



**BERRYBANK WIND FARM
TELEVISION & RADIO
RECEPTION
Pre-Construction Baseline Survey
March 2019**

Prepared By

Horder Communication Solutions



PLANNING AND ENVIRONMENT ACT 1987
PLANNING SCHEME Golden Plains & Corangamite
PERMIT NO. 20092820-A & 20091821-A

**ENDORSED PLAN
SHEET 1 OF 28**

SIGNED S. Manzi FOR
MINISTER FOR PLANNING
DATE: 17/4/19

**ENDORSED TO COMPLY
WITH CONDITION
25 (20092820-A) & 27 (20091821-A)**

**OF PLANNING PERMIT
20092820-A & 20091821-A**

**APPROVED FOR THE
MINISTER FOR PLANNING**

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Introduction

Global Power Generation, GPG, on behalf of Berrybank Wind Farm, engaged Horder Communication Solutions, (HCS), to conduct a baseline television and radio reception survey of the Berrybank Wind Farm in the region as required by Planning Permit 20092820-A and 20092821-A

The purpose of this survey is therefore to:

- Document the pre-installation television and radio reception in the area as defined.
- Provide opinion on the likely effect of the proposed Berrybank Wind Farm on television and radio reception in the described area

Detailed Method

Methodology	
Purpose	<ul style="list-style-type: none"> ▪ Prior to the commencement of the wind farm project, undertake an assessment of the existing quality of the television transmission available at a representative sample of all residential and non-stakeholder dwellings deemed to be within the area defined as within 5KM of the wind farm boundaries, (as defined by the outer turbine locations). ▪ Additional down range readings outside of the 5KM boundary towards the Warrion Hill TV translator that may be affected by down range diffraction.
Inputs	<ul style="list-style-type: none"> ▪ Topographic data (digital 10m contour) out to 10km from the wind turbines ▪ Client supplied kmz files ▪ Client supplied 5KM zone map with identified dwellings marked ▪ ABC Australia Signal Prediction kmz files ▪ Wind farm layout (coordinates and identifiers) ▪ Background map (showing roads, dwelling locations (if available), other sensitive land uses, landscape features etc) (digital) ▪ Site boundary (digital), Google Earth Pro, Licensed. ▪ "OziExplorer" Digital "Moving Map"

Method	<p>Phase 1: Project Planning & Management</p> <p>This phase includes:</p> <ul style="list-style-type: none"> • Project planning, establishment, management and technical review; • Review of available information - eg. purchase suitable maps of the region, obtain list of ACMA TV licences for area, identify location of television transmitter, local channels & frequencies, range of fixed radio communication services; • Confirmation of test equipment and fit out of vehicle; and <p>Phase 2: Field Measurements</p> <p>A two-person team carried out the field measurements over a 2-day on site period.</p> <p><i>Equipment: Television Survey</i></p> <p>Television and Radio signal strength measurements were taken from roadside locations (not within private residences) on a grid determined in the field based on the supplied consultation map.</p> <p>Our standardised measurement system for television signal strengths typically comprised:</p> <ul style="list-style-type: none"> ▪ Wisi EE06 14dB Phased Array TV Antenna ▪ Matchmaster FM03 3 Element, 3dB Yagi ▪ 10 metre Pump Up mast and vehicle mounting arrangement ▪ 12 metres RG6 Quad shield coaxial cable ▪ Rover MASTER-STC-4 Field Strength Meter/Spectrum Analyser <p>The standard TV and Radio antennae is mounted onto a 10 metre Pump Up mast erected on a custom-built support fixed to the tow-bar of a medium duty two-wheel drive vehicle.</p> <p><i>Measured Frequencies</i></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Affiliation</th> <th style="text-align: left;">Callsign</th> <th style="text-align: left;">Frequency</th> <th style="text-align: left;">Power (ERP)¹</th> <th style="text-align: left;">Pattern²</th> <th style="text-align: left;">Polarisation³</th> </tr> </thead> <tbody> <tr> <td>ABC</td> <td>3CRR</td> <td>107.9 Mhz</td> <td>100.00 kW</td> <td>Directional</td> <td>Mixed</td> </tr> <tr> <td>SBS</td> <td>SBS34</td> <td>571.500 Mhz</td> <td>300.00 kW</td> <td>Directional</td> <td>Horizontal</td> </tr> <tr> <td>ABC</td> <td>ABC35</td> <td>578.500 Mhz</td> <td>300.00 kW</td> <td>Directional</td> <td>Horizontal</td> </tr> <tr> <td>Seven</td> <td>AMV36</td> <td>585.500 Mhz</td> <td>300.00 kW</td> <td>Directional</td> <td>Horizontal</td> </tr> <tr> <td>Nine</td> <td>VTV37</td> <td>592.500 Mhz</td> <td>300.00 kW</td> <td>Directional</td> <td>Horizontal</td> </tr> <tr> <td>Ten</td> <td>BCV38</td> <td>599.500 Mhz</td> <td>300.00 kW</td> <td>Directional</td> <td>Horizontal</td> </tr> </tbody> </table>	Affiliation	Callsign	Frequency	Power (ERP) ¹	Pattern ²	Polarisation ³	ABC	3CRR	107.9 Mhz	100.00 kW	Directional	Mixed	SBS	SBS34	571.500 Mhz	300.00 kW	Directional	Horizontal	ABC	ABC35	578.500 Mhz	300.00 kW	Directional	Horizontal	Seven	AMV36	585.500 Mhz	300.00 kW	Directional	Horizontal	Nine	VTV37	592.500 Mhz	300.00 kW	Directional	Horizontal	Ten	BCV38	599.500 Mhz	300.00 kW	Directional	Horizontal
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¹ Effective Radiated Power (ERP) is measure of the apparent output of a transmitter and its antenna system.
(<https://ozdigitaltv.com/definitions#erp>)

² A directional antenna emits more power in one or two directions than in others. Directional antennas increase the ERP for the areas that they target without requiring a more powerful transmitter.
(<https://ozdigitaltv.com/definitions#directional>)

³ The polarization of an antenna refers to the orientation of the electric field (E-plane) of the radio wave with respect to the Earth's surface and is a method used to separate transmission systems
[https://en.wikipedia.org/wiki/Antenna_\(radio\)#Polarization](https://en.wikipedia.org/wiki/Antenna_(radio)#Polarization)


	<p>Phase 3: Analysis and Reporting</p> <ul style="list-style-type: none"> ▪ A detailed spreadsheet detailing the direct testing results is available on file with GPG, a formatted extract of the relevant results is detailed in the report below. ▪ Television digital signal survey results typically include, for each location: level in dBu, C/N, SNR, MER, bBER and aBER. Radio reception is level in dBu ▪ Recorded Photos of referenced locations were taken and are available on file with GPG <p>To respect the privacy of nearby dwellings, the surveys were completed from nearby public roads and no access to private property has occurred. Closed gate private roads were not entered. Wherever possible roadside surveys were taken at locations that would accurately represent distant dwellings.</p>
	 <p style="text-align: center;"><i>Survey Van located at Hirths Rd</i></p>
<p>Personnel</p>	<ul style="list-style-type: none"> ▪ John Horder – test measurements, reporting ▪ Brian Morgan - field Technician
<p>Assumptions & Notes</p>	<ul style="list-style-type: none"> ▪ This survey was confined to digital signals from the Ballarat Primary Transmitter located at Lookout Hill. ▪ A total of 60 Television and radio signal sets have been measured at 60 locations. ▪ Observations were GPS recorded at 62 Locations.

Figure – Observation GPS Logs as native Garmin and Moving Map values

GARMIN LOG				MOVING MAP LOG					
Label	Latitude	Longitude	Elevation		Latitude	Longitude	MAP	TIME	Elevation
1	38.211956	143.592877	402.328	MKR1	38.337996	143.580171	43529.47545	Position MRK 5/03/2019 9:54:38 PM	479
2	38.211957	143.592878	402.435	MKR2	38.211945	143.592873	43529.88679	Position MRK 6/03/2019 7:46:58 AM	409
3	38.186245	143.608138	409.841	MKR3	38.186373	143.608111	43529.91694	Position MRK 6/03/2019 8:30:23 AM	415
				MKR4	38.178057	143.620984	43529.93045	Position MRK 6/03/2019 8:49:50 AM	413
4	-38.15228	143.63086	425.604	MKR5	38.152279	143.630862	43529.93731	Position MRK 6/03/2019 8:59:43 AM	426
5	38.138651	143.605419	400.074	MKR6	38.138651	143.605418	43529.94646	Position MRK 6/03/2019 9:12:53 AM	400
6	38.130398	143.585817	415.862	MKR7	38.130373	143.585782	43529.95507	Position MRK 6/03/2019 9:25:17 AM	413
7	38.125667	143.562397	427.323	MKR8	38.125672	143.562394	43529.96704	Position MRK 6/03/2019 9:42:32 AM	424
8	38.108424	143.556201	424.008	MKR9	38.108387	143.556201	43529.97669	Position MRK 6/03/2019 9:56:26 AM	422
9	-38.06434	143.542401	472.798	MKR10	38.064333	143.542407	43529.99938	Position MRK 6/03/2019 10:29:06 AM	471
10	38.048811	143.545282	450.526	MKR11	38.048807	143.545283	43530.01059	Position MRK 6/03/2019 10:45:15 AM	451
11	38.027141	143.514656	480.367	MKR12	38.027143	143.514656	43530.02214	Position MRK 6/03/2019 11:01:52 AM	480
12	38.005973	143.455199	508.324	MKR13	38.005976	143.455198	43530.03632	Position MRK 6/03/2019 11:22:18 AM	508
13	37.997779	143.456631	504.019	MKR14	37.997768	143.456633	43530.04487	Position MRK 6/03/2019 11:34:36 AM	502
14	37.984822	143.459008	519.364	MKR15	37.984822	143.459005	43530.06231	Position MRK 6/03/2019 11:59:44 AM	519
15	37.976155	143.460541	530.301	MKR16	37.976092	143.460555	43530.07152	Position MRK 6/03/2019 12:12:59 PM	533
16	-37.96357	143.441718	537.459	MKR17	37.963577	143.441713	43530.08213	Position MRK 6/03/2019 12:28:16 PM	541
17	37.962949	143.436729	571.215	MKR18	-37.96295	143.436729	43530.09553	Position MRK 6/03/2019 12:47:33 PM	570
18	37.914208	143.44152	644.758	MKR19	37.914204	143.441526	43530.10652	Position MRK 6/03/2019 1:03:23 PM	646

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GARMIN LOG				MOVING MAP LOG					
19	37.911801	143.444993	633.75	MKR20	37.911801	143.44499	43530.11536	Position MRK 6/03/2019 1:16:07 PM	634
20	37.880672	143.461758	687.794	MKR21	37.881972	143.480554	43530.12911	Position MRK 6/03/2019 1:35:55 PM	674
21	37.874895	143.460317	720.204	MKR22	37.880672	143.461755	43530.14365	Position MRK 6/03/2019 1:56:51 PM	688
22	37.878868	143.485969	692.398	MKR23	37.874898	143.46031	43530.14536	Position MRK 6/03/2019 1:59:18 PM	723
23	37.874726	143.491453	679.919	MKR24	37.878851	143.485991	43530.15431	Position MRK 6/03/2019 2:12:12 PM	693
24	37.863535	143.505884	704.844	MKR25	37.874727	143.491454	43530.17093	Position MRK 6/03/2019 2:36:08 PM	681
25	37.888767	143.506035	597.317	MKR26	37.863537	143.505883	43530.18101	Position MRK 6/03/2019 2:50:38 PM	705
26	37.884511	143.494495	673.769	MKR27	37.889309	143.506076	43530.18927	Position MRK 6/03/2019 3:02:32 PM	506
27	37.918453	143.50033	650.563	MKR28	37.884509	143.494495	43530.20121	Position MRK 6/03/2019 3:19:44 PM	673
28	37.923114	143.496711	638.813	MKR29	37.918461	143.500336	43530.21005	Position MRK 6/03/2019 3:32:28 PM	644
29	-37.90868	143.477952	640.76	MKR30	-37.92312	143.496707	43530.21878	Position MRK 6/03/2019 3:45:02 PM	638
30	37.942844	143.495547	608.873	MKR31	37.908708	143.477956	43530.22849	Position MRK 6/03/2019 3:59:01 PM	642
31	-37.95148	143.493676	595.685	MKR32	37.942836	143.495561	43530.23918	Position MRK 6/03/2019 4:14:24 PM	608
32	37.955938	143.492882	591.024	MKR33	37.951482	143.493679	43530.2417	Position MRK 6/03/2019 4:18:03 PM	594
33	37.980517	143.488316	564.316	MKR34	37.955934	143.492887	43530.2434	Position MRK 6/03/2019 4:20:30 PM	591
34	37.991709	143.485986	521.399	MKR35	37.980518	143.488315	43530.25287	Position MRK 6/03/2019 4:34:08 PM	565
35	38.003392	143.483727	497.481	MKR36	37.991708	143.485984	43530.25943	Position MRK 6/03/2019 4:43:34 PM	521
36	38.006687	143.483084	487.606	MKR37	38.003387	143.483721	43530.26736	Position MRK 6/03/2019 4:54:59 PM	498
37	37.939209	143.58412	531.35	MKR38	38.006691	143.483087	43530.26865	Position MRK 6/03/2019 4:56:51 PM	487
38	37.945025	143.584181	520.825	MKR39	37.939214	143.584117	43530.89167	Position MRK 7/03/2019 7:54:00 AM	532
39	37.912475	143.576292	576.475	MKR40	37.945021	143.584182	43530.91076	Position MRK 7/03/2019 8:21:29 AM	519

GARMIN LOG				MOVING MAP LOG					
40	37.922157	143.54934	607.428	MKR41	37.912476	143.576293	43530.92198	Position MRK 7/03/2019 8:37:39 AM	576
41	37.932138	143.53038	614.793	MKR42	37.922153	143.549336	43530.94093	Position MRK 7/03/2019 9:04:56 AM	606
42	37.950984	143.563549	527.28	MKR43	37.932156	143.530366	43530.95067	Position MRK 7/03/2019 9:18:57 AM	613
43	-37.946	143.520851	623.503	MKR44	37.950988	143.563525	43530.96763	Position MRK 7/03/2019 9:43:23 AM	524
44	37.955177	143.549791	549.214	MKR45	37.946012	143.520902	43530.97997	Position MRK 7/03/2019 10:01:09 AM	626
45	37.977369	143.537753	521.164	MKR46	37.955177	143.549789	43530.98966	Position MRK 7/03/2019 10:15:06 AM	552
46	37.981108	143.501109	580.108	MKR47	37.974466	143.539843	43530.99624	Position MRK 7/03/2019 10:24:35 AM	525
47	37.982293	143.505024	581.854	MKR48	37.977371	143.537751	43531.00185	Position MRK 7/03/2019 10:32:39 AM	520
48	37.983896	143.511985	570.499	MKR49	37.981104	143.501109	43531.00598	Position MRK 7/03/2019 10:38:36 AM	579
49	37.997548	143.52208	543.784	MKR50	37.982287	143.505024	43531.01156	Position MRK 7/03/2019 10:46:38 AM	585
				MKR51	-37.9839	143.511993	43531.01781	Position MRK 7/03/2019 10:55:38 AM	566
				MKR52	37.997547	143.522068	43531.03181	Position MRK 7/03/2019 11:15:48 AM	543
50	37.990137	143.535526	540.511	MKR53	37.990126	143.535547	43531.04169	Position MRK 7/03/2019 11:30:01 AM	542
51	38.001706	143.549757	484.851	MKR54	38.001706	143.549761	43531.045	Position MRK 7/03/2019 11:34:48 AM	486
52	38.012272	143.564487	463.46	MKR55	38.012274	143.564489	43531.05174	Position MRK 7/03/2019 11:44:30 AM	466
53	38.006508	143.572183	484.546	MKR56	38.006512	143.572178	43531.06167	Position MRK 7/03/2019 11:58:48 AM	486
54	37.989424	143.575291	513.138	MKR57	37.989421	143.575292	43531.06876	Position MRK 7/03/2019 12:09:00 PM	512
55	37.964606	143.580127	502.879	MKR58	37.964606	143.580125	43531.07634	Position MRK 7/03/2019 12:19:55 PM	505
56	-37.95312	143.579648	531.825	MKR59	37.953112	143.579648	43531.08363	Position MRK 7/03/2019 12:30:25 PM	521
57	37.963202	143.594271	512.924	MKR60	37.963244	143.594204	43531.10277	Position MRK 7/03/2019 12:57:58 PM	519
58	38.018745	143.587051	453.181	MKR61	38.018749	143.587053	43531.11721	Position MRK 7/03/2019 1:18:46 PM	455

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GARMIN LOG				MOVING MAP LOG					
59	38.026109	143.560388	456.308	MKR62	38.026103	143.560392	43531.12588	Position MRK 7/03/2019 1:31:15 PM	454
60	38.035377	143.484897	453.843	MKR63	38.035381	143.484893	43531.13539	Position MRK 7/03/2019 1:44:57 PM	457
61	38.042663	143.489028	439.29	MKR64	38.042663	143.489023	43531.1418	Position MRK 7/03/2019 1:54:11 PM	440
62	38.043092	143.480873	464.948	MKR65	38.043094	143.480864	43531.14776	Position MRK 7/03/2019 2:02:46 PM	465
63	38.041321	143.520109	487.967	MKR66	38.041312	143.520173	43531.15856	Position MRK 7/03/2019 2:18:19 PM	492

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Figure - Observed Areas showing GPS recorded driven route as blue lines, wind turbine access as red lines.

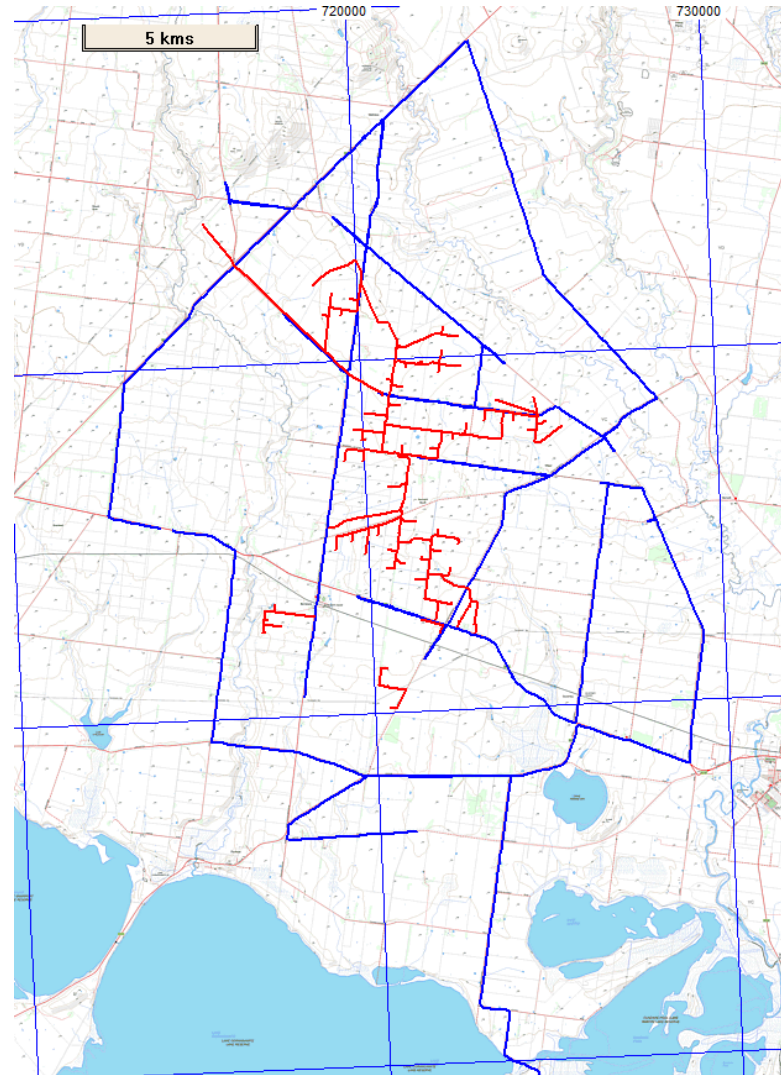
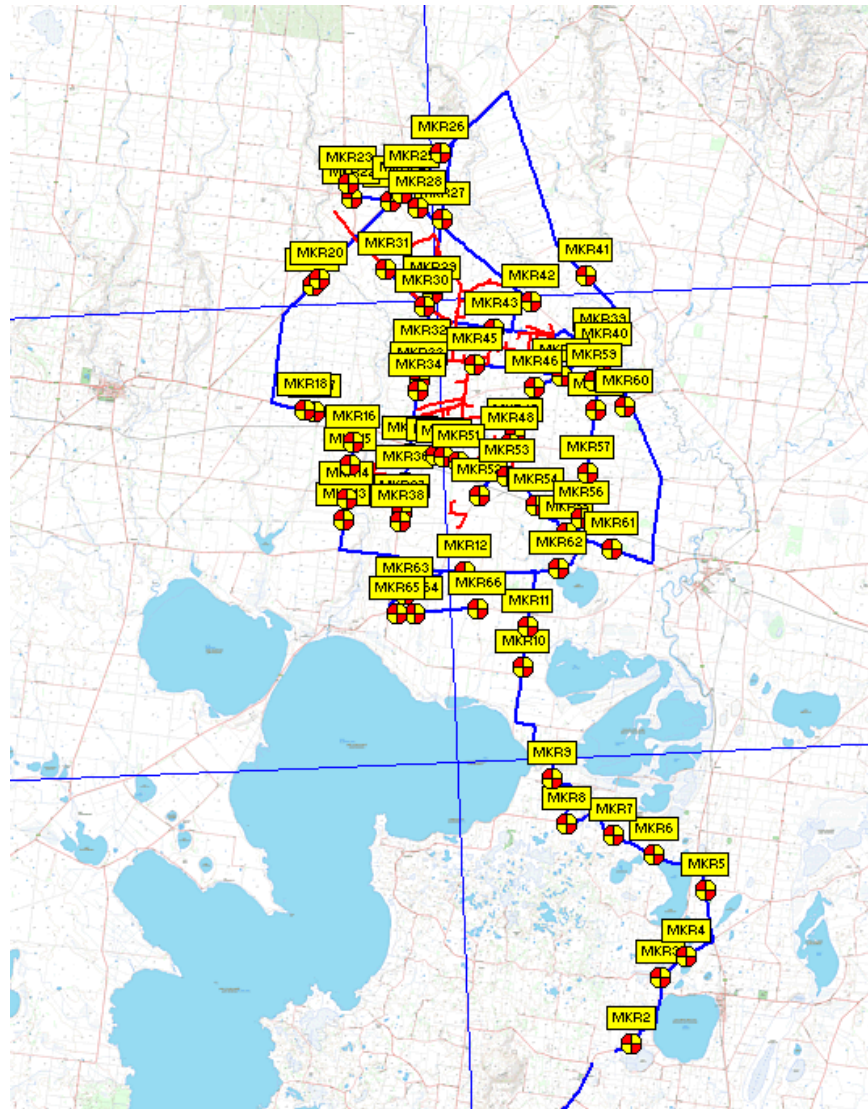


Figure - Observation Sites



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Figure - Regional Coverage, ABC TV Prediction

- Green: Urban coverage, no problems expected
- Brown: Regional coverage, augmented installation may be required
- Dark Brown: Marginal Coverage, Reception not guaranteed

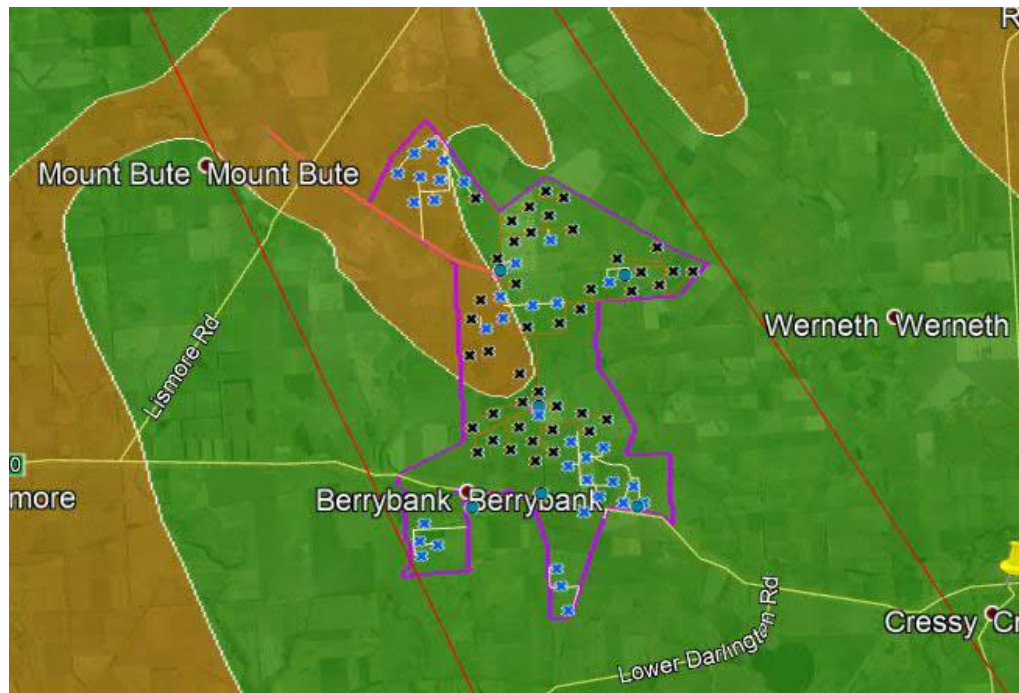
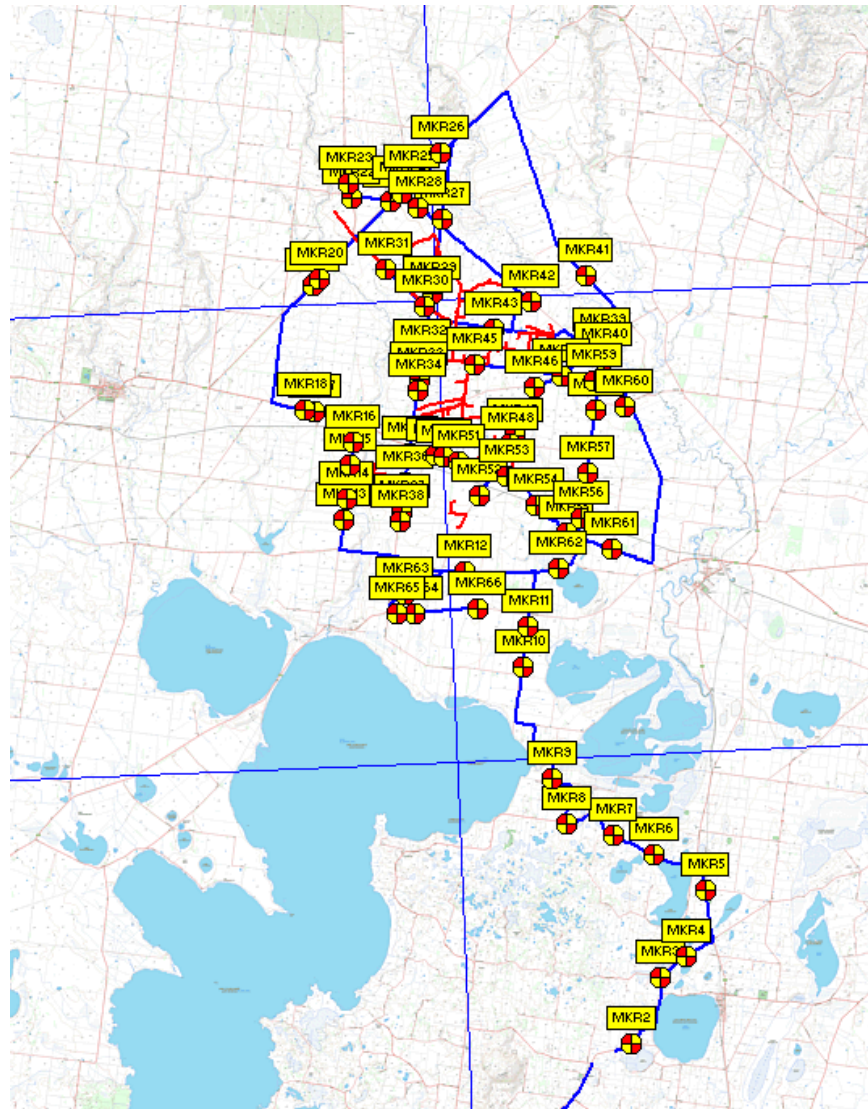


Figure - Observation Sites showing moving map MRK labels



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Extract of Results Spreadsheet

Highlighted Yellow or RED text comments should be noted.

CHANNEL	Power [dBuV]	MER [dB] /FS dBuV/M (FM Radio)	bBER	aBER	Noise Margin [dB]	Quality	Comment
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Void, No Log 1 taken

							Note. WAYpoints are recorded in Both native Garmin and on Moving Map with Ozi Explorer application. WAY refers to Garmin, MRK refers to Electronic Map. Map times are recorded ACDT. GPS is Garmin Trex 10 and linked to moving map by serial link.

Fiddlers Green Warrion		8:21:00 AM	Day 1 Log 2	WAYpoint 2			
34	50.9	30.6	1x10-4	<10-8	10	PASS	Setup, Reference site. First location past Warrion Hill TX. Acceptable MER and Radio would expect no problems with a proper installation Pic taken
35	49.5	30.2	1x10-4	<10-8	10	PASS	
36	49.5	30.9	1x10-4	3x10-5	11	PASS	
37	47.9	28.6	2x10-4	2x10-5	8	PASS	
38	47.9	28.0	8x10-5	7x10-5	8	PASS	
S2	37.8						

8569 Beeac Dretie Rd and Vale Rd		9:10:00 AM	Day 1 Log 3	WAY 3 Map MRK 3			
34	63.1	32.1	<10-6	<10-8	12	PASS	Better than Adequate Signal Levels Excellent MER No possibility of interference House obscured, 3 Pics
35	61.2	32.1	5x10-5	<10-8	12	PASS	
36	60.3	34.1	1x10-4	<10-8	14	PASS	
37	58.7	29.7	1x10-4	<10-8	10	PASS	
38	60.4	30.7	1x10-4	<10-8	11	PASS	
S2	50.1						

House 140Vale Rd Side of rd		9:13:00 AM	Day 1 Log 4	Map MRK 4			
34	60.4	32.1	2x10-5	<10-8	12	PASS	High Signal Levels Excellent MER No possibility of interference
35	61.1	32.1	8x10-5	<10-8	12	PASS	
36	59.8	34.1	8x10-5	<10-8	14	PASS	
37	58.2	29.5	8x10-5	<10-8	9	PASS	
38	59.3	30.7	5x10-5	<10-8	11	PASS	
S2	49.2						

Hartneys Rd and Vale Rd		9:29:00 AM	Day 1 Log 5	Map MRK 5			
34	66.0	31.0	1x10-4	<10-8	11	PASS	Above Adequate Signal Levels Excellent MER No possibility of interference
35	66.0	30.3	1x10-4	<10-8	10	PASS	
36	63.6	32.4	8x10-5	<10-8	12	PASS	
37	62.8	29.5	5x10-5	<10-8	9	PASS	
38	63.6	30.3	1x10-4	<10-8	10	PASS	
S2	51.3						

CHANNEL	Power [dBuV]	MER [dB] /FS dBuV/M (FM Radio)	bBER	aBER	Noise Margin [dB]	Quality	Comment
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House 3840 Lake Cundare Rd 9:42:00 AM Day 1 Log 6

MRK 6 WAY 5

34	60.2	32.1	8x10-5	<10-8	12	PASS	Above Adequate Signal Levels Excellent MER No possibility of interference Antenna seen as Log Periodic low to house
35	60.2	32.0	5x10-5	<10-8	12	PASS	
36	60.2	34.1	1x10-4	<10-8	14	PASS	
37	59.3	30.1	1x10-4	<10-8	10	PASS	
38	60.9	30.5	1x10-4	<10-8	10	PASS	
S2	49.1						

Red Bank Farm at "Y" Junction 9:55:00 AM Day 1 Log 7

MRK 7 WAY 6

34	61.8	32.1	<10-6	<10-8	12	PASS	High Signal Levels Excellent MER No possibility of interference
35	61.8	32.1	5x10-5	<10-8	12	PASS	
36	60.6	34.2	5x10-5	<10-8	14	PASS	
37	61.5	29.8	<10-6	<10-8	10	PASS	
38	61.5	30.8	2x10-5	<10-8	11	PASS	
S2	48.8						

Cnr CundarieDuverny rd and Lake Rd 10:03:00 AM Day 1 Log 8

MRK 8 WAY 7

34	61.5	32.1	2x10-5	<10-8	12	PASS	Above Adequate Signal Levels Excellent MER No possibility of interference SBS Video
35	61.5	32.0	8x10-5	<10-8	12	PASS	
36	61.5	34.2	8x10-5	<10-8	14	PASS	
37	61.5	29.9	1x10-4	<10-8	10	PASS	
38	61.5	30.7	8x10-5	<10-8	11	PASS	
S2	48.9						

Cundarie Duverny Rd 10:33:00 AM Day 1 Log 9

MRK 9 WAY 8

34	62.5	32.3	1x10-4	<10-8	12	PASS	Above Adequate Signal Levels Excellent MER No possibility of interference
35	61.7	32.0	8x10-5	<10-8	12	PASS	
36	61.7	34.2	8x10-5	<10-8	14	PASS	
37	58.9	30.1	5x10-5	<10-8	10	PASS	
38	60.0	30.6	8x10-5	<10-8	10	PASS	
S2	49.1						

Cundarie Duverny Rd 10:33:00 AM Day 1 Log 10

34	62.3	32.1	8x10-5	<10-8	12	PASS	Above Adequate Signal Levels Excellent MER No possibility of interference
35	61.2	31.8	<10-6	<10-8	12	PASS	
36	61.2	34.1	8x10-5	<10-8	14	PASS	
37	61.2	29.6	1x10-4	<10-8	9	PASS	
38	61.2	30.6	5x10-5	<10-8	10	PASS	
S2	49.1						

Log 11 VOID, Not recorded

Day 1 Log 11

CHANNEL	Power [dBuV]	MER [dB] /FS dBuV/M (FM Radio)	bBER	aBER	Noise Margin [dB]	Quality	Comment	
Cundarie Duverny Rd 5K Southern Limit		11:01:00 AM	Day 1 Log 12			MRK 10 WAY 9		
34	60.5	32.4	5x10-5	<10-8	12	PASS	Above Adequate Signal Levels Excellent MER No possibility of interference ABC Video Recorded	
35	61.2	32.1	8x10-5	<10-8	12	PASS		
36	61.2	33.9	8x10-5	<10-8	14	PASS		
37	61.2	30.1	8x10-5	<10-8	10	PASS		
38	63.0	30.7	5x10-5	<10-8	11	PASS		
S2	50.7							
270 Past House		11:16:00 AM	Day 1 Log 13			MRK 11 WAY 10		
34	58.0	32.7	5x10-5	<10-8	13	PASS	> Adequate Signal Levels Excellent MER No possibility of interference	
35	56.8	32.4	8x10-5	<10-8	12	PASS		
36	55.1	33.5	1x10-4	<10-8	13	PASS		
37	53.7	29.4	1x10-4	<10-8	9	PASS		
38	56.1	30.6	1x10-4	<10-8	10	PASS		
S2	46.7							
House no Number Foxhow Rd		11:32:00 AM	Day 1 Log 14			MRK 12 WAY 11		
34	57.3	32.0	1x10-4	<10-8	12	PASS	> Adequate Signal Levels Excellent MER No possibility of interference Pic house w garden	
35	56.5	32.1	1x10-4	<10-8	12	PASS		
36	54.4	33.3	1x10-4	<10-8	13	PASS		
37	51.7	29.1	1x10-4	<10-8	9	PASS		
38	53.6	29.8	1x10-4	<10-8	10	PASS		
S2	46.8							
565 Collins Lane		11:52:00 AM	Day 1 Log 15			MRK 13 WAY 12 SBS VIDEO		
34	64.3	32.1	8x10-5	<10-8	12	PASS	Above Adequate Signal Levels Excellent MER No possibility of interference	
35	61.0	32.0	5x10-5	<10-8	12	PASS		
36	61.0	34.2	2x10-5	<10-8	14	PASS		
37	61.0	29.9	8x10-5	<10-8	10	PASS		
38	59.8	30.6	5x10-5	<10-8	10	PASS		
S2	53.6							
6? Collins Lane		12:05:00 PM	Day 1 Log 16			MRK 14 WAY 13		
34	53.9	31.8	8x10-5	<10-8	12	PASS	Adequate Signal Levels Excellent MER No possibility of interference	
35	53.2	31.6	1x10-4	<10-8	11	PASS		
36	52.4	32.7	1x10-4	<10-8	13	PASS		
37	52.4	29.3	1x10-4	<10-8	9	PASS		
38	52.4	29.8	1x10-4	<10-8	10	PASS		
S2	53.0							

CHANNEL	Power [dBuV]	MER [dB] /FS dBuV/M (FM Radio)	bBER	aBER	Noise Margin [dB]	Quality	Comment
12:37:00 PM		Day 1 Log 17		MRK 15 WAY 14			
34	49.5	29.2	2x10-4	<10-8	9	PASS	Adequate Signal Levels Acceptable MER No possibility of interference No PIC
35	49.5	29.1	2x10-4	<10-8	9	PASS	
36	48.6	29.1	2x10-4	<10-8	9	PASS	
37	48.6	27.8	2x10-4	1x10-5	8	PASS	
38	49.7	26.2	2x10-4	1x10-5	6	PASS	
S2	50.8						
12:44:00 PM		Day 1 Log 18		MRK 16 WAY 15			
900 Collins Lane							
34	53.7	31.6	8x10-5	<10-8	11	PASS	Adequate Signal Levels Excellent MER No possibility of interference
35	53.0	31.4	1x10-4	<10-8	11	PASS	
36	53.0	32.9	5x10-5	<10-8	13	PASS	
37	52.3	29.6	8x10-5	<10-8	9	PASS	
38	51.0	29.4	8x10-5	3x10-6	9	PASS	
S2	56.4						
1:11:00 PM		Day 1 Log 19		MRK 17WAY 16			
HWY B140							
1:11:00 PM		Day 1 Log 19		MRK 18 WAY 17			
HWY B140				NOT SAFE TO SETUP			
				Use Log 19			
34	54.0	26.7	5x10-5	<10-8	7	PASS	Reading with +20dB Amplifier Sample through Dense trees Marginal Signal Levels Poor MER, Fail on 2 Channels Possibility of interference
35	55.1	25.7	1x10-3	8x10-6	6	PASS	
36	49.5	24.2	4x10-3	3x10-5	4	MARG	
37	42.9	----	----	----	----	----	
38	46.2	----	----	----	----	----	
S2	38.4						
1:40:00 PM		Day 1 Log 20		MRK 19 WAY 18			
Lismore Scarsdale RD #645							
34	45.9	27.9	1x10-4	6x10-6	8	PASS	Just acceptable Signal Levels Adequate MER No substantial possibility of interference SBS Video Western Perimeter
35	45.9	27.8	3x10-4	1x10-5	8	PASS	
36	43.3	27.1	3x10-4	3x10-5	7	PASS	
37	43.3	25.3	3x10-4	1x10-4	5	MARG	
38	48.5	27.0	2x10-4	1x10-5	7	PASS	
S2	55.5						
1:47:00 PM		Day 1 Log 21		MRK 20 WAY 19			
Rosecroft Cnr Lismore and Urches Rd							
34	49.8	30.5	1x10-4	1x10-6	10	PASS	Include +25dB amplifier in Hill Shadow Adequate Signal Levels with amplifier Excellent MER however one channel showing degradation No substantial potential of interference
35	49.8	30.2	1x10-4	2x10-5	10	PASS	
36	48.3	30.6	2x10-4	1x10-5	10	PASS	
37	47.3	23.9	1x10-3	1x10-4	4	PASS	
38	38.1	23.8	1x10-3	1x10-4	4	MARG	
S2	37.2						

CHANNEL	Power [dBuV]	MER [dB] /FS dBuV/M (FM Radio)	bBER	aBER	Noise Margin [dB]	Quality	Comment
Abandoned Cnr Lismore and Urches Rd		2:05:00 PM	Day 1 Log 22		MRK 21 WAY 20 Abandoned		
34	45.8	20.2	1x10-2	2x10-4	0	FAIL	Just Adequate Signal Levels Marginal MER No possibility of interference
35	48.2	22.1	5x10-3	8x10-6	2	MARG	
36	49.0	23.9	4x10-3	7x10-5	4	MARG	
37	49.9	23.1	2x10-3	4x10-5	3	MARG	
38	51.8	23.5	3x10-3	<10-8	3	MARG	
S2	41.3						
Hollowvale Rd		2:31:00 PM	Day 1 Log 23		MRK 23 WAY 21		
34	46.8	21.4	7x10-3	2x10-4	1	MARG	Plus 25dB Amplifier Very good TV Install, Be Adequate Signal Levels Acceptable MER Low probability of interference with good Antenna
35	50.0	23.8	5x10-3	1x10-4	4	MARG	
36	52.9	27.4	6x10-4	8x10-6	7	PASS	
37	57.8	27.8	2x10-4	<10-8	8	PASS	
38	61.3	29.3	5x10-5	<10-8	9	PASS	
S2	34.9						
Lismore Rd "Rothstate" 1182		2:42:00 PM	Day 1 Log 24		MRK 24 WAY 22		
34	53.6	23.6	1x10-2	2x10-5	3	MARG	Adequate Signal Levels Acceptable MER Low probability of interference No Pic
35	58.0	28.0	8x10-4	<10-8	8	PASS	
36	60.5	29.5	8x10-5	<10-8	9	PASS	
37	63.9	29.3	1x10-4	<10-8	9	PASS	
38	68.4	29.4	1x10-4	<10-8	9	PASS	
S2	39.4						
1288 Lismore Rd		3:06:00 PM	Day 1 Log 25		MRK 25 WAY 23		
34	56.8	31.8	1x10-4	<10-8	12	PASS	Above Adequate Signal Levels Excellent MER No possibility of interference
35	58.0	32.0	5x10-5	<10-8	12	PASS	
36	59.0	33.9	1x10-4	<10-8	14	PASS	
37	59.0	29.7	8x10-5	<10-8	10	PASS	
38	59.0	31.4	1x10-4	<10-8	11	PASS	
S2	50.0						
1435 and 1406 Lismore Rd		3:27:00 PM	Day 1 Log 26		MRK 26 WAY 24		
34	49.1	28.8	1x10-4	2x10-5	9	PASS	Adequate Signal Levels Excellent MER No possibility of interference No Pic taken House Hidden. 2 Houses at Sample, 1406 with EE06 Pic taken
35	52.2	31.2	1x10-4	<10-8	11	PASS	
36	53.4	32.6	1x10-4	6x10-6	12	PASS	
37	50.8	28.9	1x10-4	8x10-6	9	PASS	
38	50.8	29.9	1x10-4	2x10-6	10	PASS	
S2	49.5						

CHANNEL	Power [dBuV]	MER [dB] /FS dBuV/M (FM Radio)	bBER	aBER	Noise Margin [dB]	Quality	Comment
Glenfine 421 Linduc Rd		3:41:00 PM	Day 1 Log 27		MRK 27 WAY 25		
34	68.6	32.2	5x10-5	<10-8	12	PASS	Above Adequate Signal Levels Excellent MER No possibility of interference
35	68.6	32.0	5x10-5	<10-8	12	PASS	
36	68.6	33.8	5x10-5	<10-8	14	PASS	
37	69.4	29.7	5x10-5	<10-8	10	PASS	
38	70.3	31.7	8x10-5	<10-8	12	PASS	
S2	55.7						
Kimberley 1959 Urches Rd		3:48:00 PM	Day 1 Log 28		MRK 28 WAY 26		
34	55.6	31.8	8x10-5	<10-8	12	PASS	Adequate Signal Levels Excellent MER No possibility of interference
35	55.6	31.8	8x10-5	<10-8	12	PASS	
36	55.6	33.2	1x10-4	<10-8	13	PASS	
37	44.5	25.9	8x10-4	1x10-4	6	PASS	
38	44.5	18.2	5x10-2	9x10-3	-1	FAIL	
S2	42.5						
BerryBank Wallunduc Rd 2 House Sample		4:02:00 PM	Day 1 Log 29		MRK 29 WAY 27		
34	67.0	30.7	1x10-4	<10-8	11	PASS	Two Houses in distance Sample represents both. # 690 & 636 Above Adequate Signal Levels Excellent MER No possibility of interference
35	68.3	32.1	1x10-4	<10-8	12	PASS	
36	60.5	33.9	1x10-4	<10-8	14	PASS	
37	60.5	29.7	1x10-4	<10-8	10	PASS	
38	61.4	31.7	2x10-5	<10-8	12	PASS	
S2	36.6						
Pagetts Lane 2 Houses 690 and 636		4:22:00 PM	Day 1 Log 30		MRK 30 WAY 28		
34	50.5	31.2	1x10-4	<10-8	11	PASS	Above Adequate Signal Levels Excellent MER No possibility of interference
35	51.5	30.5	1x10-4	<10-8	10	PASS	
36	47.5	27.5	1x10-2	2x10-4	7	PASS	
37	43.0	27.7	3x10-4	1x10-4	8	PASS	
38	46.7	29.1	5x10-5	3x10-5	9	PASS	
S2	53.9						
House Pagetts Alne		4:28:00 PM	Day 1 Log 31		MRK 31 WAY 29		
34	47.1	29.4	2x10-4	1x10-5	9	PASS	Adequate Signal Levels Excellent MER No possibility of interference
35	49.6	29.8	8x10-5	1x10-5	10	PASS	
36	46.9	30.7	8x10-5	<10-8	11	PASS	
37	46.9	28.8	8x10-5	3x10-5	9	PASS	
38	51.2	30.0	5x10-5	1x10-5	10	PASS	
S2	52.1						
Cnr Boundary and Wallenduc Rds		4:45:00 PM	No Log Abandoned House				MRK 32
No 305 Wallenduc Rd		4:50:00 PM	No Log Long Drive NO Access				MRK 33

CHANNEL	Power [dBuV]	MER [dB] /FS dBuV/M (FM Radio)	bBER	aBER	Noise Margin [dB]	Quality	Comment	
Binga House obscured		4:51:00 PM	Day 1 Log 32		MRK 34 WAY 32			
34	62.2	32.1	1x10-4	<10-8	12	PASS	Above Adequate Signal Levels Excellent MER No possibility of interference	
35	62.9	31.6	8x10-5	<10-8	11	PASS		
36	62.9	32.7	2x10-5	<10-8	13	PASS		
37	63.7	29.5	2x10-5	<10-8	9	PASS		
38	64.7	31.4	8x10-5	<10-8	11	PASS		
S2	56.4							
Foxhow berrybank Rd, (Village)		5:07:00 PM	Day 1 Log 33		MRK 35 WAY 33			
34	64.7	31.1	<10-6	<10-8	11	PASS	Above Adequate Signal Levels Excellent MER No possibility of interference	
35	65.9	30.3	5x10-5	<10-8	10	PASS		
36	67.8	31.2	5x10-5	<10-8	11	PASS		
37	65.9	28.9	5x10-5	<10-8	9	PASS		
38	63.9	30.9	5x10-5	<10-8	11	PASS		
S2	54.7							
Berrybank Rd House to East		5:14:00 PM	Day 1 Log 34		MRK 36 WAY 35			
34	66.7	32.1	8x10-5	<10-8	12	PASS	Above Adequate Signal Levels Excellent MER No possibility of interference	
35	61.6	32.1	<10-6	<10-8	12	PASS		
36	61.6	33.6	8x10-5	<10-8	13	PASS		
37	61.6	29.4	1x10-4	<10-8	9	PASS		
38	61.6	31.8	8x10-5	<10-8	12	PASS		
S2	34.1							
Berry Bank Rd 2 Houses 1 Sample		5:30:00 PM	Day 1 Log 35		MRK 37, 38 3 Houses 1 Sample			
34	55.9	31.8	8x10-5	<10-8	12	PASS	Above Adequate Signal Levels Excellent MER No possibility of interference END OF DAY	
35	59.0	31.6	8x10-5	<10-8	11	PASS		
36	52.6	32.9	2x10-5	<10-8	13	PASS		
37	52.6	29.6	1x10-4	<10-8	9	PASS		
38	52.6	30.7	8x10-5	<10-8	11	PASS		
S2	49.5							
DAY 2								
Day 2 Log 36		225 Wilgul Werneth Rd				8:24:00 AM	MRK 39 WAY 37	
34	62.4	31.8	1x10-4	<10-8	12	PASS	Above Adequate Signal Levels Excellent MER No possibility of interference Also references two houses in paddock to south	
35	63.8	30.3	5x10-5	<10-8	10	PASS		
36	63.8	31.4	1x10-4	<10-8	11	PASS		
37	63.8	29.1	5x10-5	<10-8	9	PASS		
38	65.4	30.7	8x10-5	<10-8	11	PASS		
S2	53.7							

CHANNEL	Power [dBuV]	MER [dB] /FS dBuV/M (FM Radio)	bBER	aBER	Noise Margin [dB]	Quality	Comment	
Day 2 Log 39	949 Urches Rd						8:52:00 AM	MRK 40 WAY 38
34	67.9	32.4	5x10-5	<10-8	12	PASS	Above Adequate Signal Levels Excellent MER No possibility of interference	
35	67.9	32.4	5x10-5	<10-8	12	PASS		
36	67.9	31.5	5x10-5	<10-8	11	PASS		
37	69.2	29.7	1x10-4	<10-8	10	PASS		
38	70.6	31.8	8x10-5	<10-8	12	PASS		
S2	53.7							
Day 2 Log 40	Log 38 VOID, Not recorded						9:07:00 AM	MRK 41 No WAY
Day 2 Log 41	Burgers and Quarrels Rd						9:07:00 AM	MRK 41 No WAY
34	66.5	31.1	2x10-5	<10-8	11	PASS	Above Adequate Signal Levels Excellent MER No possibility of interference Representative of property between Urches Rd and Burgers Rd. Sample at Gate No Pic	
35	66.5	30.3	8x10-5	<10-8	10	PASS		
36	66.5	31.2	5x10-5	<10-8	11	PASS		
37	67.8	28.9	<10-6	<10-8	9	PASS		
38	67.8	30.5	2x10-5	<10-8	10	PASS		
S2	53.8							
Day 2 Log 40	Urches Rd, D&P Kerr						9:35:00 AM	MRK 42 WAY 39
34	62.3	32.0	2x10-5	<10-8	12	PASS	Above Adequate Signal Levels Excellent MER No possibility of interference	
35	62.3	31.6	5x10-5	<10-8	11	PASS		
36	63.6	33.1	5x10-5	<10-8	13	PASS		
37	63.6	29.8	2x10-5	<10-8	10	PASS		
38	63.6	31.4	2x10-5	<10-8	11	PASS		
S2	53.0							
Day 2 Log 41	739 Padgetts Lane						9:50:00 AM	MRK 43 WAY 40
34	60.2	32.1	8x10-5	<10-8	12	PASS	Above Adequate Signal Levels Excellent MER No possibility of interference Video Recorded	
35	60.2	32.3	2x10-5	<10-8	12	PASS		
36	61.3	33.9	1x10-4	<10-8	14	PASS		
37	62.0	29.7	<10-6	<10-8	10	PASS		
38	63.7	31.4	1x10-4	<10-8	11	PASS		
S2	53.6							
Day 2 Log 42	Cnr Boundary Rd, Werneth Rd						10:13:00 AM	MRK 44 WAY 41,42
34	44.8	26.9	2x10-4	2x10-5	7	PASS	Adequate Signal Levels Acceptable MER No potential of interference Although nearly MARGINAL could be recovered with amplifier. Sample through Trees	
35	47.3	28.2	1x10-4	1x10-5	8	PASS		
36	45.9	27.3	2x10-4	8x10-5	7	PASS		
37	45.9	26.6	2x10-4	2x10-5	6	MARG		
38	47.3	26.9	1x10-4	1x10-5	7	PASS		
S2	51.2							

CHANNEL	Power [dBuV]	MER [dB] /FS dBuV/M (FM Radio)	bBER	aBER	Noise Margin [dB]	Quality	Comment	
Day 2 Log 43	Back of Nargill Sth						10:32:00 AM	MRK 45 WAY 43
S2	59.5						Well Above Adequate Signal Levels Excellent MER No possibility of interference Top of Hill	
34	69.0	32.7	1x10-4	<10-8	13	PASS		
35	69.0	32.0	2x10-5	<10-8	12	PASS		
36	69.0	33.7	8x10-5	<10-8	14	PASS		
37	69.0	29.6	8x10-5	<10-8	9	PASS		
38	69.0	30.5	8x10-5	<10-8	10	PASS		
Day 2 Log 44	545 B'Bank Werneth						10:49:00 AM	MRK 46 WAY 434
34	60.7	32.1	2x10-5	<10-8	12	PASS	Above Adequate Signal Levels Excellent MER No possibility of interference Cnr Foxhow and Bbank Werneth	
35	60.7	32.2	8x10-5	<10-8	12	PASS		
36	61.7	34.1	5x10-5	<10-8	14	PASS		
37	61.7	29.6	1x10-4	<10-8	9	PASS		
38	63.1	31.8	8x10-5	<10-8	12	PASS		
S2	50.6							
Day 2 Log 45	190 Foxhow Rokenwood Rd						10:55:00 AM	MRK 47,48 WAY 44,45
						PASS	Log file Corrupted, No recorded result Locked Gates House to East and West Represents two Houses Field Notes indicate High Signal Level and Excellent MER	
						PASS		
						PASS		
						PASS		
						PASS		
						PASS		
Day 2 Log 46	7622 B140						11:10:00 AM	MRK 49 WAY 46
34	64.9	30.9	1x10-4	<10-8	11	PASS	Above Adequate Signal Levels Acceptable MER No possibility of interference	
35	64.9	29.6	5x10-5	<10-8	9	PASS		
36	64.2	30.7	2x10-5	<10-8	11	PASS		
37	62.5	29.9	8x10-5	<10-8	10	PASS		
38	63.6	29.3	1x10-4	<10-8	9	PASS		
S2	51.5							
Day 2 Log 47	Old House B140 Hamilton Hwy						11:16:00 AM	MRK 50 WAY 47
Day 2 Log 47	Bondilla B140 Hamilton Hwy						11:30:00 AM	MRK 51 WAY 47
34	60.2	32.1	8x10-5	<10-8	12	PASS	Above Adequate Signal Levels Excellent MER No possibility of interference	
35	60.2	32.3	2x10-5	<10-8	12	PASS		
36	61.3	33.9	1x10-4	<10-8	14	PASS		
37	62.0	29.7	<10-6	<10-8	10	PASS		
38	63.7	31.4	1x10-4	<10-8	11	PASS		
S2	53.6							

CHANNEL	Power [dBuV]	MER [dB] /FS dBuV/M (FM Radio)	bBER	aBER	Noise Margin [dB]	Quality	Comment	
Day 2 Log 48		Doyles Rd					11:47:00 AM	MRK 52 WAY 49
34	61.5	32.1	8x10-5	<10-8	12	PASS	Above Adequate Signal Levels Excellent MER No possibility of interference EE06 Antenna good installation	
35	62.3	31.8	8x10-5	<10-8	12	PASS		
36	62.4	33.3	8x10-5	<10-8	13	PASS		
37	63.8	29.3	8x10-5	<10-8	9	PASS		
38	65.1	31.4	8x10-5	<10-8	11	PASS		
S2	55.6							
		7300 Hamilton Hwy Deserted House					11:55:00 AM	MRK 53 WAY 50
Day 2 Log 49		7130 and Yanga @ Rail Xing					12:05:00 PM	MRK 54 WAY 51
34	63.7	31.4	2x10-5	<10-8	11	PASS	Above Adequate Signal Levels Adequate MER No possibility of interference Middle of two properties	
35	63.7	30.3	1x10-4	<10-8	10	PASS		
36	65.4	30.9	2x10-5	<10-8	11	PASS		
37	65.4	29.1	8x10-5	<10-8	9	PASS		
38	66.5	30.2	1x10-4	<10-8	10	PASS		
S2	54.3							
Day 2 Log 50		6932 Hamilton Hwy					12:14:00 PM	MRK 55 WAY 52
34	61.6	32.1	8x10-5	<10-8	12	PASS	Above Adequate Signal Levels Excellent MER No possibility of interference	
35	62.4	31.8	8x10-5	<10-8	12	PASS		
36	62.4	33.3	8x10-5	<10-8	13	PASS		
37	63.9	29.3	8x10-5	<10-8	9	PASS		
38	65.1	31.4	8x10-5	<10-8	11	PASS		
S2	55.6							
Day 2 Log 51		VOID Not Recorded						
Day 2 Log 52		VOID Not Recorded						
Day 2 Log 53		82 Duverny Rd New House					12:30:00 PM	MRK 56
34	47.0	27.4	2x10-4	1x10-5	7	PASS	Marginal Signal strength, Recorded without amplifier. Expectation with amplifier installed would be acceptable result Do not expect problem with adequate installation Excellent MER No possibility of interference	
35	44.7	24.9	1x10-3	1x10-4	5	MARG		
36	38.7	22.9	1x10-2	5x10-4	3	MARG		
37	38.7	21.9	2x10-2	8x10-4	2	FAIL		
38	41.5	23.2	1x10-2	1x10-4	3	MARG		
S2	36.8							
Day 2 Log 54		245 Duverny Rd 1KM to East					12:45:00 PM	MRK 57 WAY 55
34	55.4	31.7	8x10-5	<10-8	12	PASS	Above Adequate Signal Levels Excellent MER No possibility of interference	
35	55.4	31.7	8x10-5	<10-8	12	PASS		
36	55.4	33.3	1x10-4	<10-8	13	PASS		
37	57.5	29.6	8x10-5	<10-8	9	PASS		
38	58.8	31.4	2x10-5	<10-8	11	PASS		
S2	49.6							

CHANNEL	Power [dBuV]	MER [dB] /FS dBuV/M (FM Radio)	bBER	aBER	Noise Margin [dB]	Quality	Comment
Day 2 Log 55	565 Duverny Rd Tralee					12:53:00 PM	MRK 58 WAY 56
34	66.5	30.7	5x10-5	<10-8	11	PASS	Above Adequate Signal Levels Excellent MER No possibility of interference
35	68.3	30.3	8x10-5	<10-8	10	PASS	
36	68.3	31.2	2x10-5	<10-8	11	PASS	
37	68.3	29.3	<10-6	<10-8	9	PASS	
38	69.0	31.6	2x10-5	<10-8	11	PASS	
S2	51.2						
Day 2 Log 56	101 Boundary Rd					1:03:00 PM	MRK 59 WAY 57
34	63.9	31.6	8x10-5	<10-8	11	PASS	Above Adequate Signal Levels Excellent MER No possibility of interference
35	65.3	30.7	8x10-5	<10-8	11	PASS	
36	65.3	31.6	5x10-5	<10-8	11	PASS	
37	65.3	29.0	<10-6	<10-8	9	PASS	
38	66.5	30.9	5x10-5	<10-8	11	PASS	
S2	53.7						
Day 2 Log 57	120 Carlisle Rd					1:34:00 PM	MRK 60 WAY 58
34	68.6	30.8	1x10-4	<10-8	11	PASS	Above Adequate Signal Levels Excellent MER No possibility of interference
35	68.6	32.1	1x10-4	<10-8	12	PASS	
36	68.6	34.2	8x10-5	<10-8	14	PASS	
37	68.6	29.4	2x10-5	<10-8	9	PASS	
38	69.7	31.7	2x10-5	<10-8	12	PASS	
S2	53.9						
Day 2 Log 58	House @ CFA 6870 Hamilton Hwy					1:50:00 PM	MRK 61 WAY 59
34	62.9	31.6	5x10-5	<10-8	11	PASS	Above Adequate Signal Levels Excellent MER No possibility of interference
35	64.2	31.4	8x10-5	<10-8	11	PASS	
36	64.2	33.2	2x10-5	<10-8	13	PASS	
37	62.1	29.5	5x10-5	<10-8	9	PASS	
38	63.1	31.6	<10-6	<10-8	11	PASS	
S2	51.1						
Day 2 Log 59	Foxhow Rd Two Houses 175 and Strathdeen					#REF!	MRK 62 WAY 60
34	60.5	31.7	8x10-5	<10-8	12	PASS	Above Adequate Signal Levels Excellent MER No possibility of interference
35	58.8	32.0	2x10-5	<10-8	12	PASS	
36	57.7	33.5	8x10-5	<10-8	13	PASS	
37	57.7	29.7	5x10-5	<10-8	10	PASS	
38	60.5	31.6	5x10-5	<10-8	11	PASS	
S2	51.5						

CHANNEL	Power [dBuV]	MER [dB] /FS dBuV/M (FM Radio)	bBER	aBER	Noise Margin [dB]	Quality	Comment	
Day 2 Log 60	House Deserted Foxhow Rd						12:18:00 PM	MRK 63 WAY 61
34	60.5	32.4	<10-6	<10-8	12	PASS	Above Adequate Signal Levels Excellent MER No possibility of interference Hose Deserted, Drive Blocked by Trees	
35	60.5	32.3	8x10-5	<10-8	12	PASS		
36	61.8	33.8	2x10-5	<10-8	14	PASS		
37	61.8	30.0	5x10-5	<10-8	10	PASS		
38	62.8	31.7	5x10-5	<10-8	12	PASS		
S2	52.6							
Day 2 Log 61	Strathallan Hearths Rd						2:25:00 PM	MRK 64 WAY 62
34	66.0	30.7	<10-6	<10-8	11	PASS	Above Adequate Signal Levels Excellent MER No possibility of interference	
35	67.3	30.1	<10-6	<10-8	10	PASS		
36	67.3	31.1	1x10-4	<10-8	11	PASS		
37	67.3	28.9	<10-6	<10-8	9	PASS		
38	67.3	29.9	8x10-5	<10-8	10	PASS		
S2	55.8							
Day 2 Log 62	House 50 Hearths Rd						1:34:00 PM	MRK 65 No Log refer Log 61
Day 2 Log 62	Hearths Rd two houses in distance						2:50:00 PM	MRK 66 WAY 63
34	63.6	31.4	8x10-5	<10-8	11	PASS	Above Adequate Signal Levels Excellent MER No possibility of interference	
35	64.9	30.3	1x10-4	<10-8	10	PASS		
36	65.8	31.1	2x10-5	<10-8	11	PASS		
37	65.8	29.0	1x10-4	<10-8	9	PASS		
38	65.8	30.5	2x10-5	<10-8	10	PASS		
S2	52.0						End of Survey, Represents two houses, one to North one to South.	

Survey Findings

FM Radio received signal strength

In all cases the received converted FM field strength for the reference transmitter exceeded the ACMA minimum field strength and was of a value considered to be "Strong"

ACMA Extract

¹ Maximum field strength within the licence area

44. A transmitter shall be sited so that not more than 1 per cent of the total population of the licence area reside in areas with received field strengths greater than 110 dB μ V/m.
45. A transmitter shall not be sited so that a significant part of the population of the licence area resides in areas with received field strengths greater than 120 dB μ V/m (1 V/m). For the purpose of this guideline, 0.1 per cent of the population or 100 persons, whichever is less, constitutes a 'significant part'.
<https://www.legislation.gov.au/Details/F2009C01061>

Conversion of FM signal strength, (power), to Field strength, expressed in dB μ V/M

²When antenna factor is stated in decibels, field strength in decibel-microvolts per meter (dB μ V/m) is calculated by adding the signal level at the antenna terminals in decibel-microvolts (dB μ V) to the antenna factor in decibel/meter (dB/m). <http://www.atdi.com/dbuvm-converter-the-antenna-factor/>

Quoted source antenna (Matchmaster FM3,) gain, 5dBi <https://www.matchmaster.com.au/digital-tv-antennas/03mm-fm3/>

Antenna Factor, AF 4.13

³ Calculator <https://owenduffy.net/calc/GAF.htm>

Calculator

Frequency: (MHz)

Resistance: (Ω)

Complete one field below and hit ENTER

Gain: (dBi)

Antenna Factor: (dB/m)

e.g. For a result of 59.5dB μ V the Field strength is $59.5+4.13= 63.63$ dB μ V/M

Key Findings

The Key findings of the HCS field survey investigation are in line with our measured experience from previous Pre- and Post, Wind Farm installation surveys summarised as;

- HCS have NO documented evidence of interference to reception from reflection of signals back towards the transmitter for any usable signal strength derived from any previous surveys
- HCS have only observed impact to reception at sites located in the down range diffraction zone with respect to the transmitter where the signal strength is marginal to poor, (Modulation Error Ratio <21).

Additionally, we can offer the following conclusion relating to the observed area;

1. There is little or no potential for any negative impact on Television or Radio reception within the identified area.
2. A small area in accordance with the ABC predictions, North East of the proposed wind farm did exhibit a degraded signal however this was well within limits that would allow for stable reception with a correct installation.
3. The observed signal strengths were in accordance with the ABC produced desk top predictions and television reception from a well installed antenna or radio reception for a reasonable quality domestic receiver will not be impacted by the installation of the wind farm
4. There is NO expected interference from diffraction in the down range area towards the Warrion Hill Translator. All areas south of the Warrion Hill Tx site, (Colac and environs), take retransmitted signal from this site and are accordingly not affected by the wind farm installation.

Remediation Actions

Should complaints be received following commencement of the operation of the Berrybank Wind Farm from dwellings, that existed at the date of the Pre-Construction Survey and within 5km of a turbine, a post-construction survey, (at the same sample locations and with the same measurement methods), should be undertaken to establish if any increase in interference to reception is resulting from the establishment of the Berrybank Wind Farm.

If a post-construction survey establishes any increase in interference to reception resulting from the wind energy facility operations, the wind energy facility operator must then undertake measures to mitigate the interference and return the affected reception to pre-construction quality, as quantified by the baseline measurements, at the cost of the wind energy facility operator and to the satisfaction of the Minister for Planning.

If it is determined by a post construction survey that the Wind Farm is the source of problematic degradation several remediation actions could be used to mitigate the interference and return the affected reception to pre-construction quality.

It is our recommendation that the remediation activities, in order, would be:

1. Attempt to obtain usable quality signal from the Prime source, (Ballarat Lookout Hill TX), by remediation of the current installation to "Best Practice".

Typical Cost, \$100 to \$600 per site

2. Installation a Satellite based service utilising the ACMA supplied service on the VAST platform carried by Optus on the D2 Satellite. This service carries state by state-oriented services for primary content, (e.g. ABC SA News, Seven SA News) and all normally obtainable Free to Air services. It does NOT carry local content, i.e. regional news, regional current affairs.

Typical Cost \$800.00 per site

**APPROVED FOR THE
MINISTER FOR PLANNING**

SHEET 28 OF 28