2.704	2.9	2.9	3.0	3.5	3.8	5.0
RYP_31	680348.3	6180539	7.1	5.7	3.7	3.8	3.9	3.9	4.1	3.2	6.2	3.3	3.6	3.4	4.4	4.1	4.3	4.3	4.0	4.5	4.7	4.0
RYP_32	678568.2	6180422	6.8	5.3	4.6	4.9	5.1	5.2	5.4	3.4	4.8	3.1	2.8	2.0	2.8	2.5	2.7	2.5	2.6	3.0	3.3	5.1
RYP_33	680288.7	6180212	7.4	5.9	4.0	4.1	4.2	4.3	4.4	3.5	6.4	3.6	3.8	3.5	4.4	4.1	4.4	4.3	3.7	4.3	4.5	3.7
RYP_34	678881	6180044	7.2	5.7	4.8	5.0	5.2	5.3	5.4	3.7	5.3	3.5	3.3	2.5	3.2	3.0	3.1	3.0	2.5	3.0	3.3	4.6
RYP_35	679583	6180016	7.4	5.9	4.4	4.6	4.7	4.8	5.0	3.6	5.9	3.6	3.6	3.0	3.9	3.6	3.8	3.6	3.0	3.6	3.8	4.0
RYP_36	680191.1	6179884	7.7	6.2	4.3	4.4	4.5	4.6	4.7	3.8	6.4	3.9	4.0	3.6	4.5	4.2	4.4	4.3	3.5	4.0	4.2	3.5
RYP_37	679001	6179677	7.6	6.1	5.0	5.2	5.4	5.4	5.6	4.0	5.6	3.8	3.6	2.9	3.5	3.3	3.4	3.2	2.4	2.9	3.1	4.3
RYP_38	679651	6179673	7.7	6.3	4.7	4.9	5.0	5.1	5.2	3.9	6.1	3.9	3.9	3.3	4.1	3.8	4.0	3.8	2.9	3.5	3.7	3.8
RYP_39	680117.2	6179419	8.1	6.6	4.8	4.9	5.0	5.0	5.1	4.2	6.7	4.3	4.4	3.8	4.6	4.3	4.5	4.3	3.2	3.8	4.0	3.2
RYP_40	679031	6179317	7.9	6.5	5.3	5.5	5.6	5.7	5.9	4.3	5.9	4.2	4.0	3.2	3.8	3.5	3.7	3.4	2.2	2.8	3.0	4.0
RYP_41	679998.1	6179121	8.4	6.9	5.1	5.2	5.3	5.3	5.4	4.5	6.8	4.5	4.6	3.9	4.7	4.4	4.6	4.3	3.0	3.6	3.8	3.1
RYP_42	680994.7	6179014	8.8	7.3	5.0	5.0	5.0	5.1	5.1	4.8	7.6	5.0	5.2	4.7	5.6	5.3	5.5	5.3	4.0	4.5	4.7	2.3
RYP_43	679098.8	6178990	8.3	6.8	5.6	5.7	5.9	5.9	6.1	4.7	6.2	4.5	4.3	3.5	4.0	3.8	3.9	3.6	2.1	2.7	2.9	3.8
RYP_44	678959.9	6178675	8.5	7.1	5.9	6.1	6.2	6.3	6.4	5.0	6.3	4.8	4.6	3.7	4.2	3.9	4.0	3.7	1.9	2.5	2.6	3.8
RYP_45	678480.1	6178580	8.6	7.2	6.2	6.4	6.5	6.6	6.8	5.2	6.1	4.9	4.6	3.6	3.9	3.7	3.8	3.4	1.4	2.0	2.2	4.2
RYP_46	678311.7	6178262	8.9	7.5	6.6	6.7	6.9	7.0	7.1	5.5	6.3	5.3	4.9	3.9	4.1	3.9	3.9	3.6	1.2	1.8	1.9	4.3
RYP_47	678217.5	6177947	9.2	7.8	6.9	7.1	7.2	7.3	7.4	5.8	6.5	5.6	5.2	4.1	4.3	4.1	4.2	3.7	1.2	1.7	1.8	4.3
RYP_48	681380.3	6177803	10.1	8.6	6.2	6.2	6.1	6.1	6.1	6.1	8.7	6.2	6.4	5.8	6.6	6.3	6.4	6.2	4.3	4.9	4.9	1.3
RYP_49	681954.9	6177677	10.4	8.9	6.4	6.3	6.2	6.2	6.2	6.4	9.2	6.6	6.8	6.3	7.1	6.8	7.0	6.8	4.9	5.5	5.5	0.7
RYP_50	681372.6	6177455	10.4	8.9	6.6	6.5	6.5	6.5	6.5	6.4	8.9	6.5	6.7	6.1	6.8	6.5	6.6	6.4	4.4	4.9	5.0	1.1
RYP_51	681385.8	6177112	10.7	9.2	6.9	6.9	6.8	6.8	6.8	6.7	9.1	6.9	7.0	6.4	7.0	6.7	6.9	6.6	4.5	5.0	5.0	1.1
RYP_52	681577.2	6176633	11.2	9.7	7.4	7.3	7.3	7.3	7.2	7.2	9.6	7.4	7.5	6.9	7.5							

Highlight closer than		Receiver	R31*	R32*	R33*	R34*	R35*	R36*	R38	R40	R41*	R42*	R44*	R45	R46*	R47	R48	R49*	R50	R51*	R52*	R53	R54*
6		Easting	679303.8	680415.5	683439.9	681817.3	684553.7	679988.2	679623	678605.1	681802	683370.3	679986	682847.2	681834.8	680155	679833.9	680667	680700.9	680970.2	684135	680877	683514.5
km/s away		Northing	6177019	6176683	6175148	6174338	6174195	6173811	6173620	6171136	6168516	6168206	6166322	6165279	6164679	6162689	6162662	6162540	6161784	6161588	6161246	6160875	6155819
Closest Turbine distance			1.4	0.7	1.4	1.9	2.9	2.9	3.2	5.9	7.7	8.0	10.1	10.9	11.5	13.7	13.7	13.7	14.5	14.7	15.0	15.4	20.4
Count how many are less than 6			42	38	19	20	10	20	18	2	0	0	0	0	0	0	0	0	0	0	0	0	0
RYP_1	676564	6186549	9.9	10.6	13.3	13.3	14.7	13.2	13.3	15.5	18.8	19.6	20.5	22.2	22.5	24.1	24.1	24.4	25.1	25.3	26.4	26.0	31.5
RYP_2	676472	6186222	9.6	10.3	13.1	13.0	14.5	12.9	13.0	15.2	18.5	19.3	20.2	21.9	22.2	23.8	23.8	24.1	24.8	25.0	26.1	25.7	31.2
RYP_3	676314	6185896	9.4	10.1	12.9	12.8	14.3	12.6	12.7	14.9	18.2	19.0	19.9	21.6	21.9	23.5	23.5	23.8	24.5	24.8	25.9	25.4	30.9
RYP_4	676330	6185493	9.0	9.7	12.6	12.4	14.0	12.2	12.3	14.5	17.8	18.7	19.5	21.2	21.5	23.1	23.1	23.4	24.1	24.4	25.5	25.0	30.5
RYP_5	677768	6185211	8.3	8.9	11.6	11.6	12.9	11.6	11.7	14.1	17.2	17.9	19.0	20.6	20.9	22.6	22.6	22.9	23.6	23.8	24.8	24.5	29.9
RYP_6	676386	6185127	8.6	9.4	12.2	12.1	13.6	11.9	12.0	14.2	17.5	18.3	19.1	20.9	21.2	22.8	22.7	23.0	23.7	24.0	25.1	24.7	30.2
RYP_7	677495	6184969	8.2	8.8	11.5	11.5	12.9	11.4	11.5	13.9	17.0	17.8	18.8	20.4	20.7	22.4	22.4	22.7	23.4	23.6	24.6	24.3	29.8
RYP_9	677401	6184643	7.9	8.5	11.3	11.2	12.7	11.1	11.2	13.6	16.7	17.5	18.5	20.1	20.5	22.1	22.1	22.3	23.1	23.3	24.3	24.0	29.5
RYP_11	677311	6184316	7.6	8.2	11.0	10.9	12.4	10.8	10.9	13.2	16.4	17.2	18.2	19.8	20.2	21.8	21.8	22.0	22.8	23.0	24.1	23.7	29.2
RYP_12	677296	6183710	7.0	7.7	10.5	10.4	12.0	10.3	10.4	12.6	15.8	16.7	17.6	19.2	19.6	21.2	21.2	21.4	22.2	22.4	23.5	23.1	28.6
RYP_15	679837	6182935	5.9	6.3	8.6	8.8	9.9	9.1	9.3	11.9	14.6	15.1	16.6	17.9	18.4	20.2	20.3	20.4	21.2	21.4	22.1	22.1	27.4
RYP_16	677936	6182341	5.5	6.2	9.1	8.9	10.5	8.8	8.9	11.2	14.4	15.1	16.1	17.8	18.1	19.8	19.8	20.0	20.7	21.0	22.0	21.7	27.1
RYP_17	681366	6182613	6.0	6.0	7.7	8.3	9.0	8.9	9.2	11.8	14.1	14.5	16.3	17.4	17.9	20.0	20.0	20.1	20.8	21.0	21.5	21.7	26.9
RYP_18	678374	6182450	5.5	6.1	8.9	8.8	10.3	8.8	8.9	11.3	14.3	15.1	16.2	17.7	18.1	19.8	19.8	20.0	20.8	21.0	22.0	21.7	27.1
RYP_19	679787	6182460	5.5	5.8	8.2	8.4	9.5	8.7	8.8	11.4	14.1	14.7	16.1	17.5	17.9	19.8	19.8	19.9	20.7	20.9	21.7	21.6	26.9
RYP_20	681023	6182340	5.6	5.7	7.6	8.0	8.9	8.6	8.8	11.5	13.8	14.3	16.1	17.2	17.7	19.7	19.7	19.8	20.6	20.8	21.3	21.5	26.6
RYP_21	678367	6182056	5.1	5.8	8.6	8.5	10.0	8.4	8.5	10.9	14.0	14.7	15.8	17.4	17.7	19.4	19.4	19.7	20.4	20.6	21.6	21.3	26.7
RYP_22	679549	6181988	5.0	5.4	7.9	8.0	9.3	8.2	8.4	10.9	13.7	14.3	15.7	17.0	17.5	19.3	19.3	19.5	20.2	20.4	21.2	21.2	26.5
RYP_23	680763	6182056	5.2	5.4	7.4	7.8	8.7	8.3	8.5	11.1	13.6	14.1	15.8	16.9	17.4	19.4	19.4	19.5	20.3	20.5	21.1	21.2	26.4
RYP_24	678328	6181719	4.8	5.5	8.3	8.2	9.8	8.1	8.2	10.6	13.7	14.4	15.5	17.0	17.4	19.1	19.1	19.3	20.1	20.3	21.3	21.0	26.4
RYP_25	679390	6181590	4.6	5.0	7.6	7.6	9.0	7.8	8.0	10.5	13.3	14.0	15.3	16.7	17.1	18.9	18.9	19.1	19.8	20.1	20.9	20.8	26.1
RYP_26	678533	6181400	4.4	5.1	7.9	7.8	9.4	7.7	7.9	10.3	13.3	14.1	15.1	16.7	17.0	18.8	18.8	19.0	19.7	20.0	20.9	20.7	26.1
RYP_27	679405	6181226	4.2	4.7	7.3	7.3	8.7	7.4	7.6	10.1	12.9	13.6	14.9	16.3	16.7	18.6	18.6	18.7	19.5	19.7	20.5	20.4	25.7
RYP_28	678462	6181063	4.1	4.8	7.7	7.5	9.2	7.4	7.5	9.9	13.0	13.8	14.8	16.4	16.7	18.5	18.5	18.7	19.4	19.6	20.6	20.3	25.7
RYP_29	678286	6180743	3.9	4.6	7.6	7.3	9.1	7.1	7.2	9.6	12.7	13.5	14.5	16.1	16.5	18.2	18.1	18.4	19.1	19.3	20.4	20.0	25.5
RYP_30	678947	6180723	3.7	4.3	7.2	7.0	8.6	7.0	7.1	9.6	12.5	13.3	14.4	15.9	16.3	18.1	18.1	18.3	19.0	19.2	20.2	19.9	25.3
RYP_31	680348	6180539	3.7	3.9	6.2	6.4	7.6	6.7	7.0	9.6	12.1	12.7	14.2	15.5	15.9	17.9	17.9	18.0	18.8	19.0	19.7	19.7	24.9
RYP_32	678568	6180422	3.5	4.2	7.2	6.9	8.6	6.8	6.9	9.3	12.3	13.1	14.2	15.7	16.1	17.8	17.8	18.0	18.8	19.0	20.0	19.7	25.1
RYP_33	680289	6180212	3.3	3.5	6.0	6.1	7.4	6.4	6.6	9.2	11.8	12.4	13.9	15.2	15.6	17.5	17.6	17.7	18.4	18.6	19.4	19.3	24.6
RYP_34	678881	6180044	3.1	3.7	6.7	6.4	8.1	6.3	6.5	8.9	11.9	12.7	13.8	15.3	15.6	17.4	17.4	17.6	18.4	18.6	19.5	19.3	24.7
RYP_35	679583	6180016	3.0	3.4	6.2	6.1	7.7	6.2	6.4	8.9	11.7	12.4	13.7	15.1	15.5	17.3	17.4	17.5	18.3	18.5	19.3	19.2	24.5
RYP_36	680191	6179884	3.0	3.2	5.7	5.8	7.2	6.1	6.3	8.9	11.5	12.1	13.6	14.8	15.3	17.2	17.2	17.4	18.1	18.3	19.1	19.0	24.3
RYP_37	679001	6179677	2.7	3.3	6.3	6.0	7.8	5.9	6.1	8.6	11.5	12.3	13.4	14.9	15.3	17.0	17.0	17.2	18.0	18.2	19.1	18.9	24.3
RYP_38	679651	6179673	2.7	3.1	5.9	5.8	7.4	5.9	6.1	8.6	11.4	12.1	13.4	14.7	15.2	17.0	17.0	17.2	17.9	18.1	19.0	18.8	24.2
RYP_39	680117	6179419	2.5	2.8	5.4	5.4	6.9	5.6	5.8	8.4	11.0	11.7	13.1	14.4	14.8	16.7	16.8	16.9	17.6	17.9	18.6	18.6	23.8
RYP_40	679031	6179317	2.3	3.0	6.1	5.7	7.5	5.6	5.7	8.2	11.2	11.9	13.0	14.5	14.9	16.7	16.7	16.9	17.6	17.8	18.8	18.5	23.9
RYP_41	679998	6179121	2.2	2.5	5.3	5.1	6.7	5.3	5.5	8.1	10.8	11.4	12.8	14.1	14.6	16.4	16.5	16.6	17.4	17.6	18.3	18.3	23.6
RYP_42	680995	6179014	2.6	2.4	4.6	4.7	6.0	5.3	5.6	8.2	10.5	11.1	12.7	13.9	14.4	16.3	16.4	16.5	17.2	17.4	18.0	18.1	23.3
RYP_43	679099	6178990	2.0	2.7	5.8	5.4	7.3	5.3	5.4	7.9	10.8	11.6	12.7	14.2	14.6	16.3	16.3	16.5	17.3	17.5	18.4	18.2	23.6
RYP_44	678960	6178675	1.7	2.5	5.7	5.2	7.2	5.0	5.1	7.5	10.5	11.4	12.4	13.9	1								

Highlight closer than

6

Receiver

Easting

Northing

Closest Turbine distance

Count how many are less than 6

R56	R58	R59*	R60*	R61*	R62	R63	R64*	R65
686567.4	686871.8	684670.1	684244.2	684488.7	683916.1	683875.3	676089	676668.2
6153140	6151613	6149654	6149529	6149335	6149096	6148991	6180459	6179644
23.4	24.9	26.6	26.7	26.9	27.1	27.2	2.2	2.0
0	0	0	0	0	0	0	43	48
34.9	36.4	37.8	37.8	38.0	38.2	38.3	6.1	6.9
34.6	36.1	37.5	37.5	37.7	37.9	38.0	5.8	6.6
34.3	35.9	37.2	37.2	37.5	37.6	37.7	5.4	6.3
33.9	35.5	36.8	36.8	37.1	37.2	37.3	5.0	5.9
33.3	34.8	36.2	36.3	36.5	36.6	36.7	5.0	5.7
33.6	35.1	36.4	36.5	36.7	36.8	36.9	4.7	5.5
33.1	34.6	36.0	36.1	36.3	36.4	36.5	4.7	5.4
32.8	34.4	35.7	35.8	36.0	36.1	36.2	4.4	5.1
32.5	34.1	35.4	35.5	35.7	35.8	35.9	4.0	4.7
31.9	33.5	34.8	34.9	35.1	35.2	35.3	3.5	4.1
30.5	32.1	33.6	33.7	33.9	34.1	34.2	4.5	4.6
30.5	32.0	33.4	33.4	33.7	33.8	33.9	2.6	3.0
29.9	31.5	33.1	33.2	33.4	33.6	33.7	5.7	5.6
30.4	32.0	33.4	33.4	33.7	33.8	33.9	3.0	3.3
30.1	31.7	33.2	33.2	33.5	33.6	33.7	4.2	4.2
29.7	31.3	32.9	33.0	33.2	33.4	33.5	5.3	5.1
30.1	31.6	33.0	33.1	33.3	33.4	33.5	2.8	3.0
29.7	31.2	32.7	32.8	33.0	33.2	33.3	3.8	3.7
29.5	31.0	32.6	32.7	32.9	33.1	33.2	4.9	4.8
29.7	31.3	32.7	32.7	33.0	33.1	33.2	2.6	2.7
29.3	30.9	32.4	32.4	32.7	32.8	32.9	3.5	3.3
29.4	30.9	32.3	32.4	32.6	32.7	32.8	2.6	2.6
29.0	30.5	32.0	32.1	32.3	32.4	32.5	3.4	3.2
29.1	30.6	32.0	32.1	32.3	32.4	32.5	2.4	2.3
28.8	30.4	31.7	31.8	32.0	32.1	32.2	2.2	2.0
28.6	30.2	31.6	31.6	31.9	32.0	32.1	2.9	2.5
28.1	29.7	31.2	31.3	31.5	31.6	31.7	4.3	3.8
28.4	30.0	31.4	31.4	31.6	31.8	31.9	2.5	2.1
27.8	29.3	30.9	30.9	31.2	31.3	31.4	4.2	3.7
28.0	29.5	30.9	31.0	31.2	31.4	31.5	2.8	2.2
27.8	29.3	30.8	30.8	31.1	31.2	31.3	3.5	2.9
27.5	29.0	30.6	30.6	30.9	31.0	31.1	4.1	3.5
27.6	29.1	30.6	30.6	30.8	31.0	31.1	3.0	2.3
27.4	29.0	30.4	30.5	30.7	30.9	31.0	3.6	3.0
27.1	28.6	30.1	30.2	30.4	30.6	30.7	4.2	3.5
27.2	28.8	30.2	30.2	30.5	30.6	30.7	3.2	2.4
26.8	28.4	29.8	29.9	30.1	30.3	30.4	4.1	3.4
26.5	28.0	29.6	29.7	29.9	30.1	30.2	5.1	4.4
26.9	28.5	29.9	29.9	30.1	30.3	30.4	3.3	2.5
26.6	28.2	29.6	29.6	29.9	30.0	30.1	3.4	2.5
26.7	28.2	29.6	29.6	29.9	30.0	30.1	3.0	2.1
26.4	28.0	29.3	29.3	29.6	29.7	29.8	3.1	2.1
26.2	27.7	29.0	29.0	29.3	29.4	29.5	3.3	2.3
25.2	26.8	28.3	28.4	28.6	28.8	28.9	5.9	5.1
25.0	26.5	28.2	28.2	28.5	28.6	28.8	6.5	5.6
24.9	26.4	28.0	28.1	28.3	28.5	28.6	6.1	5.2
24.5	26.1	27.7	27.7	27.9	28.1	28.2	6.3	5.4
24.0	25.6	27.2	27.2	27.5	27.6	27.7	6.7	5.8
24.3	25.8	27.4	27.4	27.7	27.8	27.9	6.3	5.3
23.7	25.3	26.8	26.9	27.1	27.3	27.4	6.8	5.9
24.0	25.5	27.1	27.1	27.4	27.5	27.6	6.4	5.4
23.4	24.9	26.6	26.7	26.9	27.1	27.2	7.7	6.7

NOISE FUNDAMENTALS

Noise

Hearing is a fundamental human sense and is used constantly for communication and awareness of the environment.

Noise is generally described as being 'unwanted' or 'unfavourable' sound and, to some extent, is an individual or subjective response as what may be sound to one person, may be regarded as noise by another.

The measurement and assessment of sound has been developed steadily over the last century, taking into account human response measures such as hearing damage and other potential health affects such as stress. Complex sound measurement and analytical devices have also been developed.

A-weighting and 'dBA'

The overall level of a sound is usually expressed in terms of dBA, which is measured using the 'A-weighting' filter incorporated in sound level meters. These filters have a frequency response corresponding approximately to that of human hearing. People's hearing is most sensitive to sounds at mid frequencies (typically 500 Hz to 4,000 Hz) and less sensitive at lower and higher frequencies. The level of a sound in dBA is a considered a good measure of the loudness of that sound. Different sources having the same dBA level generally sound about equally as loud, although the perceived loudness can also be affected by the character of the sound (e.g. the loudness of human speech and a distant motorbike may be perceived differently, although they can be of the same dBA level).

A change of up to 3 dBA in the level of a sound is difficult for most people to detect, whilst a 3 dBA to 5 dBA change corresponds to a small but noticeable change in loudness. A 10 dBA change corresponds to an approximate doubling or halving in loudness.

Table 1 below presents examples of typical noise levels.

Table 1 Typical Noise Levels

Sound Pressure Level (dBA)	Typical Source	Subjective Evaluation
130	Threshold of pain	Intolerable
120 110	Heavy rock concert Grinding on steel	Extremely noisy
100 90	Loud car horn at 3 m Construction site with pneumatic hammering	Very noisy
80 70	Kerbside of busy street Loud radio or television	Loud
60 50	Department store General Office	Moderate to quiet
40 30	Inside private office Inside bedroom	Quiet to very quiet
20	Unoccupied recording studio	Almost silent

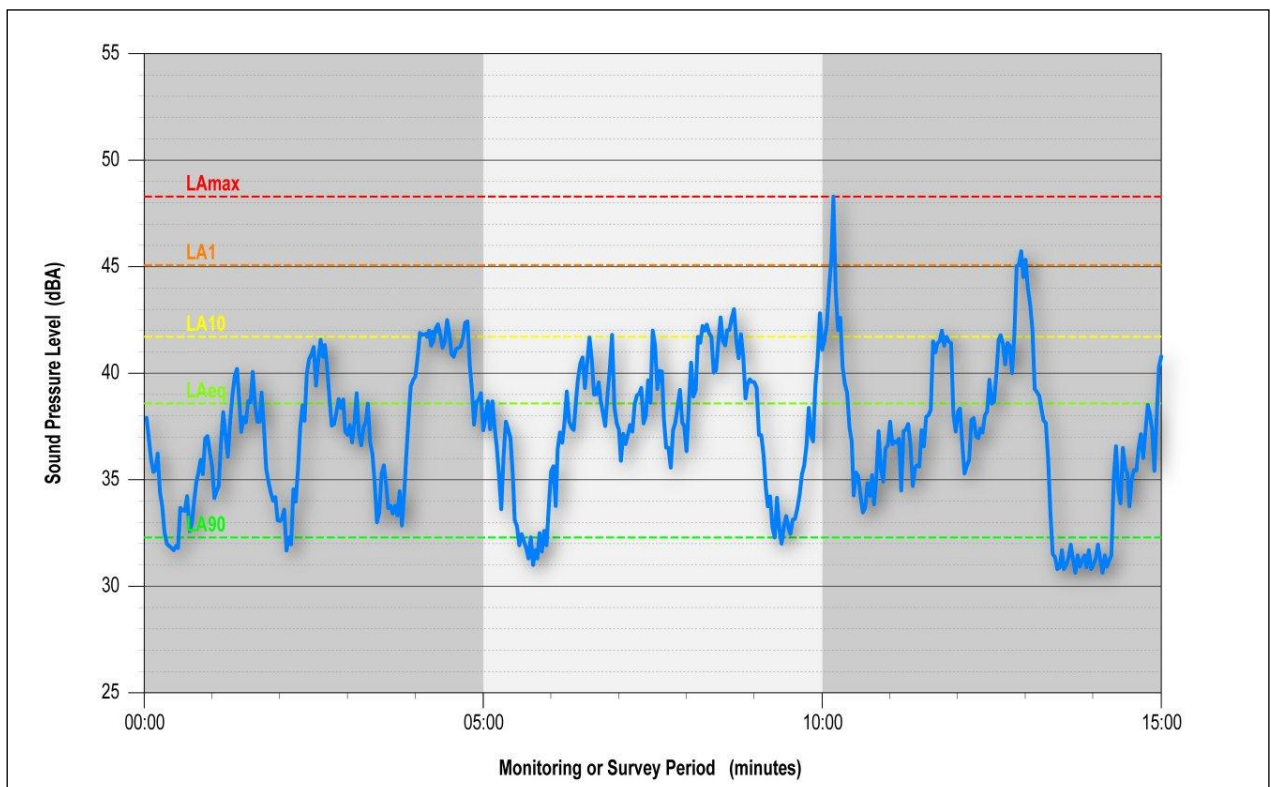
Statistical Noise Level Descriptors

As environmental noise usually varies in level over time, it is common to present the results of environmental noise testing in the form of statistical descriptors.

An explanation of noise level descriptors typically used for assessing the noise environment are illustrated in **Figure 1** and described below.

L _{Amax}	The maximum A-weighted noise level associated with a noise measurement interval.
L _{A1}	The noise level exceeded for 1% of a given measurement period. This parameter is often used to represent the <u>typical</u> maximum noise level in a given interval.
L _{A10}	The A-weighted sound pressure level exceeded 10% of a given measurement interval and is utilised normally to characterise <u>average maximum</u> noise levels.
L _{Aeq}	The A-weighted equivalent continuous sound level. It is defined as the steady sound level that contains the same amount of acoustical energy as a given time-varying sound over the same measurement interval. Can be loosely thought of as the 'average'.
L _{A90}	The A-weighted sound pressure level exceeded 90% of a given measurement interval and is representative of the <u>average minimum</u> sound level. Often used to describe the 'background' level.

Figure 1 Graphical Display of Typical Noise Descriptors



Character

The A-weighted noise level alone is a simplistic parameter and may not be sufficient in providing a thorough assessment of noise. The subjective character of a sound is also a significant parameter that needs to be considered.

Some basic characteristics of sound which can make a sound more or less intrusive include:

- The frequency content of a sound – i.e. low frequency sound such as exhaust noise or high frequency sound such as birds or insects,
- the 'tonality' of a sound – i.e. sound contains one or more prominent tones such as a horn or a whistle,
- the 'impulsiveness' of a sound – i.e. hammering, dog barking or a intermittently operating power saw.

The above parameters can usually be indicatively subjectively assessed, but more thorough assessment can be made with advanced sound measuring devices (i.e. narrow band or one-third octave analysis). Many noise policies provide an assessment method which applies penalties to sounds that exhibit particular characteristics such as the above.

Frequency Analysis

Frequency analysis is the process used to examine the tones (or frequency components) which make up the overall noise or vibration signal. This analysis was traditionally carried out using analogue electronic filters, but is now normally carried out using Fast Fourier Transform (FFT) analysers.

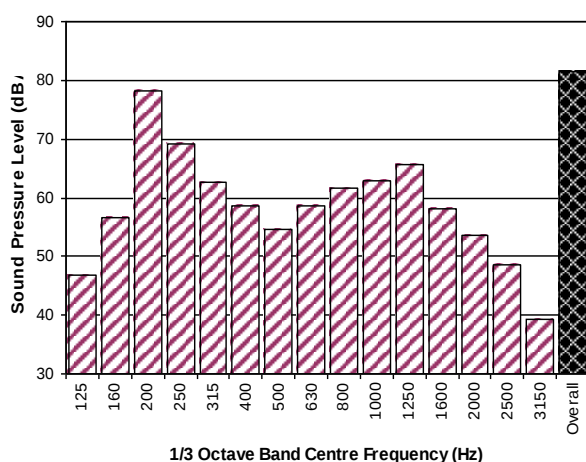
The units for frequency are Hertz (Hz), which represent the number of cycles per second.

Frequency analysis can be in:

- Octave bands (where the centre frequency and width of each band is double the previous band)
- 1/3 octave bands (3 bands in each octave band)
- Narrow band (where the spectrum is divided into 400 or more bands of equal width)

Figure 2 shows a 1/3 octave band frequency analysis where the noise is dominated by the 200 Hz band. Note that the indicated level of each individual band is less than the overall level, which is the logarithmic sum of the bands.

Figure 2 Representative 1/3 Octave Band Analysis



Vibration

Vibration may be defined as cyclic or transient motion. This motion can be measured in terms of its displacement, velocity or acceleration. Most assessments of human response to vibration or the risk of damage to buildings use measurements of vibration velocity. These may be expressed in terms of “peak” velocity or “rms” velocity.

The former is the maximum instantaneous velocity, without any averaging, and is sometimes referred to as “peak particle velocity”, or PPV. The latter incorporates “root mean squared” averaging over some defined time period.

Vibration measurements may be carried out in a single axis or alternatively as triaxial measurements. Where triaxial measurements are used, the axes are commonly designated vertical, longitudinal (aligned toward the source) and transverse.

The common units for velocity are millimetres per second (mm/s). As with noise, decibel units can also be used, in which case the reference level should always be stated. A vibration level V , expressed in mm/s can be converted to decibels by the formula $20 \log (V/V_0)$, where V_0 is the reference level (1E-6 mm/s). Care is required in this regard, as other reference levels are used by some organizations.

Human Perception of Vibration

People are able to “feel” vibration at levels lower than those required to cause even superficial damage to the most susceptible classes of building (even though they may not be disturbed by the motion). An individual's perception of motion or response to vibration depends very strongly on previous experience and expectations, and on other connotations associated with the perceived source of the vibration. For example, the vibration that a person responds to as “normal” in a car, bus or train is considerably higher than what is perceived as “normal” in a shop, office or dwelling.

Over-Pressure

The term “over-pressure” is used to describe the air pressure pulse emitted during blasting or similar events. The peak level of an event is normally measured using a microphone in the same manner as linear noise (ie unweighted), at frequencies both in and below the audible range.

Appendix D

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Wind Turbine Coordinates and Description

Name	Easting	Northing	Mitigated Layout: Sound Management Mode
RYP_1	676563	6186549	
RYP_2	676472	6186222	
RYP_3	676314	6185896	
RYP_4	676329	6185493	
RYP_5	677768	6185211	
RYP_6	676386	6185127	
RYP_7	677495	6184969	
RYP_9	677400	6184643	
RYP_11	677311	6184316	
RYP_12	677295	6183710	
RYP_15	679837	6182935	
RYP_16	677935	6182341	
RYP_17	681366	6182613	
RYP_18	678373	6182450	
RYP_19	679786	6182460	
RYP_20	681023	6182340	
RYP_21	678367	6182056	
RYP_22	679549	6181988	
RYP_23	680763	6182056	
RYP_24	678328	6181719	
RYP_25	679389	6181590	
RYP_26	678532	6181400	
RYP_27	679405	6181226	
RYP_28	678461	6181063	
RYP_29	678285	6180743	
RYP_30	678946	6180723	
RYP_31	680348	6180539	
RYP_32	678568	6180422	
RYP_33	680288	6180212	
RYP_34	678881	6180044	
RYP_35	679583	6180016	
RYP_36	680191	6179884	
RYP_37	679001	6179677	
RYP_38	679651	6179673	
RYP_39	680117	6179419	
RYP_40	679031	6179317	
RYP_41	679998	6179121	
RYP_42	680994	6179014	
RYP_43	679098	6178990	
RYP_44	678959	6178675	

Name	Easting	Northing	Mitigated Layout: Sound Management Mode
RYP_72	681953	6172668	
RYP_73	681140	6172249	SMM
RYP_74	681365	6171943	
RYP_75	681395	6171612	
RYP_76	680459	6171477	
RYP_77	681472	6171274	
RYP_78	680811	6171208	
RYP_79	680690	6170761	
RYP_80	682009	6170363	
RYP_81	682061	6170029	
RYP_82	682005	6169687	
RYP_83	681798	6169342	
RYP_84	681410	6167593	
RYP_85	681736	6167307	
RYP_86	681630	6166732	
RYP_87	681472	6166439	
RYP_88	681476	6166038	SMM
RYP_89	681369	6165705	SMM
RYP_90	681271	6165375	
RYP_92	681120	6164499	
RYP_93	680884	6164219	
RYP_94	680712	6163861	
RYP_95	681651	6163700	
RYP_97	682412	6162894	
RYP_98	682312	6162559	
RYP_99	682370	6162222	
RYP_100	682348	6161883	SMM
RYP_101	682364	6161545	SMM
RYP_102	686212	6156702	
RYP_103	686012	6156388	
RYP_104	686076	6156057	
RYP_106	685011	6155209	
RYP_107	685075	6154899	
RYP_109	685446	6154514	SMM
RYP_110	684865	6154477	
RYP_119	683637	6152682	
RYP_120	684988	6152786	
RYP_121	684859	6152485	
RYP_122	683572	6152342	
RYP_123	682721	6152320	

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Wind Turbine Coordinates and Description

Name	Easting	Northing	Mitigated Layout: Sound Management Mode
RYP_45	678480	6178580	
RYP_46	678311	6178262	
RYP_47	678217	6177947	
RYP_48	681380	6177803	
RYP_49	681954	6177677	
RYP_50	681372	6177455	
RYP_51	681385	6177112	
RYP_52	681577	6176633	
RYP_53	681202	6176809	
RYP_56	681466	6176284	
RYP_57	681049	6176486	SMM
RYP_58	682453	6176166	
RYP_61	680896	6176158	SMM
RYP_62	680706	6175844	
RYP_63	682350	6175648	
RYP_64	682964	6175563	
RYP_65	684812	6175373	
RYP_66	682356	6175315	
RYP_67	680275	6175262	SMM
RYP_68	684506	6175044	
RYP_69	682310	6174976	
RYP_70	680093	6174954	SMM
RYP_71	682030	6173110	

Name	Easting	Northing	Mitigated Layout: Sound Management Mode
RYP_125	684291	6151984	
RYP_126	682625	6151799	
RYP_127	684339	6151640	
RYP_128	683192	6151380	
RYP_129	684434	6151261	
RYP_130	683128	6151059	
RYP_131	683010	6150732	
RYP_96	682225	6163319	
RYP_132	678712	6182642	
RYP_133	678008	6181394	
RYP_134	677899	6181074	
RYP_135	679233	6180352	
RYP_136	680736	6181711	
RYP_137	680639	6181386.1	
RYP_138	680609	6181041.6	
RYP_139	680928	6177667.1	
RYP_140	680771	6177336.7	SMM
RYP_141	680422	6175567.3	SMM
RYP_145	686041	6154259.9	
RYP_142	684451	6152328.8	
RYP_143	681450	6167984.1	
RYP_144	678428	6177667.6	
RYP_124	685096	6152166.5	

Low Frequency Noise and Tonality Analysis

Low Frequency Noise

Low frequency noise has been evaluated by determining the C-weighted noise for each receptor. The overall results in dBC for each receptor are shown in the table below.

Receiver	Predicted Noise Level, Leq dBC	Receiver	Predicted Noise Level, Leq dBC
R1	42.8	R36*	42.4
R2*	46.2	R38	42.0
R6	40.6	R40	35.4
R7	39.0	R41*	47.6
R8	37.9	R42*	40.2
R9	37.5	R44*	42.8
R10	38.2	R45	41.9
R11*	46.2	R46*	47.0
R24	46.2	R47	41.2
R13*	47.1	R48	40.5
R14*	47.8	R49*	42.9
R16*	42.0	R50	41.1
R17	43.2	R51*	41.7
R19	42.0	R52*	38.1
R20	41.4	R53	39.2
R22	38.5	R54*	39.5
R25*	43.2	R56	40.9
R26*	40.5	R58	35.3
R29	40.7	R59*	40.3
R30*	47.8	R60*	38.5
R31*	45.0	R61*	38.4
R32*	49.5	R62	39.2
R33*	46.1	R63	38.8
R34*	46.7	R64*	41.1
R35*	42.6	R65	40.3

None of the receivers exceed the night-time criteria of 60 dBC which is the trigger level for further low frequency noise investigation in the NSW Draft Wind Farm Guidelines.

Tonality is assessed using the one-third octave field testing methodology. The table below shows the level of each one third octave band relative to its sidebands. Noise is said to be tonal when the one third octave band level exceeds the level of the adjacent sidebands on both sides by:

- **5 dB or more** if the centre frequency of the band containing the tone is above 400Hz
- **8 dB or more** if the centre frequency of the band containing the tone is 160 to 400Hz inclusive
- **15 dB or more** if the centre frequency of the band containing the tone is below 160Hz

The results presented in the tables below in each column are for either side-band, respectively.

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Low Frequency Noise and Tonality Analysis

Receiver	Frequency (Hz)																						
	31	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1k	1.25k	1.6k	2k	2.5k	3.15k	4k	5k
R1	16,-9	9,-12	12,-5	5,-5	5,-2	2,-3	3,-5	5,-3	3,-2	2,-3	3,-2	2,0	0,-2	2,1	-1,3	-3,2	-2,6	-6,8	-8,10	-10,16	-16,25	-25,-40	40,0
R2*	16,-9	9,-12	12,-5	5,-5	5,-3	3,-3	3,-5	5,-3	3,-2	2,-3	3,-3	3,-1	1,-2	2,1	-1,2	-2,1	-1,4	-4,6	-6,7	-7,10	-10,17	-17,24	-24,-35
R6	16,-9	9,-12	12,-5	5,-5	5,-2	2,-3	3,-4	4,-3	3,-1	1,-3	3,-2	2,0	0,-1	1,2	-2,3	-3,3	-3,7	-7,9	-9,13	-13,20	-20,30	-30,-58	58,0
R7	16,-9	9,-12	12,-5	5,-5	5,-2	2,-3	3,-5	5,-3	3,-2	2,-3	3,-2	2,0	0,-1	1,2	-2,3	-3,2	-2,7	-7,9	-9,13	-13,20	-20,-30	30,0	0,0
R8	16,-9	9,-12	12,-5	5,-5	5,-2	2,-3	3,-4	4,-3	3,-2	2,-3	3,-2	2,0	0,-1	1,2	-2,3	-3,3	-3,7	-7,10	-10,14	-14,21	-21,-35	35,0	0,0
R9	16,-9	9,-12	12,-5	5,-5	5,-2	2,-3	3,-4	4,-3	3,-1	1,-3	3,-2	2,0	0,-1	1,2	-2,3	-3,3	-3,7	-7,10	-10,14	-14,23	-23,-38	38,0	0,0
R10	16,-9	9,-12	12,-5	5,-5	5,-2	2,-3	3,-4	4,-3	3,-1	1,-2	2,-2	2,0	0,-1	1,2	-2,4	-4,4	-4,8	-8,11	-11,16	-16,25	-25,-46	46,0	0,0
R11*	16,-9	9,-12	12,-5	5,-5	5,-3	3,-3	3,-5	5,-3	3,-2	2,-3	3,-2	2,-1	1,-2	2,1	-1,2	-2,1	-1,5	-5,6	-6,7	-7,11	-11,18	-18,26	-26,-43
R24	16,-9	9,-12	12,-5	5,-5	5,-3	3,-4	4,-5	5,-3	3,-2	2,-3	3,-3	3,-1	1,-2	2,1	-1,2	-2,1	-1,5	-5,7	-7,9	-9,14	-14,21	-21,31	-31,-57
R13*	16,-9	9,-12	12,-5	5,-5	5,-2	2,-3	3,-5	5,-3	3,-2	2,-3	3,-3	3,-1	1,-2	2,1	-1,2	-2,1	-1,5	-5,6	-6,8	-8,12	-12,20	-20,29	-29,-47
R14*	16,-9	9,-12	12,-5	5,-5	5,-2	2,-3	3,-5	5,-3	3,-2	2,-3	3,-3	3,-1	1,-2	2,1	-1,2	-2,1	-1,5	-5,7	-7,8	-8,12	-12,19	-19,27	-27,-46
R16*	16,-9	9,-12	12,-5	5,-5	5,-2	2,-3	3,-4	4,-3	3,-1	1,-3	3,-2	2,0	0,-1	1,2	-2,4	-4,3	-3,8	-8,12	-12,16	-16,26	-26,-42	42,0	0,0
R17	16,-9	9,-12	12,-5	5,-5	5,-2	2,-3	3,-5	5,-3	3,-1	1,-3	3,-2	2,0	0,-1	1,2	-2,3	-3,3	-3,7	-7,10	-10,14	-14,22	-22,-32	32,0	0,0
R19	16,-9	9,-12	12,-5	5,-5	5,-2	2,-3	3,-4	4,-3	3,-1	1,-3	3,-2	2,0	0,-1	1,2	-2,4	-4,4	-4,8	-8,12	-12,16	-16,25	-25,-41	41,0	0,0
R20	16,-9	9,-12	12,-5	5,-5	5,-2	2,-3	3,-4	4,-3	3,-1	1,-3	3,-2	2,0	0,-1	1,2	-2,4	-4,4	-4,8	-8,12	-12,16	-16,25	-25,-42	42,0	0,0
R22	16,-9	9,-12	12,-5	5,-5	5,-2	2,-3	3,-4	4,-3	3,-1	1,-3	3,-2	2,0	0,-1	1,2	-2,4	-4,4	-4,9	-9,13	-13,19	-19,29	-29,-56	56,0	0,0
R25*	16,-9	9,-12	12,-5	5,-5	5,-2	2,-3	3,-5	5,-3	3,-2	2,-3	3,-2	2,0	0,-2	2,1	-1,3	-3,2	-2,6	-6,8	-8,11	-11,17	-17,27	-27,-44	44,0
R26*	16,-9	9,-12	12,-5	5,-5	5,-2	2,-3	3,-4	4,-3	3,-1	1,-2	2,-2	2,0	0,-1	1,2	-2,3	-3,3	-3,8	-8,11	-11,15	-15,24	-24,-38	38,0	0,0
R29	16,-9	9,-12	12,-5	5,-5	5,-2	2,-3	3,-4	4,-3	3,-1	1,-2	2,-2	2,0	0,-1	1,2	-2,4	-4,3	-3,8	-8,11	-11,15	-15,24	-24,-41	41,0	0,0
R30*	16,-9	9,-12	12,-5	5,-5	5,-3	3,-3	3,-5	5,-3	3,-2	2,-3	3,-3	3,-1	1,-2	2,1	-1,2	-2,1	-1,5	-5,7	-7,8	-8,12	-12,19	-19,27	-27,-44
R31*	16,-9	9,-12	12,-5	5,-5	5,-2	2,-3	3,-5	5,-3	3,-2	2,-3	3,-3	3,-1	1,-2	2,1	-1,3	-3,2	-2,6	-6,9	-9,11	-11,16	-16,25	-25,-40	40,0
R32*	16,-9	9,-12	12,-5	5,-5	5,-3	3,-3	3,-5	5,-3	3,-2	2,-3	3,-3	3,-1	1,-2	2,1	-1,2	-2,1	-1,5	-5,6	-6,8	-8,12	-12,19	-19,26	-26,-40
R33*	16,-9	9,-12	12,-5	5,-5	5,-2	2,-3	3,-5	5,-3	3,-2	2,-3	3,-3	3,-1	1,-2	2,1	-1,2	-2,1	-1,4	-4,6	-6,7	-7,10	-10,17	-17,24	-24,-37
R34*	16,-9	9,-12	12,-5	5,-5	5,-2	2,-3	3,-5	5,-3	3,-2	2,-3	3,-2	2,-1	1,-2	2,1	-1,2	-2,1	-1,5	-5,7	-7,8	-8,13	-13,20	-20,29	-29,-52

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Low Frequency Noise and Tonality Analysis

	Frequency (Hz)																						
Receiver	31	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1k	1.25k	1.6k	2k	2.5k	3.15k	4k	5k
R35*	16,-9	9,-12	12,-5	5,-5	5,-3	3,-4	4,-5	5,-3	3,-2	2,-3	3,-3	3,-1	1,-2	2,1	-1,2	-2,1	-1,5	-5,6	-6,8	-8,13	-13,20	-20,30	-30,-55
R36*	16,-9	9,-12	12,-5	5,-5	5,-2	2,-3	3,-4	4,-3	3,-1	1,-3	3,-2	2,0	0,-1	1,2	-2,3	-3,2	-2,6	-6,8	-8,11	-11,16	-16,26	-26,-45	45,0
R38	16,-9	9,-12	12,-5	5,-5	5,-2	2,-3	3,-4	4,-3	3,-1	1,-2	2,-2	2,0	0,-1	1,2	-2,3	-3,3	-3,7	-7,10	-10,13	-13,20	-20,30	-30,-60	60,0
R40	16,-9	9,-12	12,-5	5,-5	5,-2	2,-3	3,-4	4,-2	2,-1	1,-2	2,-2	2,0	0,-1	1,2	-2,4	-4,4	-4,8	-8,12	-12,16	-16,25	-25,-50	50,0	0,0
R41*	16,-9	9,-12	12,-5	5,-5	5,-3	3,-4	4,-5	5,-3	3,-2	2,-3	3,-3	3,-1	1,-2	2,1	-1,2	-2,1	-1,4	-4,6	-6,7	-7,11	-11,17	-17,25	-25,-37
R42*	16,-9	9,-12	12,-5	5,-5	5,-2	2,-3	3,-5	5,-3	3,-2	2,-3	3,-2	2,0	0,-1	1,2	-2,3	-3,3	-3,8	-8,11	-11,16	-16,25	-25,-41	41,0	0,0
R44*	16,-9	9,-12	12,-5	5,-5	5,-2	2,-3	3,-5	5,-3	3,-2	2,-3	3,-2	2,0	0,-2	2,2	-2,3	-3,2	-2,7	-7,10	-10,13	-13,21	-21,32	-32,-59	59,0
R45	16,-9	9,-12	12,-5	5,-5	5,-2	2,-3	3,-4	4,-3	3,-1	1,-3	3,-2	2,0	0,-1	1,2	-2,3	-3,3	-3,7	-7,10	-10,14	-14,22	-22,-31	31,0	0,0
R46*	16,-9	9,-12	12,-5	5,-5	5,-3	3,-3	3,-5	5,-3	3,-2	2,-3	3,-3	3,-1	1,-2	2,1	-1,2	-2,1	-1,5	-5,6	-6,8	-8,12	-12,19	-19,27	-27,-46
R47	16,-9	9,-12	12,-5	5,-5	5,-2	2,-3	3,-5	5,-3	3,-2	2,-3	3,-2	2,0	0,-2	2,1	-1,3	-3,2	-2,7	-7,9	-9,12	-12,18	-18,28	-28,-52	52,0
R48	16,-9	9,-12	12,-5	5,-5	5,-2	2,-3	3,-4	4,-3	3,-1	1,-3	3,-2	2,0	0,-1	1,2	-2,3	-3,3	-3,7	-7,10	-10,13	-13,20	-20,-31	31,0	0,0
R49*	16,-9	9,-12	12,-5	5,-5	5,-2	2,-3	3,-5	5,-3	3,-2	2,-3	3,-2	2,0	0,-2	2,1	-1,3	-3,2	-2,7	-7,9	-9,13	-13,19	-19,29	-29,-53	53,0
R50	16,-9	9,-12	12,-5	5,-5	5,-2	2,-3	3,-4	4,-3	3,-1	1,-3	3,-2	2,0	0,-1	1,2	-2,3	-3,3	-3,7	-7,10	-10,15	-15,23	-23,-34	34,0	0,0
R51*	16,-9	9,-12	12,-5	5,-5	5,-2	2,-3	3,-4	4,-3	3,-2	2,-3	3,-2	2,0	0,-2	2,1	-1,3	-3,2	-2,7	-7,9	-9,13	-13,20	-20,30	-30,-56	56,0
R52*	16,-9	9,-12	12,-5	5,-5	5,-2	2,-3	3,-4	4,-3	3,-1	1,-3	3,-2	2,0	0,-1	1,2	-2,3	-3,3	-3,8	-8,11	-11,16	-16,25	-25,-43	43,0	0,0
R53	16,-9	9,-12	12,-5	5,-5	5,-2	2,-3	3,-4	4,-3	3,-1	1,-3	3,-2	2,0	0,-1	1,2	-2,3	-3,3	-3,8	-8,11	-11,14	-14,23	-23,-37	37,0	0,0
R54*	16,-9	9,-12	12,-5	5,-5	5,-3	3,-3	3,-5	5,-3	3,-1	1,-3	3,-2	2,0	0,-1	1,2	-2,3	-3,3	-3,7	-7,10	-10,14	-14,22	-22,-35	35,0	0,0
R56	17,-9	9,-12	12,-5	5,-5	5,-3	3,-3	3,-5	5,-3	3,-2	2,-3	3,-3	3,0	0,-2	2,1	-1,3	-3,2	-2,7	-7,9	-9,13	-13,20	-20,30	-30,-56	56,0
R58	16,-9	9,-12	12,-5	5,-5	5,-2	2,-3	3,-4	4,-3	3,-1	1,-3	3,-2	2,0	0,-1	1,2	-2,4	-4,4	-4,9	-9,12	-12,16	-16,25	-25,-49	49,0	0,0
R59*	16,-9	9,-12	12,-5	5,-5	5,-2	2,-3	3,-5	5,-3	3,-2	2,-3	3,-2	2,0	0,-1	1,2	-2,3	-3,3	-3,8	-8,11	-11,15	-15,22	-22,-36	36,0	0,0
R60*	16,-9	9,-12	12,-5	5,-5	5,-3	3,-3	3,-5	5,-3	3,-2	2,-3	3,-3	3,0	0,-2	2,1	-1,3	-3,3	-3,8	-8,11	-11,15	-15,23	-23,-37	37,0	0,0
R61*	16,-9	9,-12	12,-5	5,-5	5,-2	2,-3	3,-4	4,-3	3,-1	1,-3	3,-2	2,0	0,-1	1,2	-2,3	-3,3	-3,8	-8,12	-12,17	-17,26	-26,-46	46,0	0,0
R62	16,-9	9,-12	12,-5	5,-5	5,-2	2,-3	3,-4	4,-3	3,-1	1,-3	3,-2	2,0	0,-1	1,2	-2,4	-4,4	-4,8	-8,12	-12,16	-16,25	-25,-45	45,0	0,0
R63	16,-9	9,-12	12,-5	5,-5	5,-2	2,-3	3,-4	4,-3	3,-1	1,-3	3,-2	2,0	0,-1	1,2	-2,4	-4,4	-4,9	-9,12	-12,17	-17,26	-26,-48	48,0	0,0
R64*	16,-9	9,-12	12,-5	5,-5	5,-2	2,-3	3,-4	4,-3	3,-1	1,-3	3,-2	2,0	0,-1	1,2	-2,4	-4,4	-4,9	-9,12	-12,17	-17,26	-26,-47	47,0	0,0
R65	16,-9	9,-12	12,-5	5,-5	5,-2	2,-3	3,-4	4,-3	3,-2	2,-3	3,-2	2,0	0,-1	1,2	-2,3	-3,3	-3,8	-8,12	-12,16	-16,26	-26,-43	43,0	0,0