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Moreton Hill Wind Farm

Electromagnetic Interference Assessment

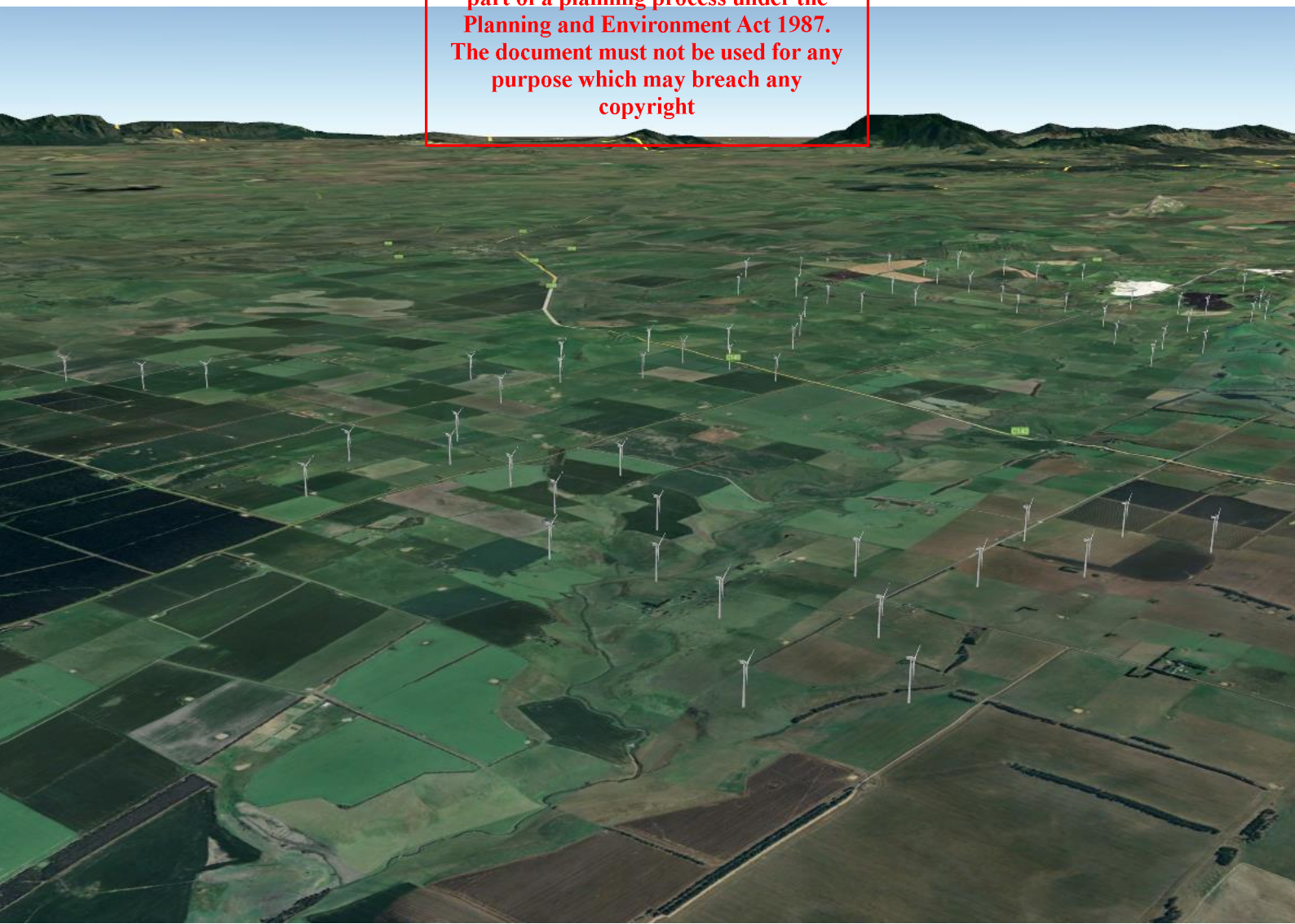
MHWF Nominees Pty Ltd

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02 February 2026

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1. Introduction

1.1 Purpose of this report

The purpose of this report is to assess potential electromagnetic interference and subsequent impacts which may be caused by the development of the Moreton Hill Wind Farm. Any found implications due to development shall be accompanied by recommended mitigations where required.

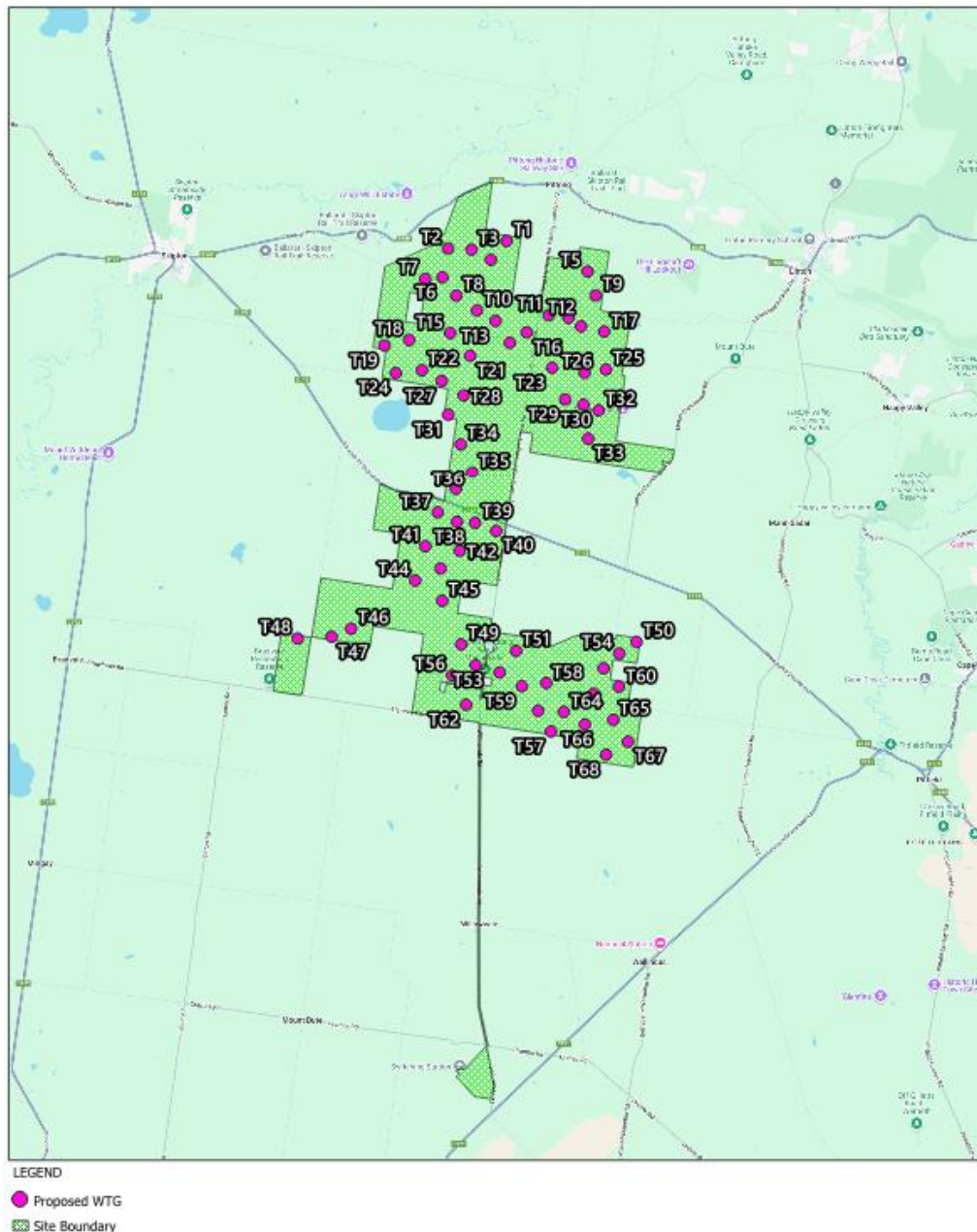


Figure 1 Proposed Moreton Hill Wind Farm

The proposed wind farm development is located near the towns of Linton and Skipton, Victoria and involves the installation of up to 62 wind turbine generators (WTG), of which 68 potential locations are analysed in this assessment.

1.2 Scope and limitations

This report: has been prepared by GHD on behalf of MHWF Nominees Pty Ltd and may only be used and relied on by MHWF Nominees Pty Ltd for the purpose agreed between GHD and MHWF Nominees Pty Ltd as set out in section 1.1 of this report.

GHD otherwise disclaims responsibility to any person other than MHWF Nominees Pty Ltd arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report (refer section(s) 2 of this report). GHD disclaims liability arising from any of the assumptions being incorrect.

Accessibility of documents

If this report is required to be accessible in any other format, this can be provided by GHD upon request and at an additional cost if necessary.

GHD has prepared this report on the basis of information provided by MHWF Nominees Pty Ltd and others who provided information to GHD (including Government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

1.3 Abbreviations

The following abbreviations have been used in this report:

Table 1 Definitions

Abbreviation	Definition
ACMA	Australian Communications and Media Authority
AM	Amplitude Modulation
AMTA	Australian Mobile Telecommunications Association
BoM	Bureau of Meteorology
FM	Frequency Modulation
GHz	Gigahertz (10^9)
GNSS	Global Navigation Satellite System
kHz	Kilohertz (10^3)
LMR	Land Mobile Radio
MHz	Megahertz (10^6)
MW	Megawatt (10^6)
PTMP	Point to Multi-Point
PTP	Point to Point
RFNSA	Radio Frequency National Site Archive
UHF	Ultra-High Frequency
VAST	Viewer Access Satellite Television
VHF	Very-High Frequency
WTG	Wind Turbine Generator

1.4 References

Table 2 *References*

Ref No	Reference
1	Draft National Wind Farm Development Guidelines, Environment Protection and Heritage Council of Australia and New Zealand, EPHC July 2010.
2	Bacon, D. F. (2002). A Proposed Method for Establishing an Exclusion Zone around a Terrestrial Fixed Link outside of which a Wind Turbine will cause Negligible Degradation of the Radio Link. Radiocommunications Agency UK Report Ver 1.1, 28 Oct 2002
3	Recommendation ITU-R BT.1893-1 (10/2015) Assessment methods of impairment caused to digital television reception by wind turbines, International Telecommunication Union (ITU), Geneva 2015

2. Methodology

Electromagnetic interference can occur when a wind turbine generator (WTG) is located in such a way as to induce an unwanted disturbance to radio waves between a signal source and signal receiver. The interference may occur by way of obstruction of transmission path causing diffraction, reflection, and scattering, or through radiation of electromagnetic energy by the turbine within the operating band of the radio system.

In cases where WTG interference can be modelled, areas may be designated as exclusion zones. Avoiding the construction of turbines within these zones can significantly reduce the impact on radio systems. When avoidance is not feasible, mitigation strategies should be employed. The definition of exclusion zones is based on a detailed analysis of the WTG layout.

Radio services operating below 30 MHz, particularly AM Radio Broadcast services, are not included in this assessment. This is due to their reliance on ground wave propagation, which operates independently of direct-ray transmission between transmitting and receiving antennas.

2.1 Radio System Search

In April 2025, a search was conducted on the Australian Communications and Media Authority (ACMA) radio communications database to identify all licensed radio systems operating above 30 MHz within 50 kilometres from the centre of the proposed wind farm development.

- The following radio systems were considered in this assessment:
- Fixed Point-to-Point (PTP), and Point-to-Multipoint (PTMP) radio systems
- Land Mobile Radio Systems (LMRS)
- FM Radio Narrowcast and Broadcast
- Radiodetermination Stations
- Aircraft Communications Systems
- Amateur Radio Systems
- Public Telecommunication Services (PTS)
- Scientific Radio Systems
- Mobile Telephone
- Digital Television Broadcast
- Meteorological Radar
- Defence Radio Systems
- Trigonometrical Systems.

The results of the ACMA radio communications data extraction were reviewed and presented in graphical format depicting the radio site locations and ray-lines of the radio systems within the vicinity of the wind farm. The map was refined to only show those radio sites and services with the potential impact for radio-interference caused by the proposed wind farm development.

This method does not determine the impact on users of class licence services, as these services are operated on shared frequencies, can be used by member of public, and are not listed within the ACMA database.

2.2 Assumptions

In April, 2025, GHD was provided the indicative layout of 68 potential WTG locations which is listed in Appendix A, of which up to 62 WTG locations may be utilised.

The dimensions of the WTGs used in this analysis are:

Hub Height: up to 166m

Rotor diameter: up to 172m

Blade tip height: up to 252m

Dimensions are based on a 'worst case scenario', with a margin of safety added as to ensure this assessment is applicable to any turbine with less than or equal to the dimensions assessed.

2.3 Identification of Impacted Services

2.3.1 Obstruction to Point-to-Point (PTP) Link

In long distance wireless communications, PTP radio system signals travel over a line-of-sight path between the transmitter and receiver defined by an ellipsoidal volume known as the Fresnel zone. Diffraction occurs when the WTG is positioned such that the Fresnel Zone is partially or wholly blocked, causing a decrease in signal strength at the receiver.

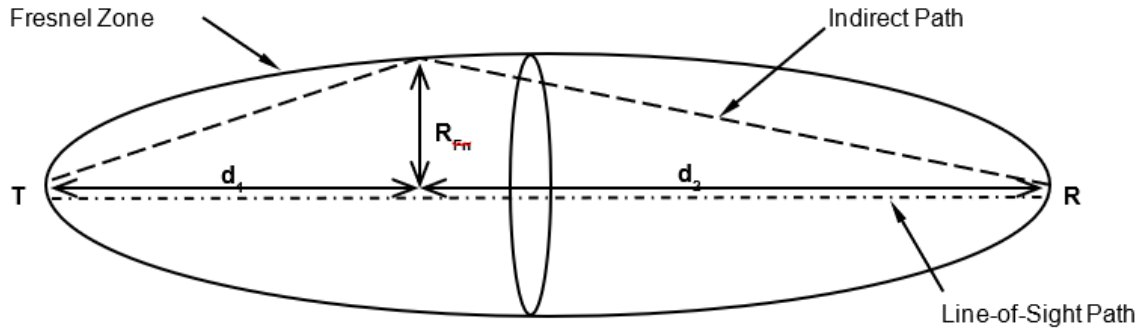


Figure 2 Fresnel Zone Calculation

The Fresnel zone is defined by:

$$R_{Fn} = \sqrt{\frac{n\lambda d_1 d_2}{d_1 + d_2}} \quad (1)$$

R_{Fn} = the nth Fresnel zone Radius in metres

n = the nth Fresnel zone

λ = the wavelength of the transmitted signal in metres

d_1 = the distance from T in metres

d_2 = the distance from R in metres

The reflected path from transmitter to the circle defined by the first Fresnel Zone, to the receiver has a path length of $d + \lambda/2$, which is received as 180° out of phase and leads to signal cancelation. It is recommended to design the geographic WTG layout such that all infrastructure is located outside the second Fresnel zone of all PTP radio systems [Ref 2]. As a result, the area encompassing the second Fresnel zone of a PTP link will be designated as a WTG exclusion zone.

PTP exclusion zones within a 50-kilometre radius of the project site have been modelled in 2D. Any identified encroachments, or risk of encroachments, into PTP link exclusion zones were then further modelled and analysed in 3D. The drawings included in Appendix C – Figure 1 shows the plot of direct line of sight for PTP radio links and Appendix C – Figure 2 plots the second Fresnel zone (WTG exclusion zones) for PTP radio links.

2.3.2 Reflection and Scattering

Radio signals can reflect and scatter from WTG blades or pylons. The WTG design scatters reflected signals over a wide angle, potentially causing destructive interference and signal power reduction as seen in Figure 3.

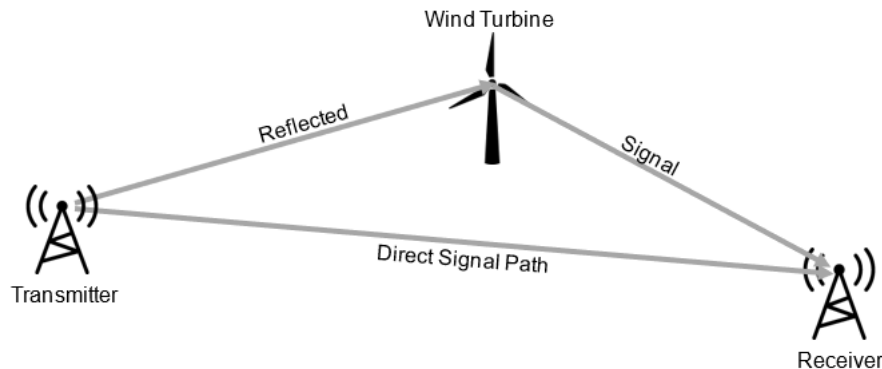


Figure 3 Reflection of Radio Signals by Wind Turbine Infrastructure

Scattering effects caused by WTG can be described as either forward scattering or back scattering. Forward scattering is comparable to shadowing, and back scattering is comparable to reflection and is depicted in Figure 4 below.

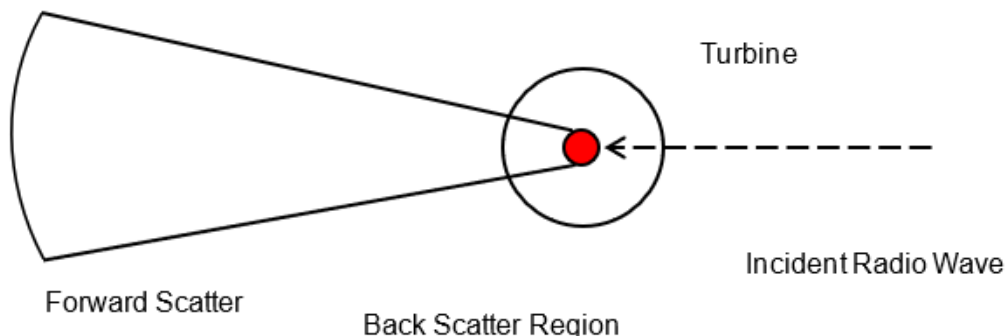


Figure 4 Scattering of Radio Signals by Wind Turbine Infrastructure

No single criterion exists for the determination of exclusion zones due to reflection and scattering. The impact of backscattering due to a WTG near a transmitting or receiving antenna is unlikely to be significant beyond 2 kilometres [Ref 2] [Ref 3], and it is unlikely to be necessary to investigate the forward scattering impact beyond 10 kilometres of a WTG [Ref 3]. GHD recommends that the area of radius 2 kilometres from a WTG should be free of telecommunication infrastructure. Forward scatter zones of broadcast transmission sites for television and FM radio have been modelled as an aperture that extends 5 kilometres from the WTG, which should be free of reception sites and dwellings.

2.3.3 Obstruction to Radar Services Line-of-Sight

Radar services can be impacted by WTG sites if they are located in the radar line-of-sight and operating range. Depending on the frequency of operation, radar can operate at a range of 370 kilometres.

Of particular concern is The Bureau of Meteorology's meteorological radar network. Meteorological radar is critical radar infrastructure that is operated by the Bureau. It provides data that facilitates monitoring and prediction of wind speeds and weather conditions. Meteorological radar typically has capability to monitor weather at a range of 250 kilometres or more.

In accordance with guidelines [Ref 2], individual operators of radar within the vicinity have been approached to evaluate the development and advise whether there may be impact on their services.

2.3.4 Near-field Effects

WTG infrastructure located close to a telecommunication site can cause unwanted signal power reductions to the radio system service area.

Typical near-field exclusion zone radii are:

- 2 metres for low band VHF paging systems (i.e., under 50 MHz)
- 20 metres for UHF, LMR and cellular sites (i.e., up to 2.5 GHz)
- 720 metres for PTP microwave radio links (i.e. up to 300GHz in the direction of the link)

Existing transmitters and microwave PTP links in the vicinity of the proposed wind farm have been analysed to aid in turbine micro-siting activities to mitigate the near field effects so that turbines should not be placed in paths of known microwave links. Future transmitter installations should be built outside the exclusion zones noted above. In the case of future PTP microwave links, antennas can be installed within 720 meters of a turbine, but the alignment of the link must be engineered to not point at a turbine.

2.3.5 Radiation of Electromagnetic Energy

Electromagnetic interference can occur when WTG electrical infrastructure radiates energy with a frequency within the operating frequency of a radio communications system.

Turbines supplied within Australia are required to be compliant with electromagnetic compatibility as defined in relevant Australian Standards. As a result of complying with these standards, the electromagnetic interference due to radiation is negligible.

Battery storage inverters, synchronous condensers, and transformers may cause interference to radio signals due to the emission of electromagnetic fields. These electric fields typically propagate over very distances (tens of metres) and are limited to “near-field” effects.

2.4 Guidelines and Codes

This methodology was carried out with the consideration of The Draft National Wind Farm Development Guidelines, 2010 Section F – Electromagnetic Interference [Ref 1].

2.5 Impact assessment

The impact assessment approach aimed to identify, assess, and characterise the likelihood and level of EMI impacts of the Project. The impact assessment approach involved the following steps:

- Identifying potential environmental and social impacts that the Project may have.
- Determine how elements of the Project, such as infrastructure, construction, and operations relate to the identified impacts.
- Implement feasible mitigation measures to minimise impact.
- Assessing residual impacts, with the implementation of mitigation measures, against the defined impact criteria.
- Where residual impacts were assigned a 'high' or 'very high' rating, making further revisions to the Project design and mitigation where feasible.

Following the identification of potential impacts, mitigation strategies were recommended to either avoid or minimise the impacts. The mitigation hierarchy of avoid, minimise, and offset was used to select appropriate measures for each impact.

Table 3 *Impact Assessment*

Impact Rating	Qualitative description of impact	Qualitative of socio-economic impact
Very Low	No detectable impact, unlikely to disrupt service	No detectable economic, cultural, recreational, or social impacts. Affected services are resilient.
Low	Minor detectable degradation, resulting limited disruption	Short term, localised economic, cultural, recreational, or social impacts. Affected services are resilient.
Medium	Noticeable impact, some disruption to broader areas or services temporarily	Medium term, localised economic, cultural, recreational, or social impacts. Limited change at regional level.
High	Significant degradation, disruption to essential services or a widespread area	Long term, major economic, cultural, or social impacts at local, regional, and state levels. Limited change at national level. Affected services are sensitive and/or not resilient to change.
Very High	Critical degradation, widespread impact, and prolonged service outages	Permanent major impact on regional economic, cultural, recreational, or social impacts at regional, state, and national levels.

3. EMI Assessment

3.1 Fixed PTP and PTMP Radio Systems

To avoid degradation to radio system services, WTGs should not obstruct the second Fresnel exclusion zones of the radio links. During the construction of the project, these zones should not be entered when lifting turbines into place. In the event that entering these zones is unavoidable, the link operator should be consulted prior to construction, allowing the link operator to anticipate the potential temporary service degradation and take steps to minimise or negate the impact on the communications link.

Findings & Potential Impacts

The fixed point-to-point radio systems within the vicinity of the proposed wind farm are shown in Appendix C, Figures 1-2 and are further listed within Appendix B. Further detail on the analysed turbines is shown in Appendix C Figures 3-5. Stakeholder contact to the link license owners is detailed within Appendix D, Figures 1-4.

Initial Findings

The initial 2D model desktop investigation revealed that the project boundary had a significant number of point-to-point links passing through. The turbines, T1, T2, T3, T4, T5, T32, T37 and T54 all came within close proximity to the boundary of a second Fresnel exclusion zone, modelled in Appendix C, Figures 1-5 as the pink point-to-point links.

Turbines T1, T2 and T3 were at risk of encroaching on the Central Highland Region Water Corporation owned link (License No: 1566085/1). Further analysis into these turbines illustrated in Appendix C, Figure 3 shows that they were all situated over 10 meters from the second Fresnel boundary, with T2 being approximately 45 meters away. Therefore, GHD foresees these turbines shall not cause degradation to the link.

The 2D analysis in Appendix C, Figure 4 shows turbines T4 and T5 were directly within in the path of the second Fresnel exclusion zone of the National Broadband Network owned link (License No: 12186312/2). T4 encroached by approximately 5.3 meters and T5 by 7.7 meters. Further 3D modelling showed the turbines are not currently physically overlapping the link as shown within Figure 5 and 6, however, they still posed a risk to the link.

The turbines T32 and T37 were also at risk of encroaching on the link owned by Powercor Australia (License No: 1149179/2). T32 was directly within the line of sight of the link, however, upon further analysis it was seen that T37 is approximately 20 meters away from the Fresnel zone and as a result will not cause interference. 3D modelling indicates that T32 in this previous position would directly impact the point-to-point link, this is shown in Figure 7.

Finally, the turbine T54 was identified to be at risk of encroaching on the link owned by Optus (License No: 11684903/1). Further analysis shows the turbine is located approximately 50 meters from the second Fresnel zone, this means that the turbine will not cause degradation to the link.

Stakeholder Consultation

GHD approached key stakeholders for feedback of the initial layout, NBN responded in June, 2025 asking for T4 and T5 to be micro sited by 21.02m and 26.02m, respectively, see Appendix D, Figure 2 for more information. Powercor responded to communications in July asking for T32 and T37 to be micrositied Northwest by 200 and 130 metres, respectively. Powercor, GHD and MHWF have been in further communications regarding the requirements and necessary mitigation measures for these turbines. As for Central Highlands Water Corporation and Optus, no response has been received to the communications by GHD.

Mitigations

To mitigate the identified risks GHD recommended micro siting T32 Northwest by 100 meters. Additionally, GHD recommended micro siting T4 by 22 metres North and micro siting T5 by 20 meters North and 20 meters East. As many turbine sites are close to point-to-point links stakeholders should be contacted prior to construction to notify them of potential minor signal interruptions during construction.

Revised Layout

The proponent adopted the recommendations, T4 has been microsites approximately 22 metres Northwest and T5 has been microsites approximately 90 metres Southeast. Additionally, T32 has been microsites 200 metres North Northwest. Other minor changes were made to accommodate a boundary change. T52 has been relocated close to the Optus owned link (License No: 11684903/1), however, the turbine does not encroach on the second Fresnel zone of the link. GHD does not foresee any link degradation to due to these changes. Clear avoidance of the second Fresnel zones has been demonstrated, see Appendix C, Figures 3, 4 and 5 for more.

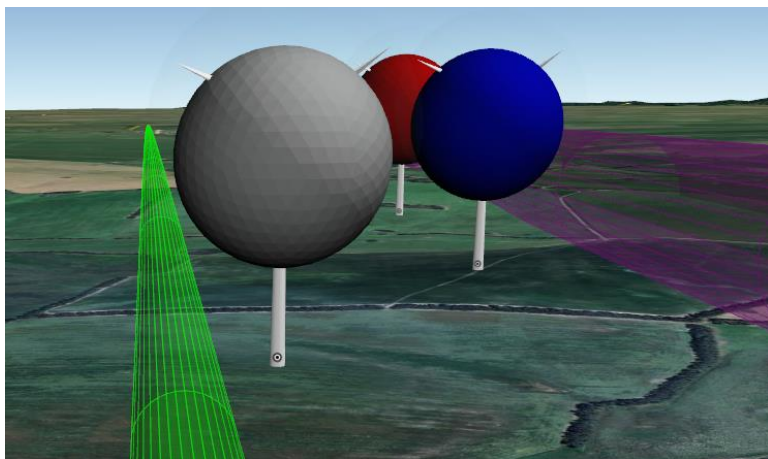


Figure 5 3D exclusion zone detail T4 showing no encroachment of the green link (License No: 12186312/2)

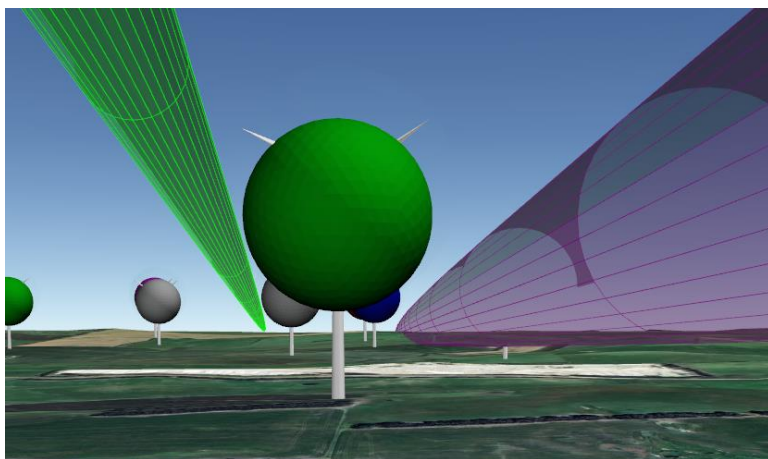


Figure 6 3D exclusion zone detail T5 showing no encroachment of the green link (License No: 12186312/2).

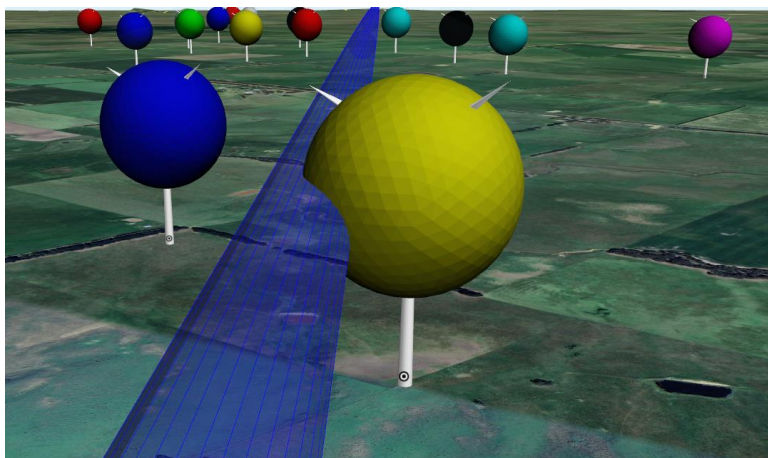


Figure 7 3D exclusion zone detail T32 showing encroachment on blue link (License No: 1149179/2)

3.2 Land Mobile Radio Systems

A land mobile radio system (LMRS) is a person-to-person voice communication system with the transmitter and receiver in one unit. It can be stationary (base station units), mobile (installed in vehicles), or portable (handheld two-way radios). In Australia, most land mobile radio systems operate in the VHF Mid Band (70-87.5 MHz), VHF High Band (148-174 MHz), and the UHF 400 MHz band. As the wavelengths at these frequencies are large, the radio signals are generally unaffected by wind turbines.

Most land mobile radio systems are used exclusively for public safety organisations such as police, firefighters, and other emergency response organisations. The systems are quite resilient as they usually operate on specific reserved frequencies.

Findings & Potential Impacts

The land mobile radio systems within the vicinity of the proposed wind farm development corridor are shown on Appendix C in Figure 6 and are listed within Appendix B.

The closest two LMRS are located approximately 2.5 kilometres from the nearest WTGs, one to the Northeast of T9 and the other to the Southwest of T19. Due to the frequency of operation and distance from the proposed site, GHD does not foresee any electromagnetic interference impact that would degrade LMR signals.

3.3 Digital Television Broadcast

Wind farms have the potential to cause signal degradation to Television reception due to signal scattering, diffraction, and near-field effects. Television reception at dwellings located in the scattering zones may be adversely affected by the proposed wind farm. For a dwellings' TV reception to be potentially impacted, they must be located within the scatter zone area and within the respective transmitters signal area

Findings & Potential Impacts

Television reception at dwellings located within the scattering zones may be adversely affected by the proposed wind farm. For a dwellings' TV reception to be potentially impacted, they must be located within both the scatter zone area and the respective transmitter signal area Appendix C Figure 8 shows this area with the signal as grey gradient.

Where existing dwellings, broadcast coverage zones and scatter zones overlap, the identified dwellings within the intersection of both zones should be considered for pre- and post-construction assessment of television reception strength. Appendix C, Figure 8 shows these dwellings in orange, there are approximately 47 impacted dwellings.

The proposed site is approximately 50 kilometres from Mount Cole, where the Ballarat transmitter is located. This is the only transmitter with coverage in the area. The path from the transmitter to major surrounding cities is not impeded, therefore, suggesting the impacts will be minimal. However, housing within the vicinity of the wind farm may have reduced service quality. As the proposed site is far beyond 10 kilometres from Ballarat, GHD foresees any impact to digital television broadcasts is unlikely.

Pre-construction television signal surveys should be conducted in locations at or near identified dwellings in the impact zone to determine the existing television signal levels as a baseline measurement, including the towns of Skipton and Linton. For dwellings receiving digital television signals from the Digital Terrestrial Television system, the baseline measurement can be compared to a post-construction survey to determine any service impact. For dwellings receiving digital television signals from Viewer Access Satellite Television System (VAST), which is common in areas with limited terrestrial signal coverage, there will be no to negligible impact to these dwellings.

In the event that post-construction monitoring indicates an impact on television signal quality, mitigation strategies should be employed by Moreton Hill Wind Farm. These measures include the installation of signal repeaters or boosters to improve reception in affected areas and transitioning affected dwellings to VSAT.

3.4 FM Narrowcast and Broadcast

Overseas and local experience indicates that radio reception is unlikely to be affected by operating wind farms. Broadcast FM services have smaller wavelengths than AM services and can be affected by turbines directly in the

path of the receptor. There may be a minor impact / signal degradation for FM broadcast services for receivers in the forward and backscatter regions.

FM narrowcast and broadcast sites within the vicinity of the proposed wind farm are listed in Appendix B. The Australian Broadcasting Corporation (ABC) provides coverage information for their FM transmissions.

Findings & Potential Impacts

The city of Ballarat is beyond 30 kilometres of the proposed site, Refer to Appendix C Figure 7. The broadcasting transmitters identified are all situated around the city; therefore, they are approximately 30 kilometres away from the site. GHD foresees that there may be a potential signal degradation to FM broadcast services beyond the Southeast of the proposed windfarm.

GHD does not see any foreseeable electromagnetic interference impact that would degrade the AM broadcast services, as the low frequency (<30MHz) of AM radio signals propagate over the horizon and are not specifically analysed in this EMI assessment.'

As outlined any existing or approved dwellings at the date of development approval that are within 5 kilometres of any turbine, Moreton Hill Wind Farm should undertake a pre- and post-construction assessment of the FM radio reception strength. Refer to section 4.1 for further detail.

3.5 Mobile Telephone and Broadband Internet Broadcast

Cellular mobile phone technologies provide robust communications in areas of significant obstruction via multipath communications between customer equipment and the network base station sites. The three carrier networks (Telstra, Optus and Vodafone) have transmitter sites covering the main population areas around the greater wind farm area.

Appendix C – Figure 17 shows the Telstra 4G and 5G coverage within the project vicinity

Appendix C – Figure 18 shows the Optus 4G coverage within the project vicinity

Appendix C – Figure 19 shows the Vodafone 4G coverage within the project vicinity

Findings & Potential Impacts

Interference to cellular phone coverage is anticipated to be minimal except for those operating close to the proposed wind farm infrastructure (such as maintenance staff), or where existing coverage is already inadequate according to the carrier's publicly available coverage maps as shown in the figure references above.

3.6 Meteorological Radar

Meteorological radar is a critical radio infrastructure operated by the Bureau of Meteorology. It provides data that facilitates precise prediction of wind speeds and weather conditions. Radars typically have capability to monitor weather at a range of 250 kilometres or more.

There are two meteorological radars within 250 kilometres of the proposed wind farm: Melbourne and Rainbow. These are located at approximately 115 kilometres and 230 kilometres, respectively as shown in Appendix C, Figures 12 and 13.

Findings & Potential Impacts

The meteorological radars identified to be potentially impacted by the wind farms construction are situated on opposite sides of the wind farm. Therefore, reducing the impact from the wind farm. The Bureau of Meteorology responded in May, 2025 stating, "under normal atmospheric conditions, it poses a manageable risk to Bureau assets. As a result, the Bureau has no objections to the proposed development proceeding..." See Appendix D, Figure 5 for further information.

3.7 Aircraft Communications Systems

Wind farms have the potential to disturb navigational signals, which can distort the accuracy of the aircraft positioning systems and introduce 'false targets'.

Findings & Potential Impacts

There are three aircraft communications systems within the vicinity of the proposed wind farm. These are all approximately 33 kilometres Northeast of the closest turbine within the proposed site. This is shown within Appendix C, Figure 11 and listed in Appendix B. Airservices Australia replied to GHD in July, 2025 stating "The proposed activity does not impact Airservices operations or facilities at Ballarat aerodrome nor any route LSALT." Airservices has also asked for a vertical obstacle notification, see Appendix D, Figure 6 for more. GHD foresees that the proposed wind farm development will have nil to negligible impact on navigation signals.

3.8 Radiodetermination Station

Radiodetermination stations are radio transmission systems which are used to determine location, velocity, or other characteristics of an object. These systems are commonly used in various fields such as aviation, maritime navigation, military applications etc.

Findings & Potential Impacts

The radiodetermination stations within the vicinity of the proposed wind farm are shown in Appendix C, Figure 14 and listed in Appendix B.

GHD foresees that the proposed wind farm development will have nil to negligible impact on radiodetermination stations as the closest transmitter is approximately 60 kilometres away, therefore, it will not be subject to near field effects.

3.9 Amateur Radio Systems

Amateur radio can consist of transmitters ranging from HF to UHF spectrum in specific bands reserved for citizen use by licenced individuals. Fixed amateur stations are registered on the ACMA database however the specific frequencies of the transmissions can vary depending on the type of communications being used at the time.

Findings & Potential Impacts

The amateur radio systems within the vicinity of the proposed wind farm are shown in Appendix C, Figure 15 and are listed in Appendix B.

The closest radio system is approximately 28 kilometres from the proposed wind farm development and GHD foresees nil to negligible impact to the known fixed amateur radio systems.

3.10 Scientific Radio Systems

Scientific Radio Systems are reserved for research, teaching, demonstration, trialling new technologies or for repair and maintenance purposes. Scientific Radio Systems are registered on the ACMA database; however, the specific frequencies can vary depending on the use case and/or license.

Findings & Potential Impacts

The desktop analysis showed there were no scientific radio systems present within a 50 kilometre radius of the proposed wind farm development site.

3.11 Trigonometric Systems

Trigonometrical systems operate across Australia and are operated and maintained by Geoscience Australia. The GNSS networks of approximately 100 Continuously Operating Reference Stations (CORS) across the Australian

region and the South Pacific, including: Australian Regional GNSS Network (ARGN), South Pacific Regional GNSS Network (SPRGN), and AuScope Network.

Findings & Potential Impacts

Consultation with Geosciences Australia in April 2025 confirmed “Geosciences Australia do not foresee any interference to our GNSS infrastructure as a result of the proposed Moreton Hill Wind Farm” See Appendix D, Figure 7.

3.12 Defence Radio Systems

Defence radio systems are not required to be recorded in the ACMA radio communications database and therefore direct consultation with the Department of Defence is required to determine the impact of the wind farm on the Defence’s operations around the wind farm area.

Typically, the Defence Spectrum Office (DSO), raises the following concerns to Defence HF transmissions and wind farm development projects:

Defence use HF in both a fixed and itinerant nature on their ranges and bases. They can use this equipment anywhere in country, but typical high tempo use of the itinerant variation could be at Defence range boundaries.

Findings & Potential Impacts

As the wind farm is required to conform to AS/NZS 61000.6.4:2012³, the wind farm will reduce, as much as is practicable, the emission of HF noise from the turbines, substation(s) and electronic control equipment.

In April 2025, the Defence Security and Estate Group stated that the electromagnetic interference impacts to Defence radio systems would be addressed in the aviation impact assessment (AIA). Defence requested and have been provided the AIA, see Appendix D, Figure 8. GHD reviewed the AIA, revision 1 dated 26 October 2023 conducted by Aviation Projects and the AIA concluded that “the project would be outside the clearance zones associated with civil aviation navigation aids and communication facilities”. GHD foresees no impact to Defence radio systems resulting from the construction of the project.

3.13 50 Hz Radiation (Transmission Lines)

The primary sources of electromagnetic fields associated with wind farms are the substations and transmission lines. Designing to the standards utilised by the local transmission and distribution authorities will ensure safe levels of electromagnetic radiation are achieved.

4. Summary and Mitigation Strategies

All types of radio communications can benefit from general mitigation through the design of the turbine and the choice of materials used in its construction. Turbines should be strategically spaced to prevent the formation of an electromagnetic barrier, often referred to as a 'virtual wall,' between transmitters and nearby households. To minimize interference with radio signals, wind farm developers ensure that equipment complies with the Electromagnetic Emission Standard (AS/NZS 61000.6.4:2012). Additionally, turbine designs incorporate electrical insulation and shielding to reduce RF noise emitted by electronic control systems within the nacelle.

4.1 Mitigation Strategies

Table 4 provides a summary of the findings from section 3 inclusive of Mitigation Strategies and other recommendations.

Table 4 **Mitigation Strategies**

Item	Description	Impact	Mitigation Measure	Residual Impact
4.1 Fixed PTP and PTMP Radio Systems	Signals that travel between two fixed sites cannot have their second Fresnel zone impeded as it can interrupt communications.	Anticipated impact to services	Avoid micro siting turbines within the second Fresnel exclusion zones. To avoid degradation to the radio system services, WTGs should not obstruct the second Fresnel Zone of the radio links. During the construction of the project, these zones should not be entered when lifting turbines into place. If entering these zones is unavoidable, the link operator should be consulted prior to construction, allowing the link operator to anticipate the potential temporary service degradation and take steps to minimise or negate the impact on the communications link.	
4.2 Land Mobile Radio Systems	As wavelengths at these frequencies are large, impacts due to wind turbines are unlikely.	Nil to negligible anticipated impact to services.	Nil	Nil
4.3 Digital Television Broadcast	Digital television signals may be impacted by the diffraction and scattering of signals caused by turbines.	Minor reduction of coverage in area	Pre- and post-construction testing of baseline signal measurements should be conducted by an independent radio monitoring specialist. If post-construction testing reveals an unacceptable level of interference as a result of the wind farm measures to restore quality should be undertaken. These measures could include: – Review and improvement of receive antenna orientation and state of repair. – Installation of a more directional and/or higher gain antenna. – Relocation of antenna to less affected position. – Installation of an appropriate amplifier.	Impacts reduced to minor.
4.4 FM Narrowcast and Broadcast	AM signals are often unaffected due to low frequency and large wavelength. FM services may be affected as they have a smaller wavelength, impacts are likely to be minor.	Nil to negligible anticipated impact to services.	Pre- and post-construction testing of baseline signal measurements should be conducted by an independent radio monitoring specialist. This should be done in the 5 kilometre area surrounding turbines. If unacceptable reduction in quality is found mitigations shall be undertaken. – Review and improvement of receive antenna orientation and state of repair. – Installation of a more directional and/or higher gain antenna. – Relocation of antenna to less affected position. – Installation of an appropriate amplifier. – Installation of an additional transmission tower on opposite side of wind farm	Impacts reduced to minor.
4.5 Mobile Telephone and Broadband Internet Broadcast	Degradation to signal in areas close to turbines.	Nil to negligible anticipated impact to services.	Nil	Nil
4.6 Meteorological radar	Potential impacts to Rainbow and Melbourne radars due to obstruction.	Manageable impact to	Nil, manageable impacts as stated by Bureau of Meteorology.	Minor, manageable impacts.

Item	Description	Impact	Mitigation Measure	Residual Impact
		Bureau assets.		
4.7 Aircraft Communication Systems	Potential to disturb navigational signals and accuracy of aircraft positioning signals.	Nil to negligible anticipated impact to services.	Nil	Nil
4.8 Radiodetermination Station	Potential impact on radio transmission systems ability to determine characteristics of objects.	Nil to negligible anticipated impact to services.	Nil	Nil
4.9 Amateur Radio Systems	Potential to degrade signals in bands reserved for citizen use.	Nil to negligible anticipated impact to services.	Nil	Nil
4.10 Scientific Radio Systems	Potential to interfere with systems used for teaching, researching, demonstrating, or trialling new technologies.	No scientific radio systems in the area	Nil	Nil
4.11 Trigonometric Systems	Degradation to network operated and maintained by Geosciences Australia.	Nil to negligible anticipated impact to services.	Consultation showed nil impacts identified by Geosciences Australia.	Nil
4.12 Defence Radio Systems	Potential interference to defence systems operating within the area.	Nil to negligible anticipated impact to services.	Nil.	Nil
4.13 50 Hz Radiation	Potential emission of extremely low frequency (ELF).	Nil to negligible anticipated impact to services.	Follow design standards utilised by the local transmission and distribution authorities.	Nil

Appendices

Appendix A

Turbine Locations

Turbine Locations

Turbine ID	Latitude	Longitude
T1	-37.682394	143.467621
T2	-37.684235	143.449602
T3	-37.684538	143.456754
T4	-37.687073	143.462719
T5	-37.690004	143.492643
T6	-37.691296	143.447762
T7	-37.691653	143.442311
T8	-37.695664	143.451859
T9	-37.695719	143.495049
T10	-37.699373	143.458317
T11	-37.700609	143.480675
T12	-37.701296	143.486716
T13	-37.701955	143.464010
T14	-37.703384	143.490570
T15	-37.704977	143.450193
T16	-37.704839	143.473836
T17	-37.704647	143.497757
T18	-37.705298	143.438146
T19	-37.706727	143.430071
T20	-37.707366	143.468524
T21	-37.710498	143.456268
T22	-37.714013	143.441374
T23	-37.713491	143.481717
T24	-37.714782	143.433354
T25	-37.713876	143.498382
T26	-37.714782	143.491751
T27	-37.715977	143.447673
T28	-37.720220	143.454150
T29	-37.721236	143.485744
T30	-37.722417	143.491334
T31	-37.724998	143.449463
T32	-37.723929	143.496035
T33	-37.730792	143.492827
T34	-37.732248	143.453421
T35	-37.739139	143.456928
T36	-37.743505	143.451894
T37	-37.749242	143.446269
T38	-37.751521	143.452241
T39	-37.751795	143.457796
T40	-37.753799	143.464392
T41	-37.757560	143.442416
T42	-37.758712	143.453144
T43	-37.762967	143.447241

Turbine ID	Latitude	Longitude
T44	-37.766041	143.439326
T45	-37.770926	143.447693
T46	-37.777759	143.419467
T47	-37.779625	143.413495
T48	-37.780174	143.402906
T49	-37.781601	143.453421
T50	-37.781033	143.507748
T51	-37.783083	143.470538
T52	-37.787402	143.497541
T53	-37.786567	143.458004
T54	-37.783797	143.502445
T55	-37.788378	143.465226
T56	-37.789037	143.450852
T57	-37.802858	143.481321
T58	-37.791012	143.479946
T59	-37.791670	143.472169
T60	-37.791835	143.502235
T61	-37.793630	143.494501
T62	-37.796334	143.455018
T63	-37.797706	143.477238
T64	-37.797981	143.485223
T65	-37.799846	143.500500
T66	-37.801272	143.492028
T67	-37.805332	143.505152
T68	-37.808514	143.498416

Appendix B

Radio sites in vicinity of wind farm

GHD | MHWF Nominees Pty Ltd | 12656042 | Moreton Hill Wind Farm 24

GHD | MHWF Nominees Pty Ltd | 12656042 | Moreton Hill Wind Farm 25

GHD | MHWF Nominees Pty Ltd | 12656042 | Moreton Hill Wind Farm 26

GHD | MHWF Nominees Pty Ltd | 12656042 | Moreton Hill Wind Farm 27

GHD | MHWF Nominees Pty Ltd | 12656042 | Moreton Hill Wind Farm 28

GHD | MHWF Nominees Pty Ltd | 12656042 | Moreton Hill Wind Farm 29

GHD | MHWF Nominees Pty Ltd | 12656042 | Moreton Hill Wind Farm 30

31

GHD | MHWF Nominees Pty Ltd | 12656042 | Moreton Hill Wind Farm 32

GHD | MHWF Nominees Pty Ltd | 12656042 | Moreton Hill Wind Farm 33

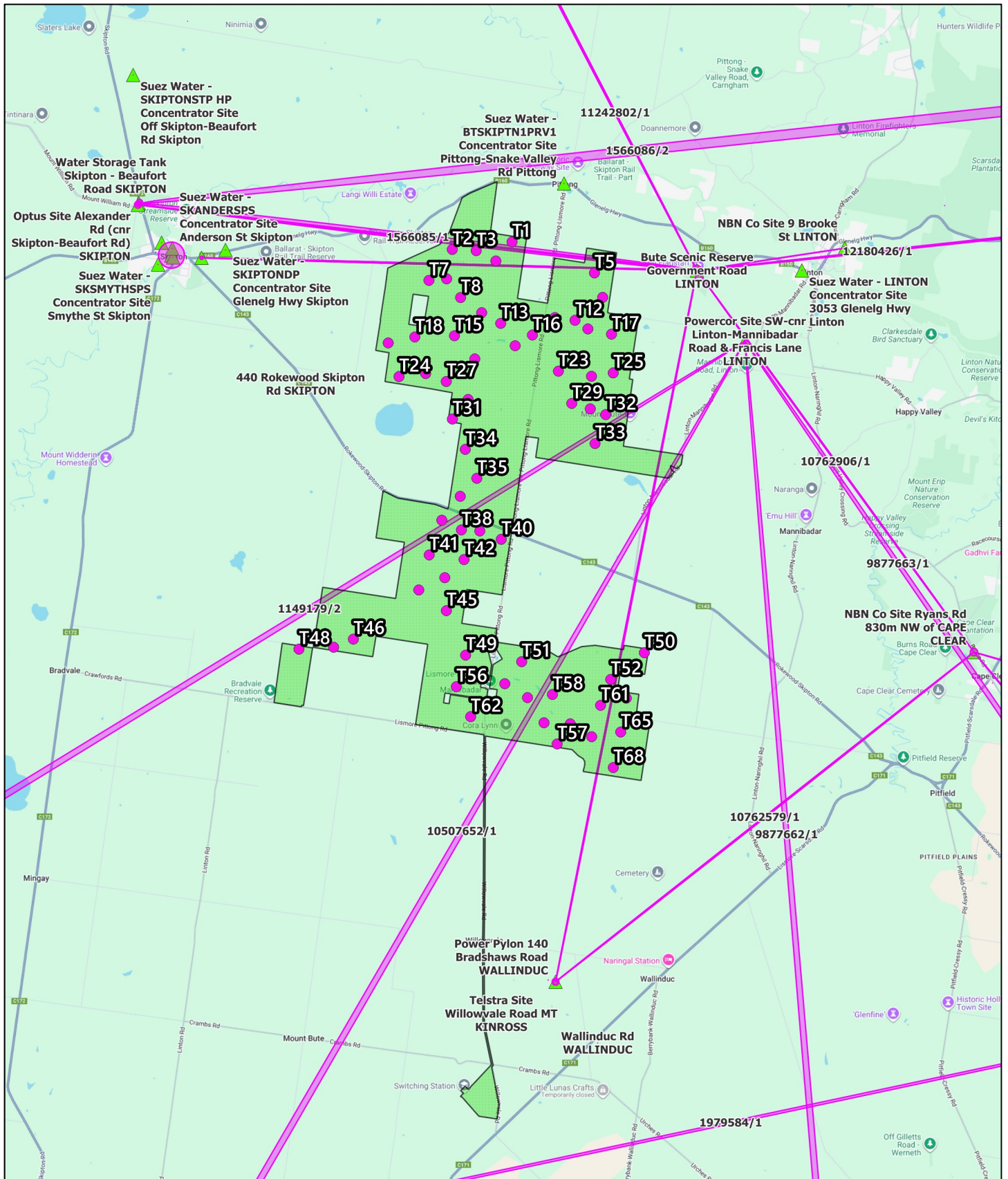
Suez Water - SKIPTONDP Concentrator Site Glenelg Hwy Skipton	10034707	12127206/1	SUEZ WATER PTY LTD	-37.6844	143.3807	1.69E+08
Suez Water - SKIPTONDP Concentrator Site Glenelg Hwy Skipton	10034707	12127206/1	SUEZ WATER PTY LTD	-37.6844	143.3807	1.69E+08
Bute Scenic Reserve Government Road LINTON	204824	11571180/2	NBN CO LIMITED	-37.6894	143.5237	6.64E+09
Bute Scenic Reserve Government Road LINTON	204824	11571180/2	NBN CO LIMITED	-37.6894	143.5237	6.98E+09
Suez Water - SKBRIDGSPS Concentrator Site 19 Bridge St Skipton	10034714	12127206/1	SUEZ WATER PTY LTD	-37.6827	143.3613	1.69E+08
Suez Water - SKBRIDGSPS Concentrator Site 19 Bridge St Skipton	10034714	12127206/1	SUEZ WATER PTY LTD	-37.6827	143.3613	1.69E+08
Suez Water - SKMONTNSPS Concentrator Site Cnr of Cleveland St and	10034716	12127206/1	SUEZ WATER PTY LTD	-37.6857	143.3642	1.69E+08
Suez Water - SKMONTNSPS Concentrator Site Cnr of Cleveland St and	10034716	12127206/1	SUEZ WATER PTY LTD	-37.6857	143.3642	1.69E+08
Water Storage Tank Skipton - Beaufort Road SKIPTON	9004396	1566084/1	CENTRAL HIGHLANDS REGION WATER	-37.6733	143.3544	4.62E+08
Water Storage Tank Skipton - Beaufort Road SKIPTON	9004396	1566084/1	CENTRAL HIGHLANDS REGION WATER	-37.6733	143.3544	4.52E+08
Bute Scenic Reserve Government Road LINTON	204824	10655087/2	NBN CO LIMITED	-37.6894	143.5237	1.94E+10
Bute Scenic Reserve Government Road LINTON	204824	10655087/2	NBN CO LIMITED	-37.6894	143.5237	1.84E+10
Powercor Site SW-cnr Linton-Mannibadar Road & Francis Lane LINTON	9026481	10507652/1	Powercor Australia Ltd	-37.7063	143.5383	1.44E+09
Powercor Site SW-cnr Linton-Mannibadar Road & Francis Lane LINTON	9026481	10507652/1	Powercor Australia Ltd	-37.7063	143.5383	1.5E+09
NBN Co Site 9 Brooke St LINTON	9015325	10655087/2	NBN CO LIMITED	-37.684	143.5685	1.94E+10
NBN Co Site 9 Brooke St LINTON	9015325	10655087/2	NBN CO LIMITED	-37.684	143.5685	1.84E+10
Powercor Site SW-cnr Linton-Mannibadar Road & Francis Lane LINTON	9026481	9877663/1	Powercor Australia Ltd	-37.7063	143.5383	1.5E+09
Powercor Site SW-cnr Linton-Mannibadar Road & Francis Lane LINTON	9026481	9877663/1	Powercor Australia Ltd	-37.7063	143.5383	1.43E+09
Bute Scenic Reserve Government Road LINTON	204824	12180428/1	NBN CO LIMITED	-37.6894	143.5237	1.08E+10
Bute Scenic Reserve Government Road LINTON	204824	12180428/1	NBN CO LIMITED	-37.6894	143.5237	1.13E+10
Suez Water - SKIPTONDP Concentrator Site Glenelg Hwy Skipton	10034707	12127208/1	SUEZ WATER PTY LTD	-37.6844	143.3807	1.69E+08
Suez Water - SKIPTONDP Concentrator Site Glenelg Hwy Skipton	10034707	12127208/1	SUEZ WATER PTY LTD	-37.6844	143.3807	1.69E+08
Suez Water - SKMONTNSPS Concentrator Site Cnr of Cleveland St and	10034716	12127208/1	SUEZ WATER PTY LTD	-37.6857	143.3642	1.69E+08
Suez Water - SKMONTNSPS Concentrator Site Cnr of Cleveland St and	10034716	12127208/1	SUEZ WATER PTY LTD	-37.6857	143.3642	1.69E+08
Suez Water - SKBRIDGSPS Concentrator Site 19 Bridge St Skipton	10034714	12127208/1	SUEZ WATER PTY LTD	-37.6827	143.3613	1.69E+08
Suez Water - SKBRIDGSPS Concentrator Site 19 Bridge St Skipton	10034714	12127208/1	SUEZ WATER PTY LTD	-37.6827	143.3613	1.69E+08
Suez Water - SKANDERSPS Concentrator Site Anderson St Skipton	10034705	12127208/1	SUEZ WATER PTY LTD	-37.6841	143.3646	1.69E+08
Suez Water - SKANDERSPS Concentrator Site Anderson St Skipton	10034705	12127208/1	SUEZ WATER PTY LTD	-37.6841	143.3646	1.69E+08
Bute Scenic Reserve Government Road LINTON	204824	11570242/2	NBN CO LIMITED	-37.6894	143.5237	7.06E+09
Bute Scenic Reserve Government Road LINTON	204824	11570242/2	NBN CO LIMITED	-37.6894	143.5237	6.72E+09
Suez Water - SKSMYTHSPS Concentrator Site Smythe St Skipton	10034715	12127208/1	SUEZ WATER PTY LTD	-37.6879	143.3603	1.69E+08
Suez Water - SKSMYTHSPS Concentrator Site Smythe St Skipton	10034715	12127208/1	SUEZ WATER PTY LTD	-37.6879	143.3603	1.69E+08
Suez Water - SKMONTSSPS Concentrator Site Cnr of Anderson St and Glenelg	10034706	12127208/1	SUEZ WATER PTY LTD	-37.6862	143.3648	1.69E+08
Suez Water - SKMONTSSPS Concentrator Site Cnr of Anderson St and Glenelg	10034706	12127208/1	SUEZ WATER PTY LTD	-37.6862	143.3648	1.69E+08
Suez Water - LINTON Concentrator Site 3053 Glenelg Hwy Linton	10034708	12127208/1	SUEZ WATER PTY LTD	-37.6893	143.5555	1.69E+08
Suez Water - LINTON Concentrator Site 3053 Glenelg Hwy Linton	10034708	12127208/1	SUEZ WATER PTY LTD	-37.6893	143.5555	1.69E+08
Suez Water - RTSKIPTN1PRV1 Concentrator Site Pittong-Snake Valley Rd	10034663	12127208/1	SUEZ WATER PTY LTD	-37.6685	143.4834	1.69E+08
Suez Water - RTSKIPTN1PRV1 Concentrator Site Pittong-Snake Valley Rd	10034663	12127208/1	SUEZ WATER PTY LTD	-37.6685	143.4834	1.69E+08
Bute Scenic Reserve Government Road LINTON	204824	1566090/1	CENTRAL HIGHLANDS REGION WATER	-37.6894	143.5237	4.52E+08
Bute Scenic Reserve Government Road LINTON	204824	1566090/1	CENTRAL HIGHLANDS REGION WATER	-37.6894	143.5237	4.61E+08
Bute Scenic Reserve Government Road LINTON	204824	12186312/2	NBN CO LIMITED	-37.6894	143.5237	7.75E+09
Bute Scenic Reserve Government Road LINTON	204824	12186312/2	NBN CO LIMITED	-37.6894	143.5237	8.06E+09
NBN Co 50m lattice tower, 55 Rokewood-Skipton Road Skipton	10035980	12186312/2	NBN CO LIMITED	-37.6863	143.3735	7.75E+09
NBN Co 50m lattice tower, 55 Rokewood-Skipton Road Skipton	10035980	12186312/2	NBN CO LIMITED	-37.6863	143.3735	8.06E+09
Bute Scenic Reserve Government Road LINTON	204824	10655086/2	NBN CO LIMITED	-37.6894	143.5237	1.84E+10
Bute Scenic Reserve Government Road LINTON	204824	10655086/2	NBN CO LIMITED	-37.6894	143.5237	1.94E+10
Bute Scenic Reserve Government Road LINTON	204824	12186311/2	NBN CO LIMITED	-37.6894	143.5237	8.06E+09
Bute Scenic Reserve Government Road LINTON	204824	12186311/2	NBN CO LIMITED	-37.6894	143.5237	7.75E+09
NBN Co 50m lattice tower, 55 Rokewood-Skipton Road Skipton	10035980	12186311/2	NBN CO LIMITED	-37.6863	143.3735	8.06E+09
NBN Co 50m lattice tower, 55 Rokewood-Skipton Road Skipton	10035980	12186311/2	NBN CO LIMITED	-37.6863	143.3735	7.75E+09
Bute Scenic Reserve Government Road LINTON	204824	12179721/1	NBN CO LIMITED	-37.6894	143.5237	1.85E+10
Bute Scenic Reserve Government Road LINTON	204824	12179721/1	NBN CO LIMITED	-37.6894	143.5237	1.95E+10
NBN Co Site 9 Brooke St LINTON	9015325	10655086/2	NBN CO LIMITED	-37.684	143.5685	1.84E+10
NBN Co Site 9 Brooke St LINTON	9015325	10655086/2	NBN CO LIMITED	-37.684	143.5685	1.94E+10

Land Mobile Transmitters						
Name	Site ID	Licence Number	Licensee	Latitude	Longitude	Frequency
440 Rokewood Skipton Rd SKIPTON	9023722	1988072/1	The Trustee for NICK SHADY FAMILY	The Trustee for NICK SHADY	143.4035	4.53E+08
440 Rokewood Skipton Rd SKIPTON	9023722	1988072/1	The Trustee for NICK SHADY FAMILY	The Trustee for NICK SHADY	143.4035	4.63E+08
Bute Scenic Reserve Government Road LINTON	204824	1800507/1	DEPARTMENT OF JUSTICE AND	DEPARTMENT OF JUSTICE AND	143.5237	1.72E+08
Bute Scenic Reserve Government Road LINTON	204824	1800507/1	DEPARTMENT OF JUSTICE AND	DEPARTMENT OF JUSTICE AND	143.5237	1.68E+08
Bute Scenic Reserve Government Road LINTON	204824	10269982/1	DEPARTMENT OF JUSTICE AND	DEPARTMENT OF JUSTICE AND	143.5237	1.72E+08
Bute Scenic Reserve Government Road LINTON	204824	10269982/1	DEPARTMENT OF JUSTICE AND	DEPARTMENT OF JUSTICE AND	143.5237	1.68E+08
Bute Scenic Reserve Government Road LINTON	204824	1800508/1	DEPARTMENT OF JUSTICE AND	DEPARTMENT OF JUSTICE AND	143.5237	1.72E+08
Bute Scenic Reserve Government Road LINTON	204824	1800508/1	DEPARTMENT OF JUSTICE AND	DEPARTMENT OF JUSTICE AND	143.5237	1.68E+08
Glenelg Hwy F/S LINTON	46146	1309606/1	Countrv Fire Authoritv	Countrv Fire Authority	143.5627	1.61E+08
Glenelg Hwy F/S LINTON	46146	1309606/1	Countrv Fire Authoritv	Countrv Fire Authority	143.5627	1.61E+08
Bute Scenic Reserve Government Road LINTON	204824	1800299/1	DEPARTMENT OF JUSTICE AND	DEPARTMENT OF JUSTICE AND	143.5237	1.49E+08
Glenelg Hwy F/S LINTON	46146	1309604/1	Countrv Fire Authoritv	Countrv Fire Authority	143.5627	1.61E+08
Glenelg Hwy F/S LINTON	46146	1309604/1	Countrv Fire Authoritv	Countrv Fire Authority	143.5627	1.61E+08
Bute Scenic Reserve Government Road LINTON	204824	1800510/1	DEPARTMENT OF JUSTICE AND	DEPARTMENT OF JUSTICE AND	143.5237	1.67E+08
Bute Scenic Reserve Government Road LINTON	204824	1800510/1	DEPARTMENT OF JUSTICE AND	DEPARTMENT OF JUSTICE AND	143.5237	1.72E+08
Bute Scenic Reserve Government Road LINTON	204824	1327849/1	DEPARTMENT OF JUSTICE AND	DEPARTMENT OF JUSTICE AND	143.5237	1.49E+08
Bute Scenic Reserve Government Road LINTON	204824	1800506/1	DEPARTMENT OF JUSTICE AND	DEPARTMENT OF JUSTICE AND	143.5237	1.73E+08
Bute Scenic Reserve Government Road LINTON	204824	1800506/1	DEPARTMENT OF JUSTICE AND	DEPARTMENT OF JUSTICE AND	143.5237	1.68E+08
CFA Fire Station 54-56 Montgomery Street Skipton	138025	1310317/1	Countrv Fire Authority	Countrv Fire Authority	143.3596	1.61E+08
CFA Fire Station 54-56 Montgomery Street Skipton	138025	1310317/1	Countrv Fire Authority	Countrv Fire Authority	143.3596	1.61E+08
Bute Scenic Reserve Government Road LINTON	204824	12156689/1	DEPARTMENT OF JUSTICE AND	DEPARTMENT OF JUSTICE AND	143.5237	1.68E+08
Bute Scenic Reserve Government Road LINTON	204824	12156689/1	DEPARTMENT OF JUSTICE AND	DEPARTMENT OF JUSTICE AND	143.5237	1.73E+08
Bute Scenic Reserve Government Road LINTON	204824	10269984/1	DEPARTMENT OF JUSTICE AND	DEPARTMENT OF JUSTICE AND	143.5237	1.72E+08
Bute Scenic Reserve Government Road LINTON	204824	10269984/1	DEPARTMENT OF JUSTICE AND	DEPARTMENT OF JUSTICE AND	143.5237	1.67E+08
Glenelg Hwy F/S LINTON	46146	1309605/1	Countrv Fire Authoritv	Countrv Fire Authority	143.5627	1.61E+08
Glenelg Hwy F/S LINTON	46146	1309605/1	Countrv Fire Authoritv	Countrv Fire Authority	143.5627	1.61E+08
Bute Scenic Reserve Government Road LINTON	204824	1804465/1	DEPARTMENT OF JUSTICE AND	DEPARTMENT OF JUSTICE AND	143.5237	1.67E+08
Bute Scenic Reserve Government Road LINTON	204824	1804465/1	DEPARTMENT OF JUSTICE AND	DEPARTMENT OF JUSTICE AND	143.5237	1.71E+08
Bute Scenic Reserve Government Road LINTON	204824	1800509/1	DEPARTMENT OF JUSTICE AND	DEPARTMENT OF JUSTICE AND	143.5237	1.72E+08
Bute Scenic Reserve Government Road LINTON	204824	1800509/1	DEPARTMENT OF JUSTICE AND	DEPARTMENT OF JUSTICE AND	143.5237	1.67E+08
CFA Fire Station 54-56 Montgomery Street Skipton	138025	1310316/1	Countrv Fire Authority	Countrv Fire Authority	143.3596	1.61E+08
CFA Fire Station 54-56 Montgomery Street Skipton	138025	1310316/1	Countrv Fire Authority	Countrv Fire Authority	143.3596	1.61E+08
Bute Scenic Reserve Government Road LINTON	204824	10269983/1	DEPARTMENT OF JUSTICE AND	DEPARTMENT OF JUSTICE AND	143.5237	1.72E+08
Bute Scenic Reserve Government Road LINTON	204824	10269983/1	DEPARTMENT OF JUSTICE AND	DEPARTMENT OF JUSTICE AND	143.5237	1.67E+08
CFA Fire Station 54-56 Montgomery Street Skipton	138025	1310318/1	Countrv Fire Authority	Countrv Fire Authority	143.3596	1.61E+08
CFA Fire Station 54-56 Montgomery Street Skipton	138025	1310318/1	Countrv Fire Authority	Countrv Fire Authority	143.3596	1.61E+08

Public Telecommunications Services Transmitters						
Name	Site ID	Licence Number	Licensee	Latitude	Longitude	Frequency
Bute Scenic Reserve Government Road LINTON	204824	10094268/223	OPTUS MOBILE PTY LIMITED	-37.6894	143.5237	1.96E+09
Bute Scenic Reserve Government Road LINTON	204824	10094268/223	OPTUS MOBILE PTY LIMITED	-37.6894	143.5237	2.15E+09
Optus Site Skipton Near Corner of Wongan Rd-Skipton Rd & Alexanders Rd SKIPTON	135347	10094268/223	OPTUS MOBILE PTY LIMITED	-37.673	143.3546	1.96E+09
Optus Site Skipton Near Corner of Wongan Rd-Skipton Rd & Alexanders Rd SKIPTON	135347	10094268/223	OPTUS MOBILE PTY LIMITED	-37.673	143.3546	2.15E+09
Bute Scenic Reserve Government Road LINTON	204824	10094268/223	OPTUS MOBILE PTY LIMITED	-37.6894	143.5237	2.14E+09
Bute Scenic Reserve Government Road LINTON	204824	10094268/223	OPTUS MOBILE PTY LIMITED	-37.6894	143.5237	1.95E+09
Optus Site Skipton Near Corner of Wongan Rd-Skipton Rd & Alexanders Rd SKIPTON	135347	10094268/223	OPTUS MOBILE PTY LIMITED	-37.673	143.3546	2.14E+09
Optus Site Skipton Near Corner of Wongan Rd-Skipton Rd & Alexanders Rd SKIPTON	135347	10094268/223	OPTUS MOBILE PTY LIMITED	-37.673	143.3546	1.95E+09

Appendix C

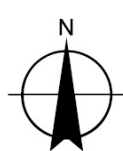
Reference Figures



LEGEND

- Site Boundary
- Proposed WTG
- Point-to-Point Link
- Fixed Point-to-Point Transmitter

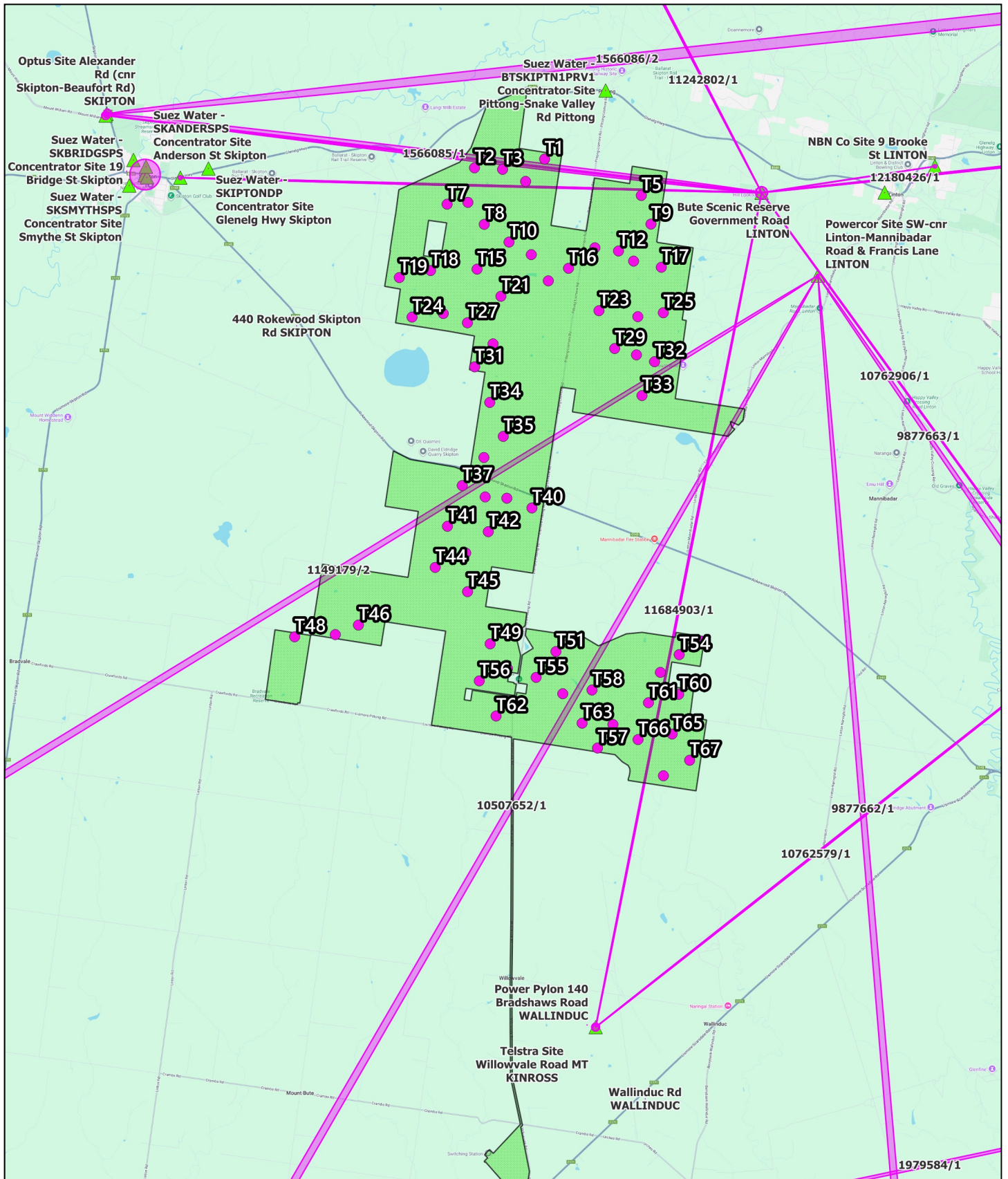
Paper Size A4
0 2.5 5 km
Map Projection: Universal Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia 1994
Grid: Map Grid Of Australia, Zone 54



Moreton Hill Wind Farm
EMI Impact Assessment
Fixed Point-to-Point Radio System

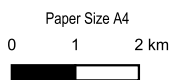
Project No. 12656042
Revision No. C02
Date. 02/02/2026

Figure 1

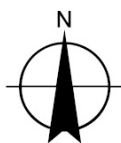


LEGEND

- Site Boundary
- Proposed WTG
- Point-to-Point Link
- Fixed Point-to-Point Transmitter



Map Projection: Universal Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia 1994
Grid: Map Grid Of Australia, Zone 54

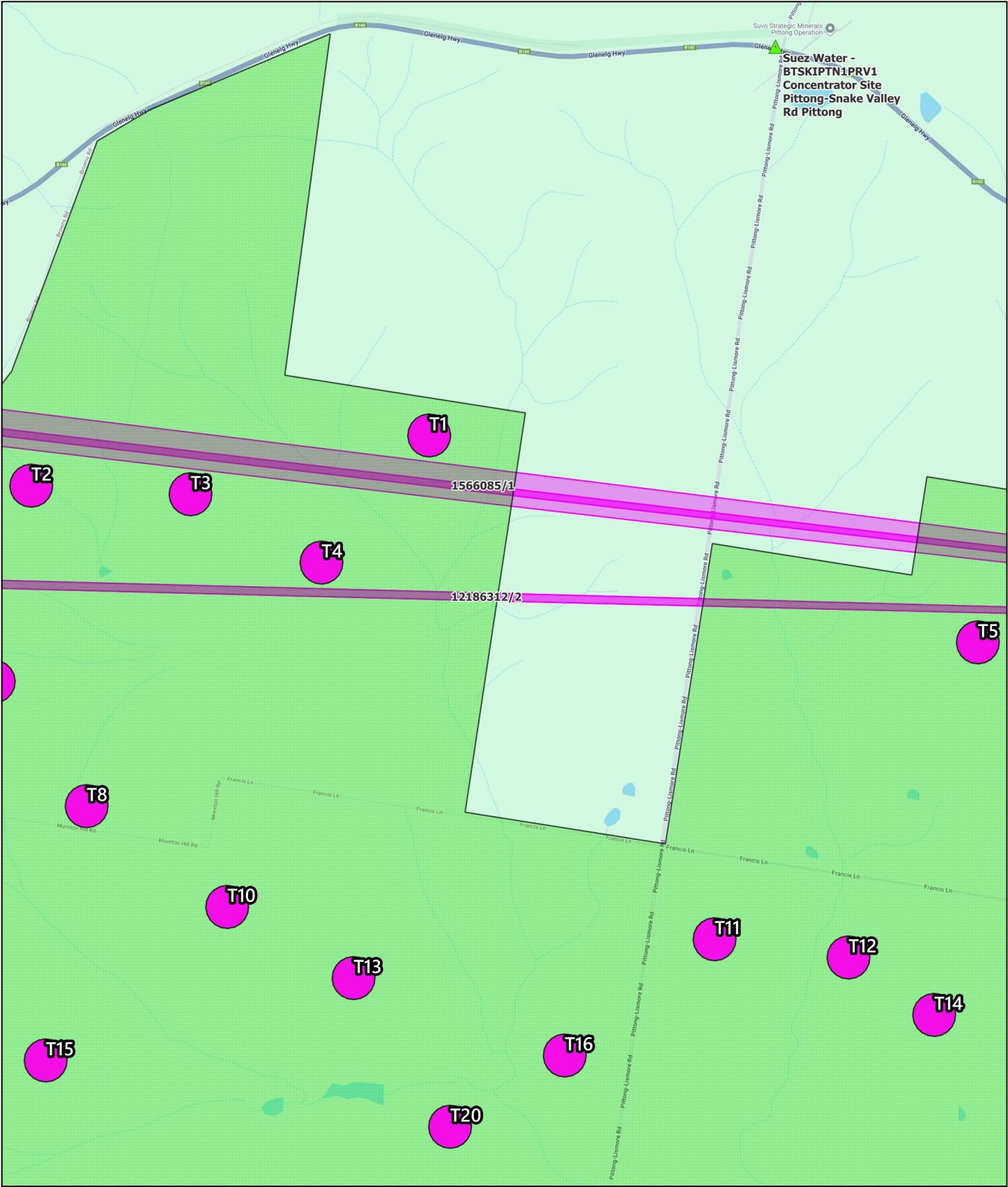


Moreton Hill Wind Farm
EMI Impact Assessment

Point-to-Point Exclusion Zones

Project No. 12656042
Revision No. C02
Date. 02/02/2026

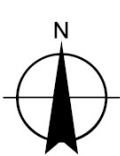
Figure 2



LEGEND

- Site Boundary
- Proposed WTG To Scale
- Point-to-Point Link
- Fixed Point-to-Point Transmitter

Paper Size A4
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Map Projection: Universal Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia 1994
Grid: Map Grid Of Australia, Zone 54

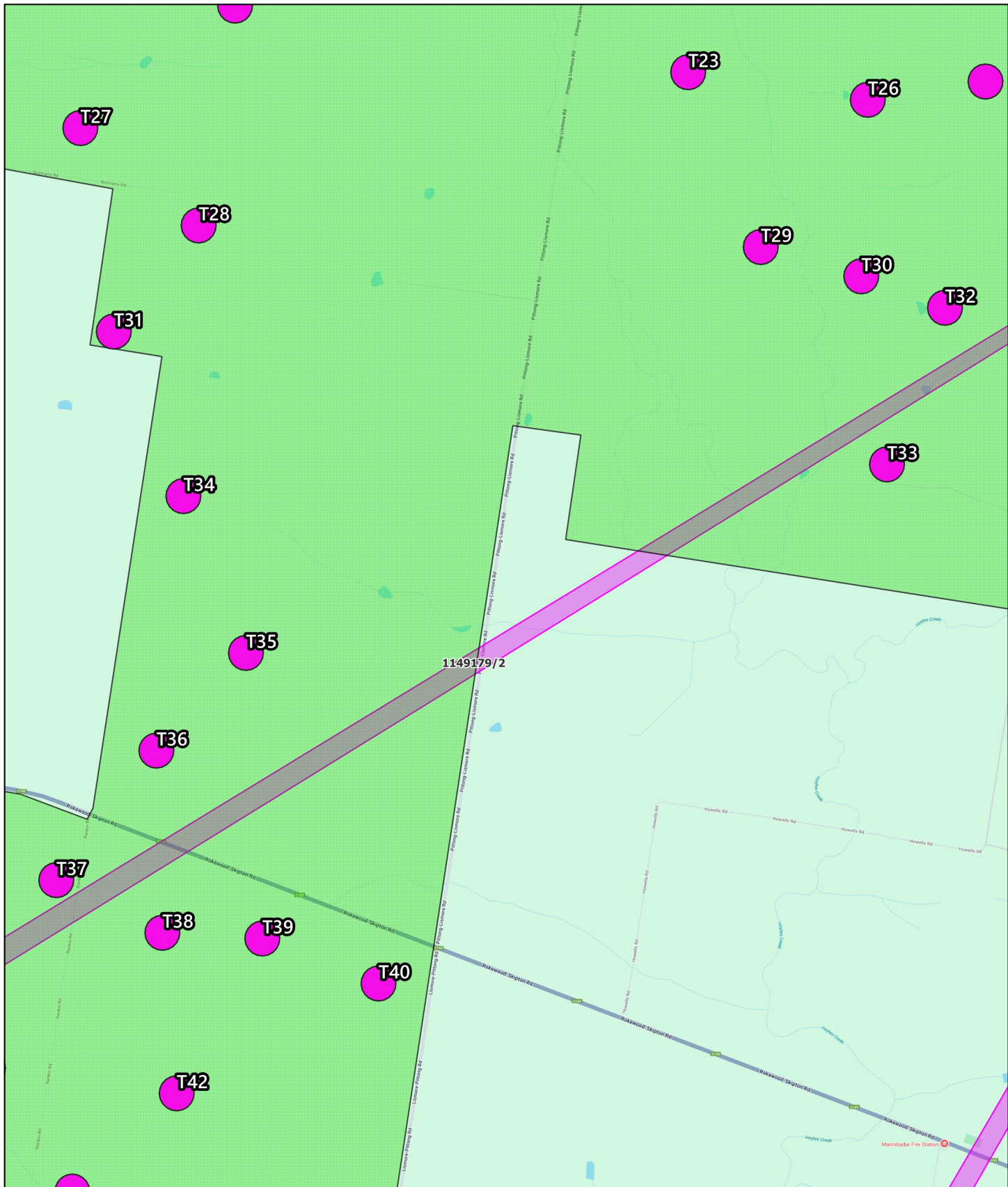


Moreton Hill Wind Farm
EMI Impact Assessment
**Fixed Point-to-Point Radio
System - T1/T2/T3/T4/T5 Detail**

Project No. 12656042
Revision No. C02
Date. 02/02/2026

Figure 3

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Data source: Google Earth Imagery 2026. Created by: JR



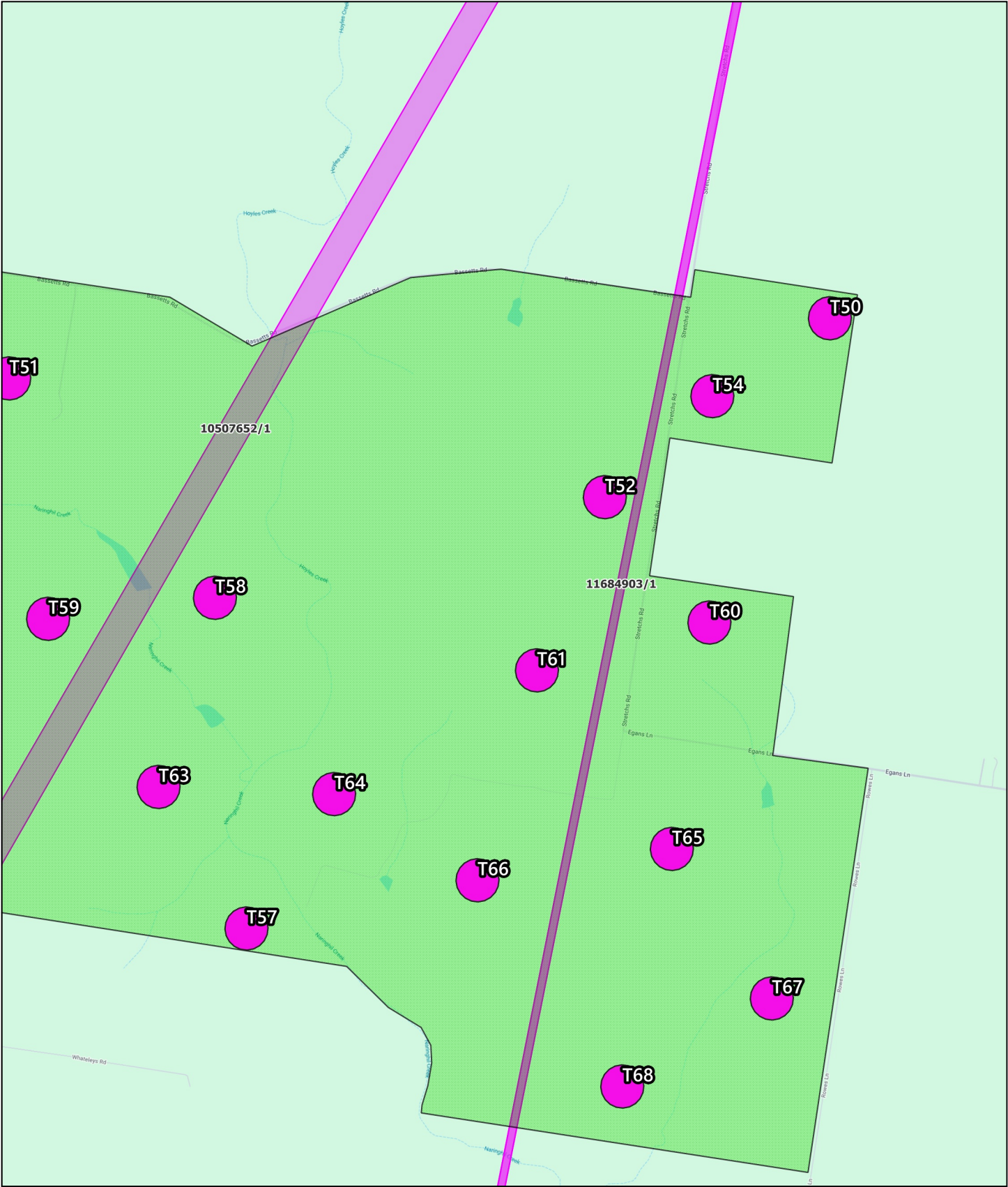
LEGEND

- Site Boundary
- Proposed WTG
- Point-to-Point Link

Paper Size A4 0 0.25 0.5 km Map Projection: Universal Transverse Mercator Horizontal Datum: Geocentric Datum of Australia 1994 Grid: Map Grid Of Australia, Zone 54		 	Moreton Hill Wind Farm EMI Impact Assessment Fixed Point-to-Point Radio System - T32/T37 Detail	Project No. 12656042 Revision No. C02 Date. 02/02/2026
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Figure 4

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Data source: Google Earth Imagery 2026. Created by: JR

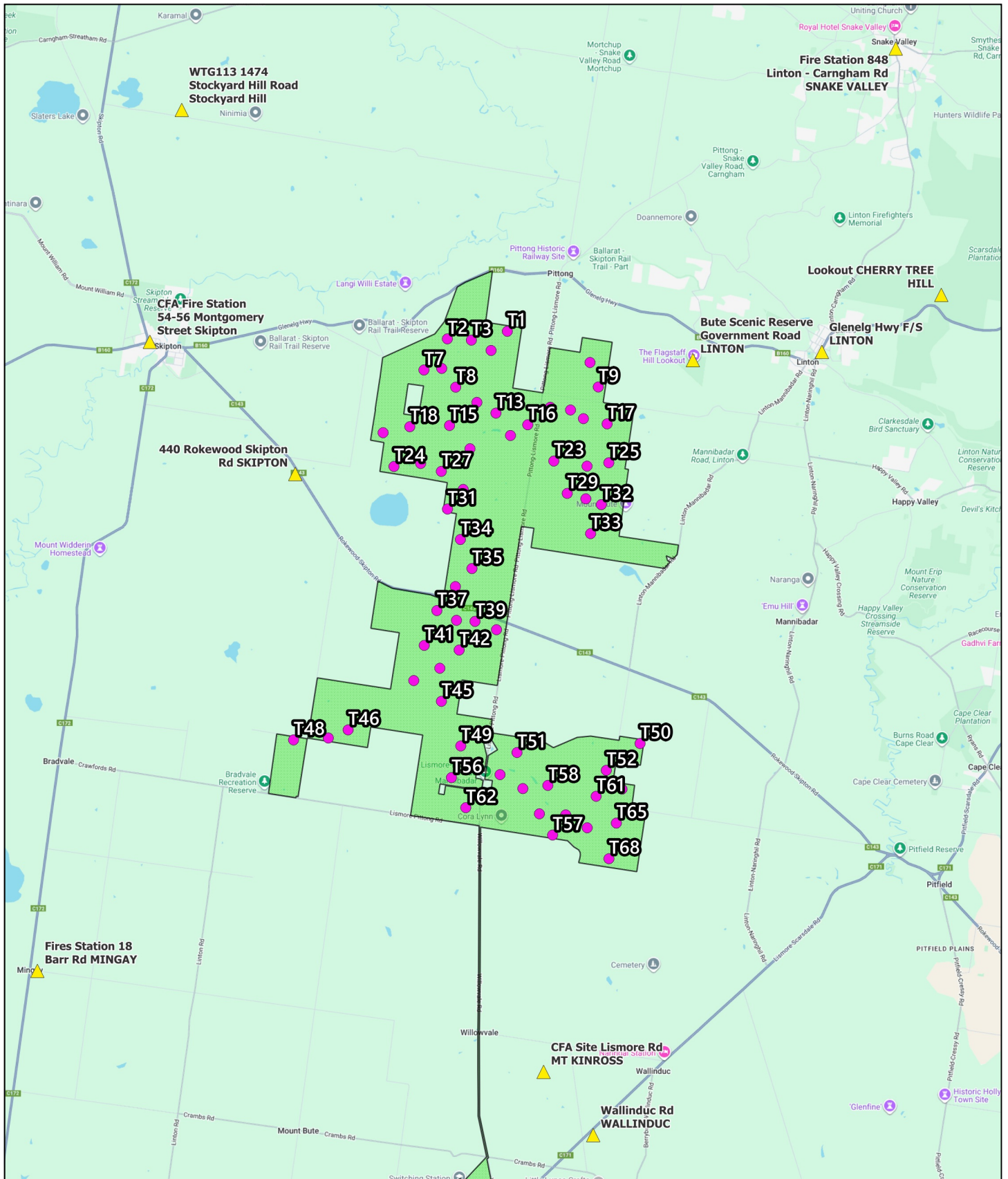


- LEGEND
- Site Boundary
 - Proposed WTG
 - Point-to-Point Link

Paper Size A4 0 0.25 0.5 km Map Projection: Universal Transverse Mercator Horizontal Datum: Geocentric Datum of Australia 1994 Grid: Map Grid Of Australia, Zone 54	N	 	Moreton Hill Wind Farm EMI Impact Assessment Fixed Point-to-Point Radio System - T52/T54 Detail	Project No. 12656042 Revision No. C02 Date. 02/02/2026
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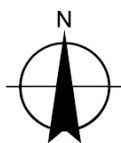
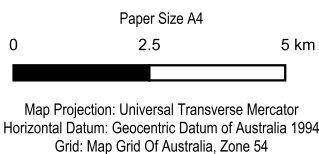
Figure 5

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Data source: Google Earth Imagery 2026. Created by: JR



LEGEND

- Site Boundary
- Proposed WTG
- Land Mobile Transmitter

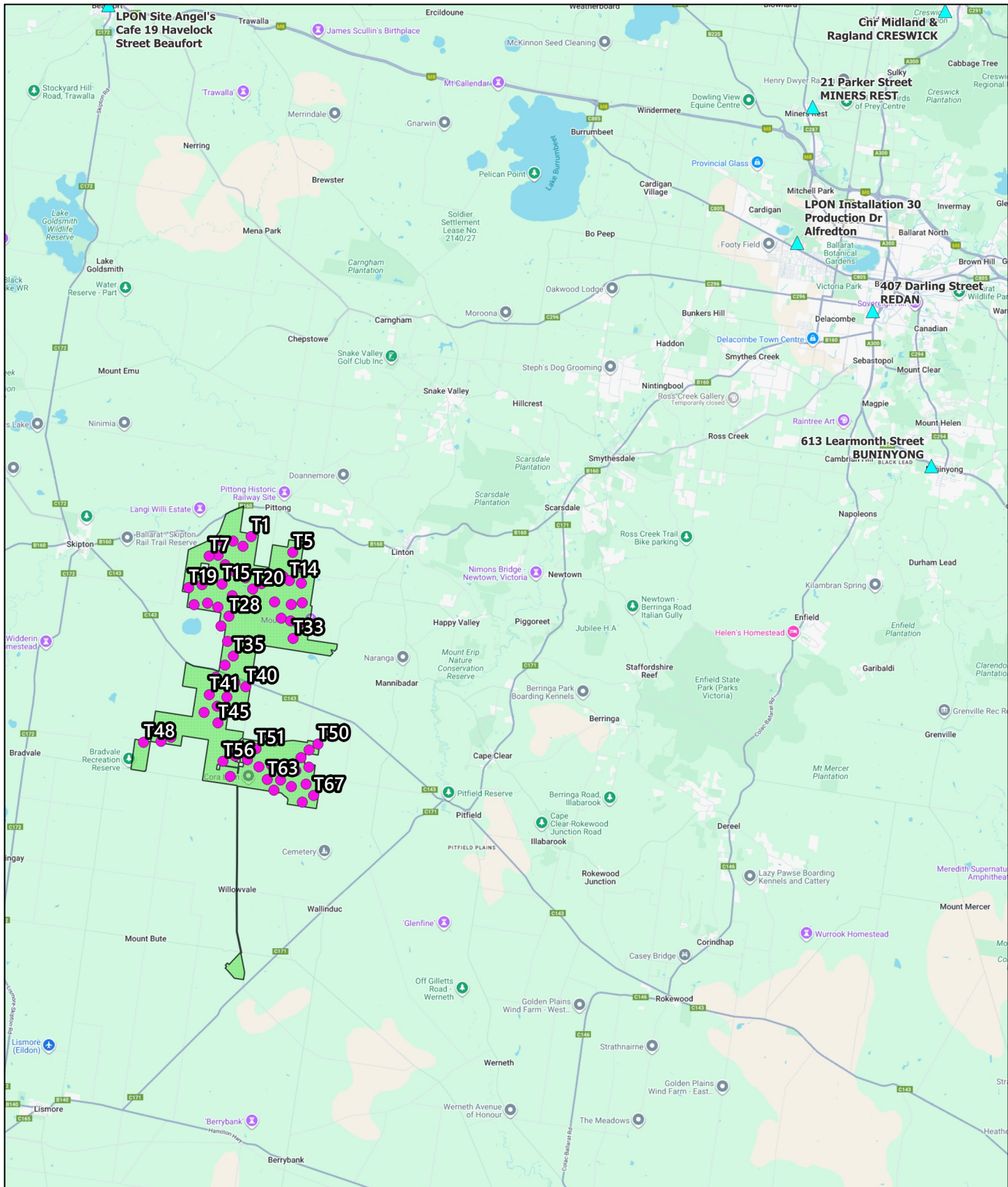


Moreton Hill Wind Farm
EMI Impact Assessment

Land Mobile Radio
Transmitters

Project No. 12656042
Revision No. C02
Date. 02/02/2026

Figure 6

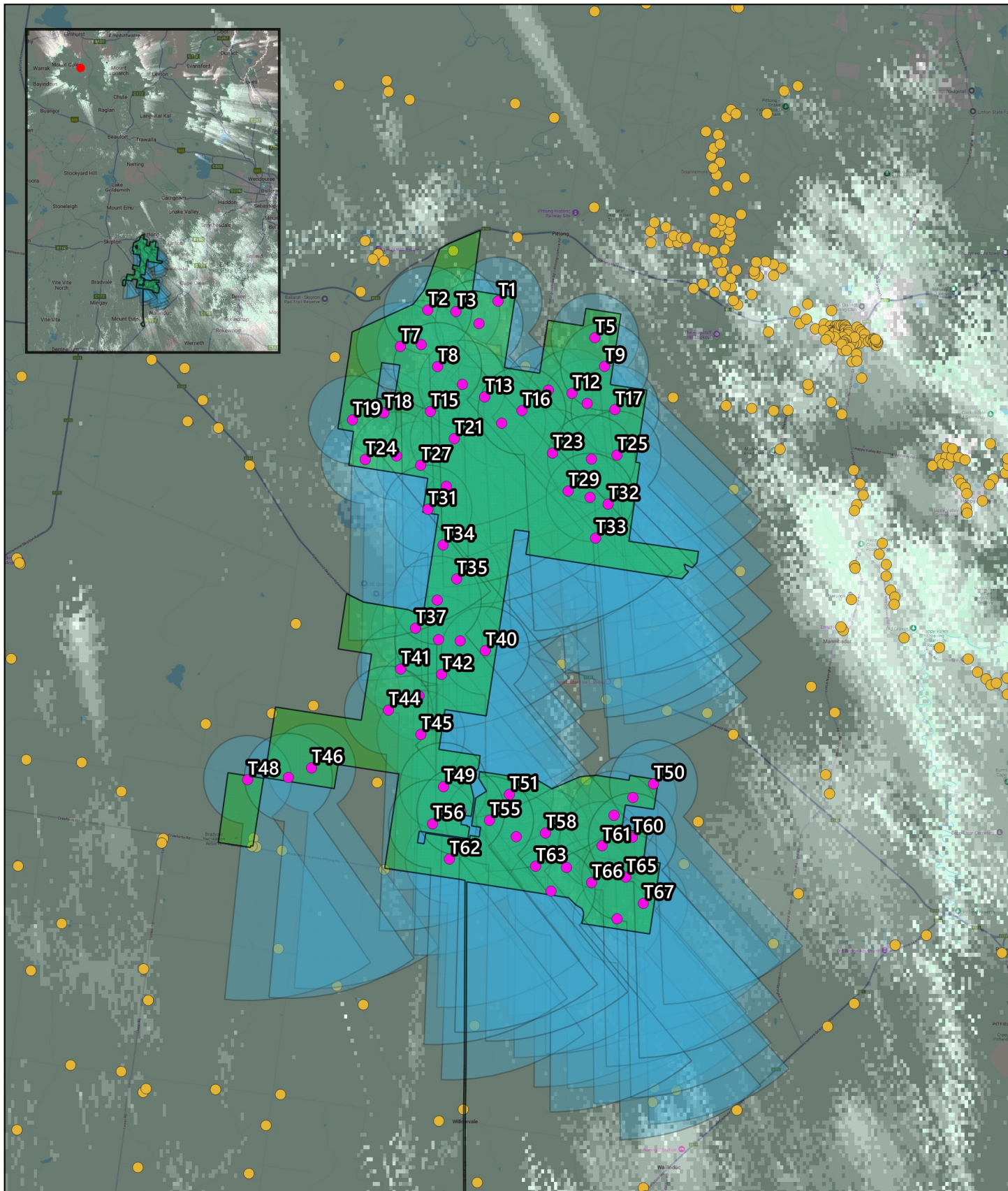


- LEGEND**
- Site Boundary
 - Proposed WTG
 - Broadcasting Transmitter

Paper Size A4 0 5 10 km Map Projection: Universal Transverse Mercator Horizontal Datum: Geocentric Datum of Australia 1994 Grid: Map Grid Of Australia, Zone 54			Moreton Hill Wind Farm EMI Impact Assessment Broadcast Transmitters	Project No. 12656042 Revision No. C02 Date. 02/02/2026
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Figure 7

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Data source: Google Earth Imagery 2026. Created by: JR

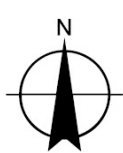


LEGEND

- Site Boundary
- Proposed WTG
- Scatter Zone
- Dwellings
- Ballarat Transmitter
- Band 1 (Gray)
- Strong
- Weak

Paper Size A4
0 2.5 5 km

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia 1994
Grid: Map Grid Of Australia, Zone 54

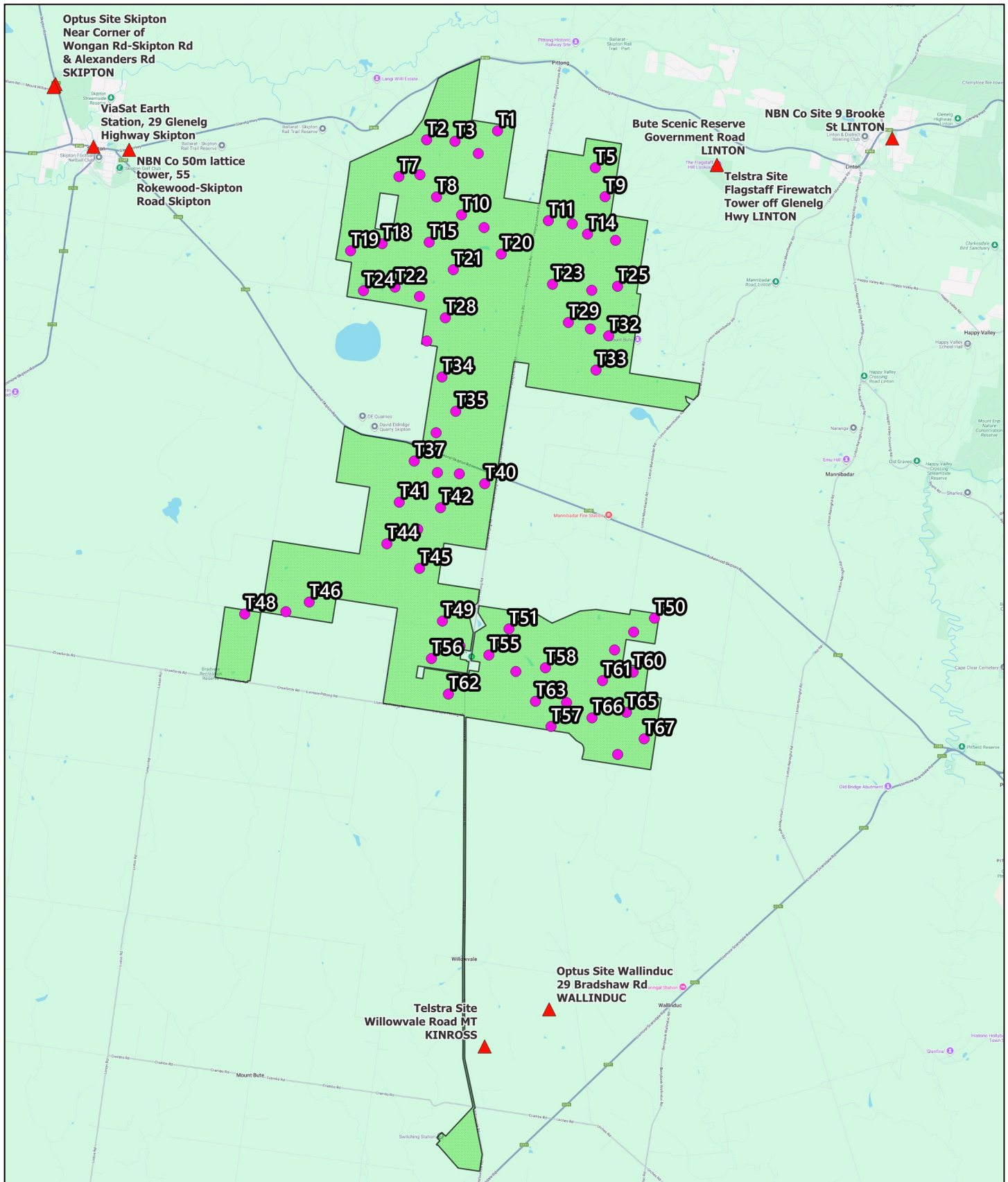


Moreton Hill Wind Farm
EMI Impact Assessment

Ballarat TV Transmitter Scatter Zones

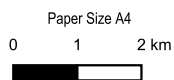
Project No. 12656042
Revision No. C02
Date. 02/02/2026

Figure 8

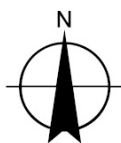


LEGEND

- Site Boundary
- Proposed WTG
- Spectrum Transmitter



Map Projection: Universal Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia 1994
Grid: Map Grid Of Australia, Zone 54



Moreton Hill Wind Farm
EMI Impact Assessment

Spectrum Transmitters

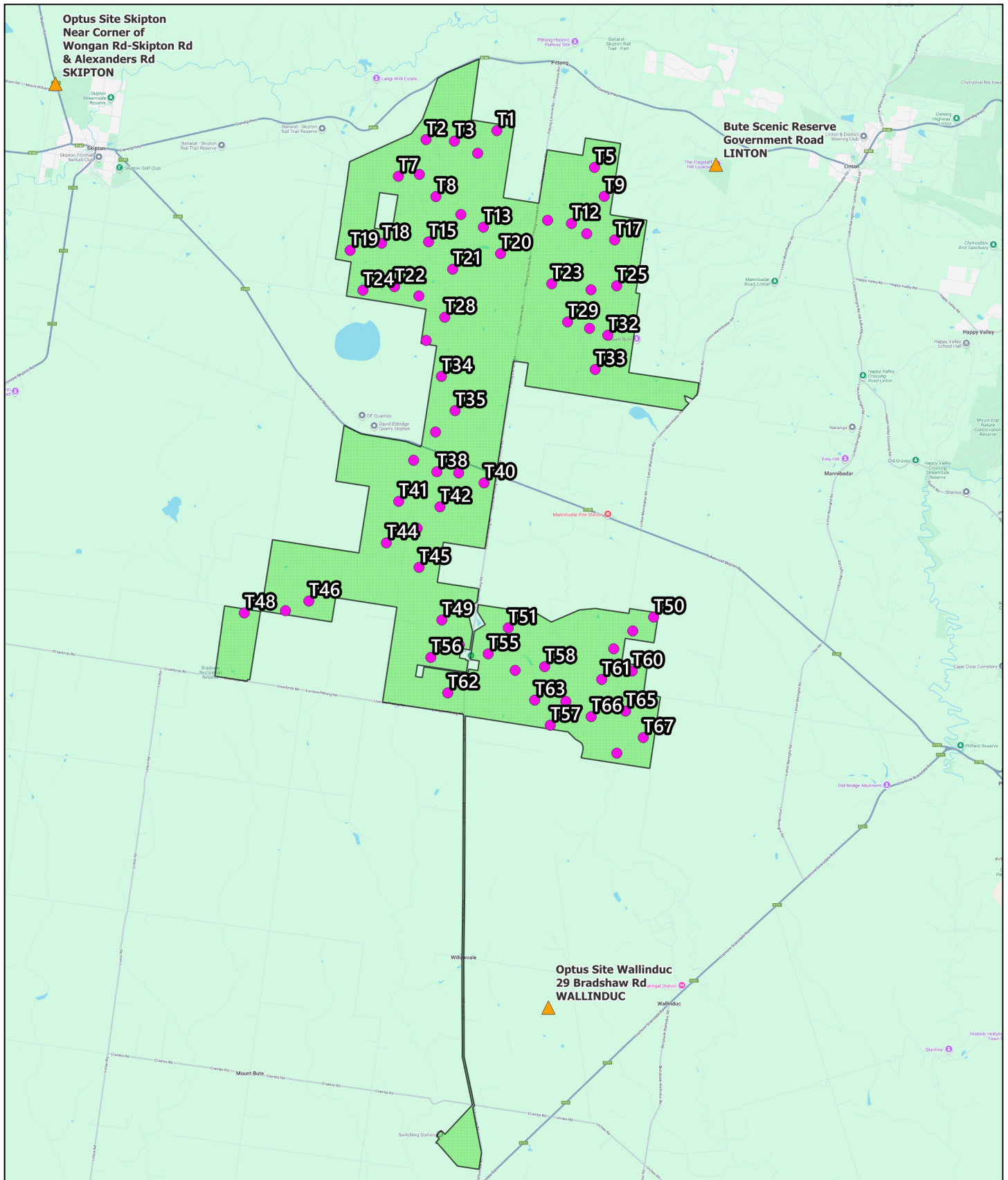
Project No. 12656042
Revision No. C02
Date. 02/02/2026

Figure 9

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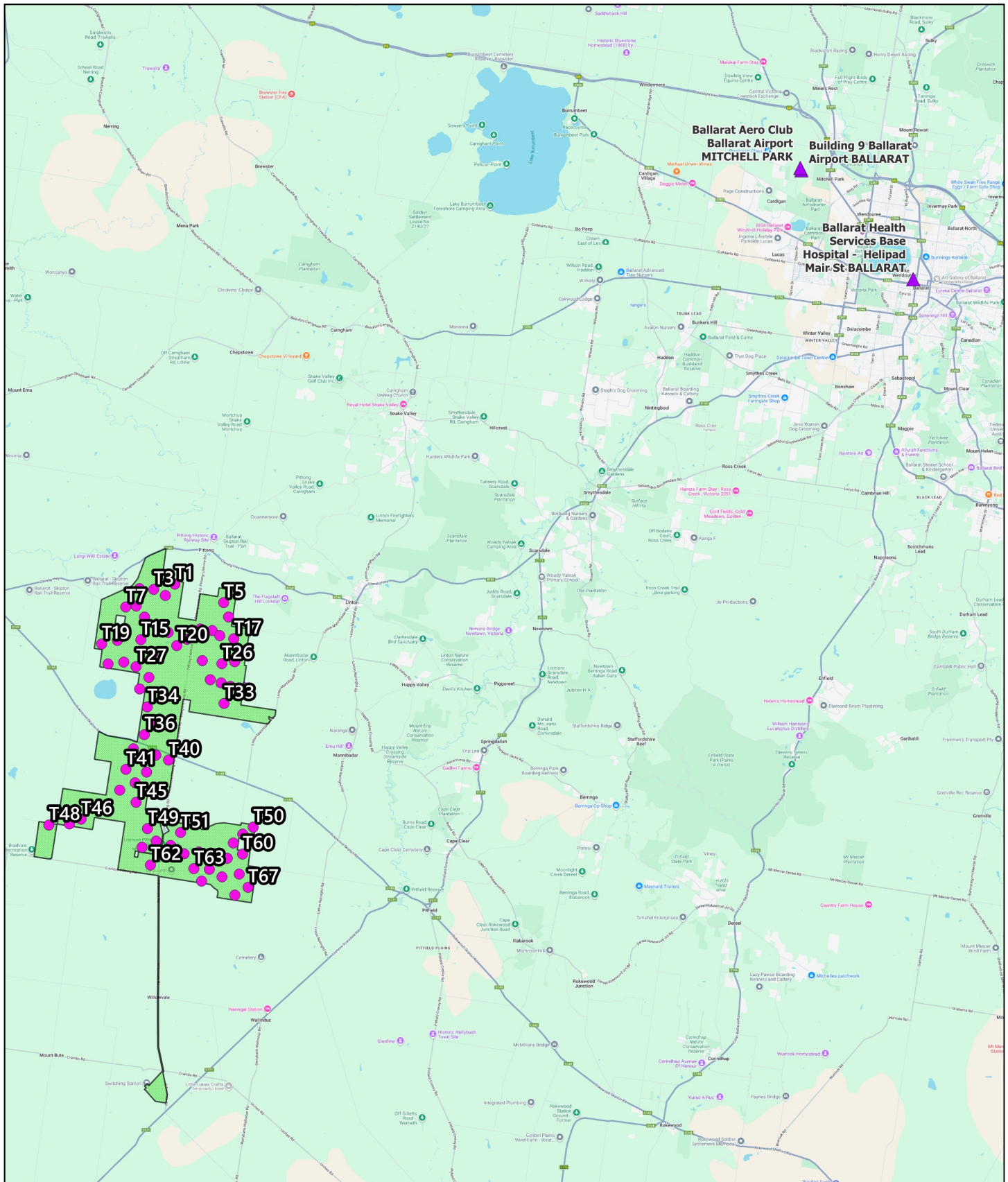
Data source: Google Earth Imagery 2026. Created by: JR



- LEGEND**
- Site Boundary
 - Proposed WTG
 - PTS Transmitter

Paper Size A4 0 1 2 km Map Projection: Universal Transverse Mercator Horizontal Datum: Geocentric Datum of Australia 1994 Grid: Map Grid Of Australia, Zone 54		 	Moreton Hill Wind Farm EMI Impact Assessment Public Telecommunications Services Transmitters	Project No. 12656042 Revision No. C02 Date. 02/02/2026
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Figure 10

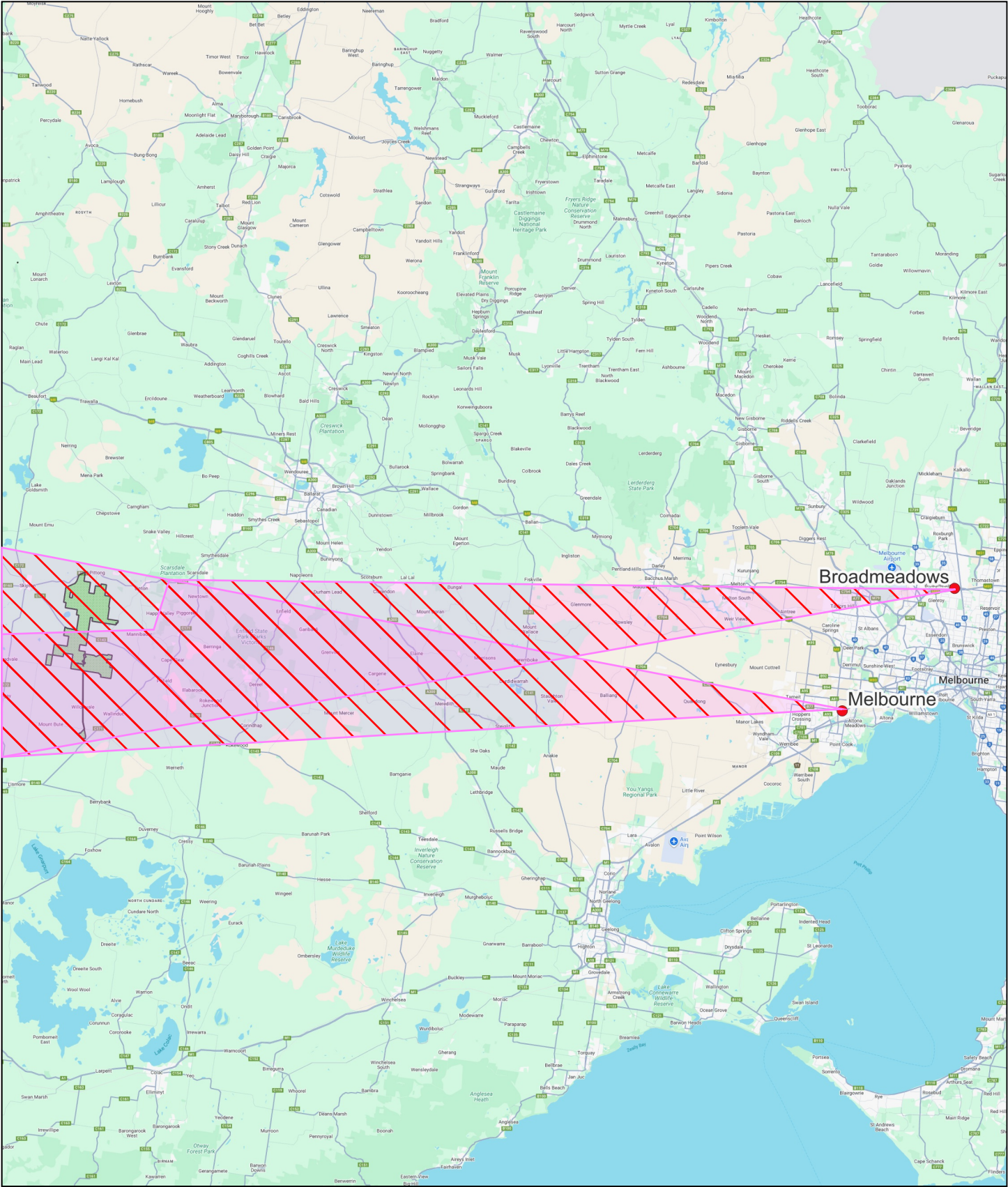


- LEGEND**
- Site Boundary
 - Proposed WTG
 - Aeronautical Transmitter

Paper Size A4 0 2.5 5 km Map Projection: Universal Transverse Mercator Horizontal Datum: Geocentric Datum of Australia 1994 Grid: Map Grid Of Australia, Zone 54		 	Moreton Hill Wind Farm EMI Impact Assessment Aeronautical Transmitters	Project No. 12656042 Revision No. C02 Date. 02/02/2026
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Figure 11

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 Data source: Google Earth Imagery 2026. Created by: JR



- LEGEND**
- Site Boundary
 - Weather Radar
 - Radar Cone

Paper Size A4

0 10 20 km

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia 1994
Grid: Map Grid Of Australia, Zone 54

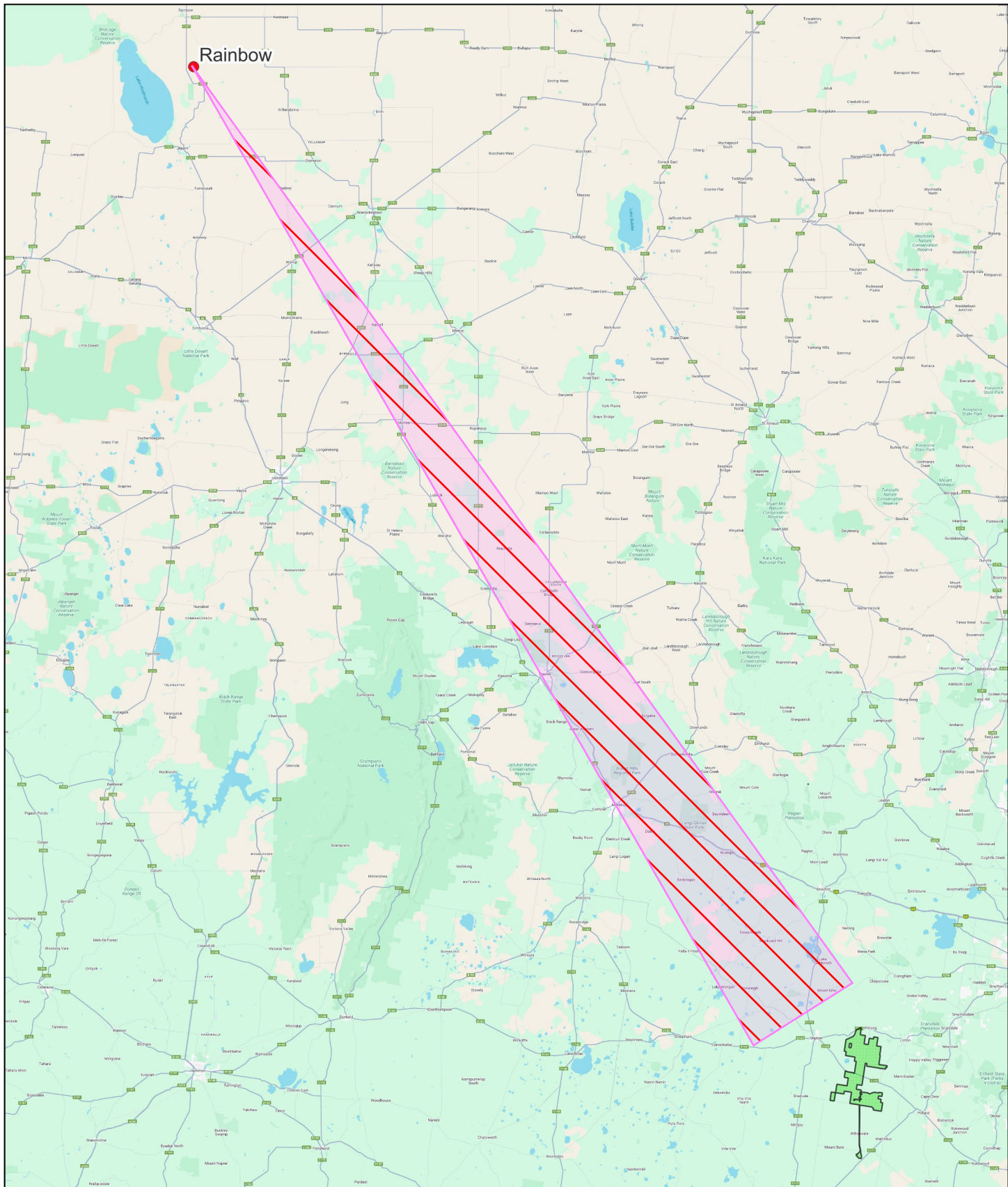
Moreton Hill Wind Farm
EMI Impact Assessment

**Melbourne Meteorological
Radar**

Project No. 12656042
Revision No. C02
Date. 02/02/2026

Figure 12

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Data source: Google Earth Imagery 2026. Created by: JR



- LEGEND**
- Site Boundary
 - Weather Radar
 - Radar Cone

Paper Size A4

0 10 20 km

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia 1994
Grid: Map Grid Of Australia, Zone 54

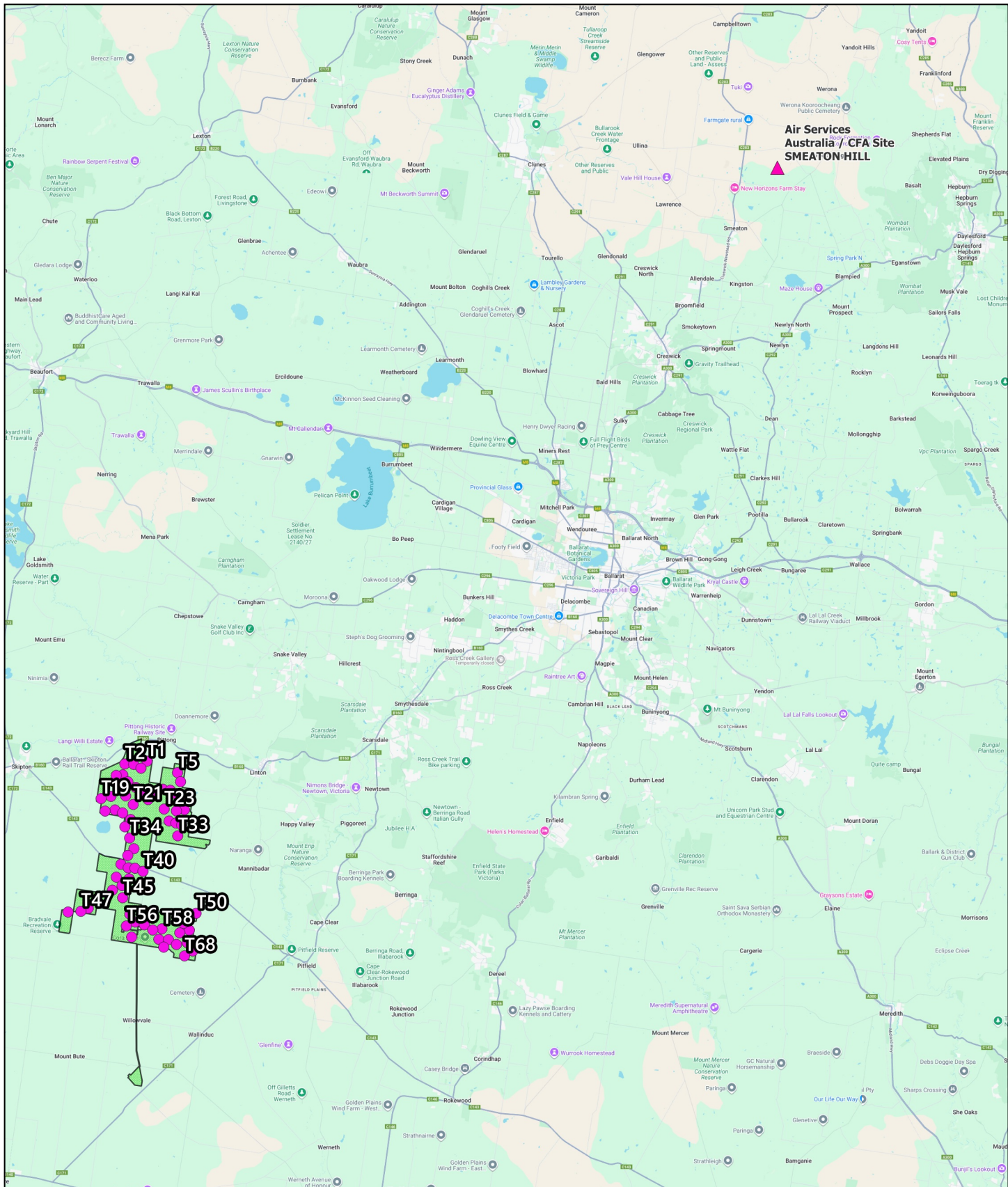
Moreton Hill Wind Farm
EMI Impact Assessment

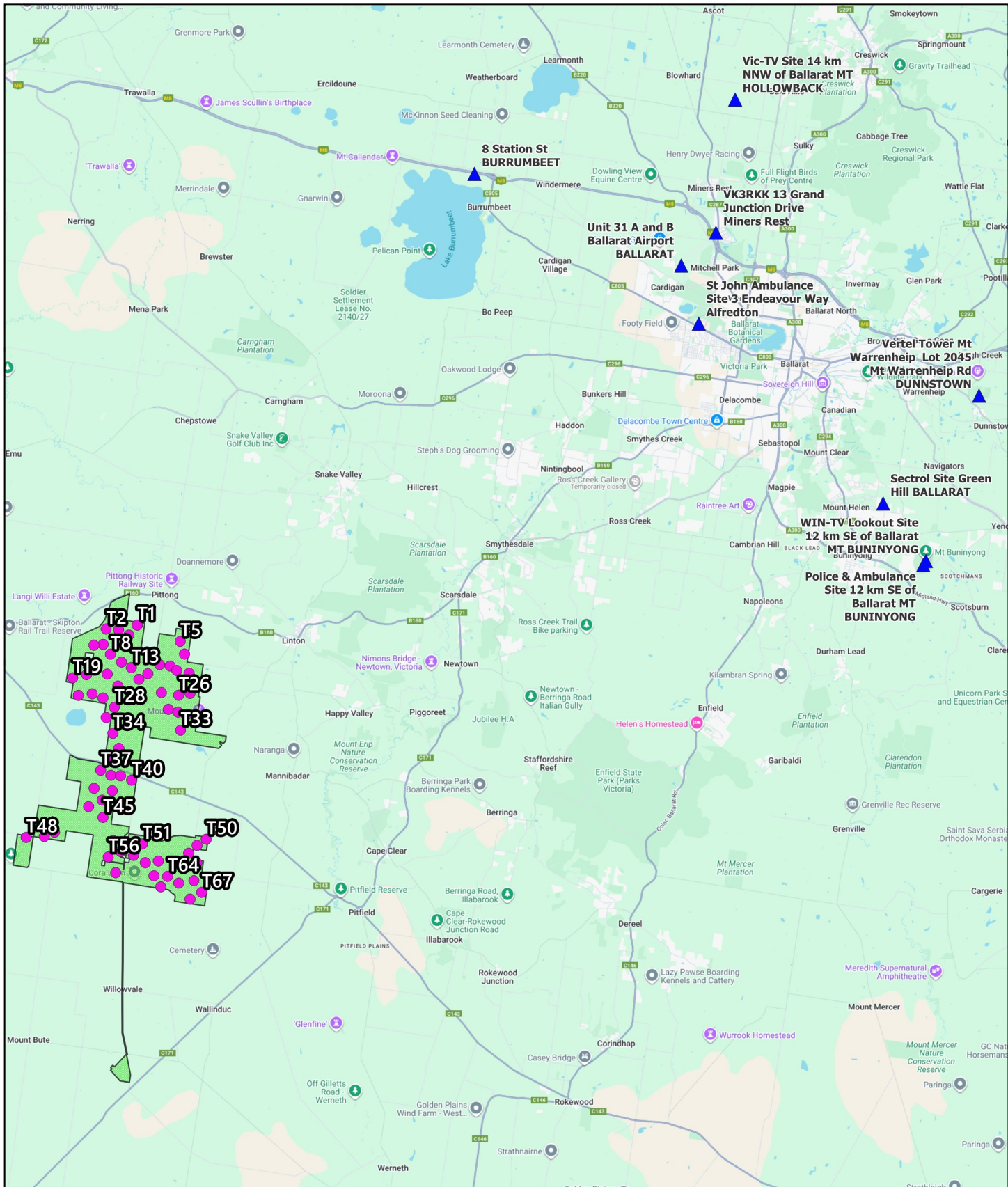
Rainbow Meteorological Radar

Project No. 12656042
Revision No. C02
Date. 02/02/2026

Figure 13

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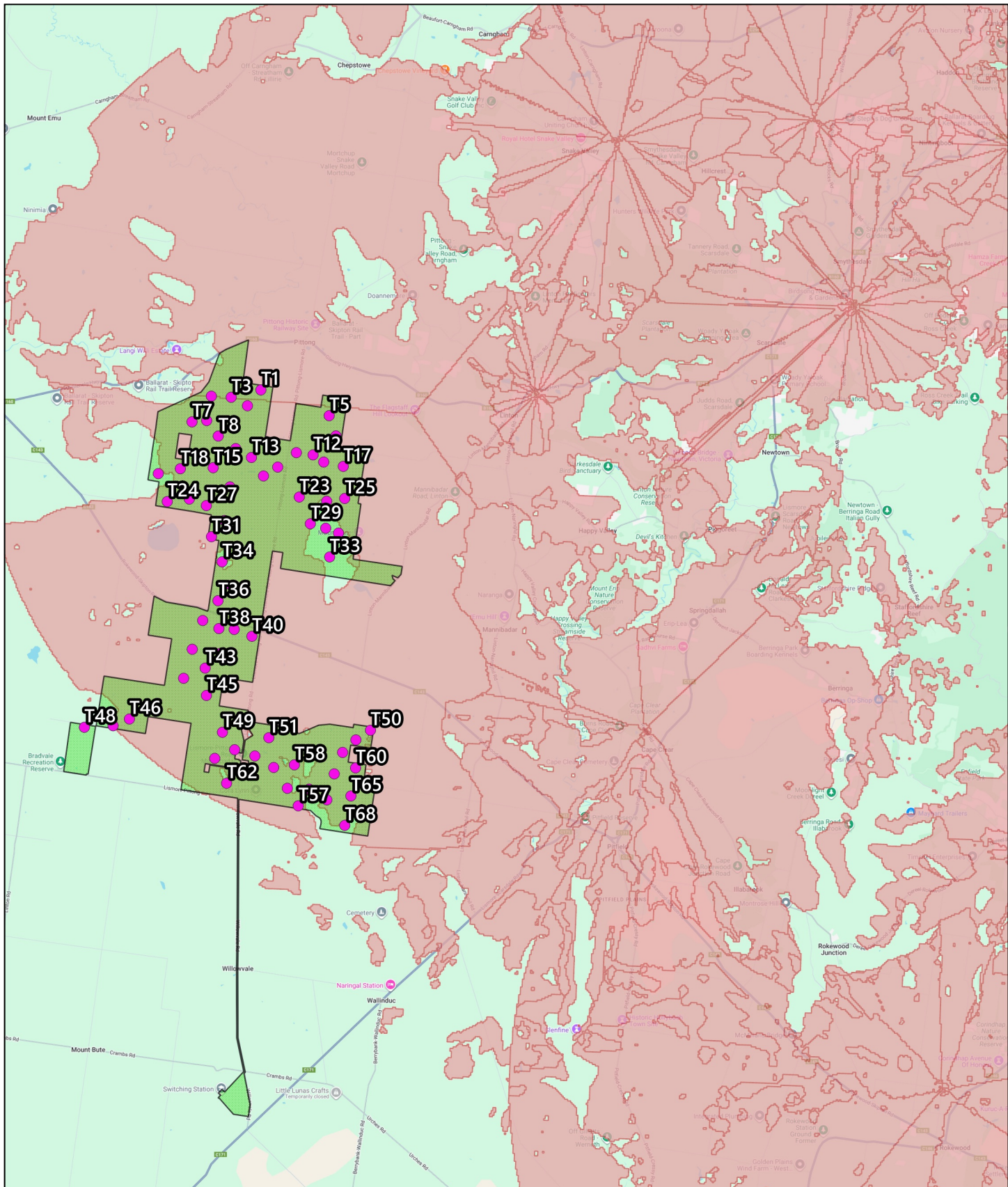


- LEGEND**
- Site Boundary
 - Proposed WTG
 - Amateur Transmitter

Paper Size A4 0 5 10 km Map Projection: Universal Transverse Mercator Horizontal Datum: Geocentric Datum of Australia 1994 Grid: Map Grid Of Australia, Zone 54			Moreton Hill Wind Farm EMI Impact Assessment Amateur Transmitters	Project No. 12656042 Revision No. C02 Date. 02/02/2026
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Figure 15

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Data source: Google Earth Imagery 2026. Created by: JR



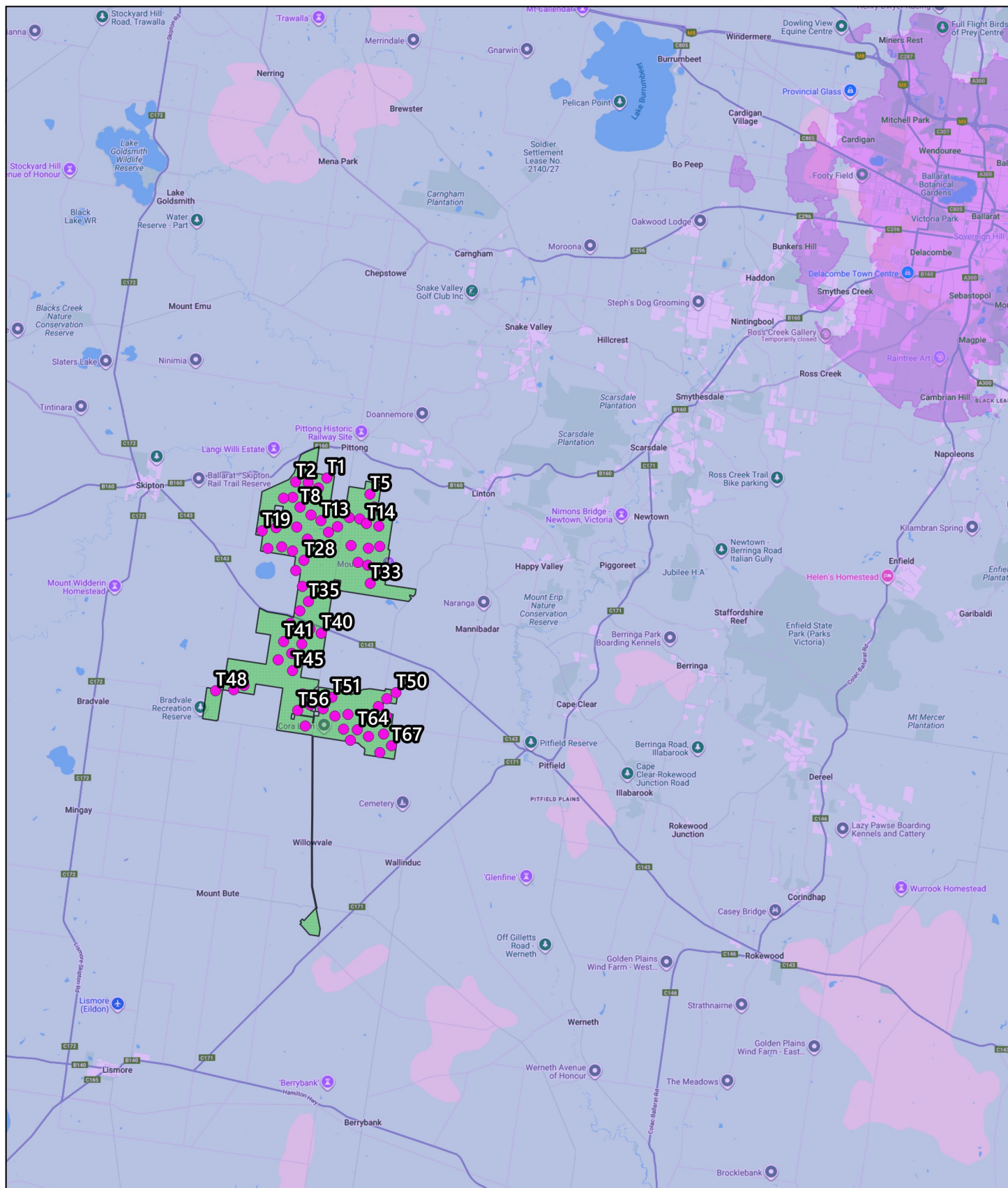
LEGEND

- Site Boundary
- Proposed WTG
- Fixed Wireless Coverage

Paper Size A4 0 2.5 5 km Map Projection: Universal Transverse Mercator Horizontal Datum: Geocentric Datum of Australia 1994 Grid: Map Grid Of Australia, Zone 54	N GHD SQUADRON ENERGY	Moreton Hill Wind Farm EMI Impact Assessment NBN Coverage	Project No. 12656042 Revision No. C02 Date. 02/02/2026
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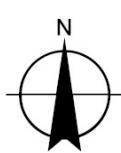
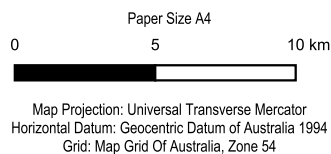
Figure 16

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Data source: Google Earth Imagery 2026. Created by: JR



LEGEND

-  Site Boundary
 Proposed WTG
 4G Coverage
 5G Coverage



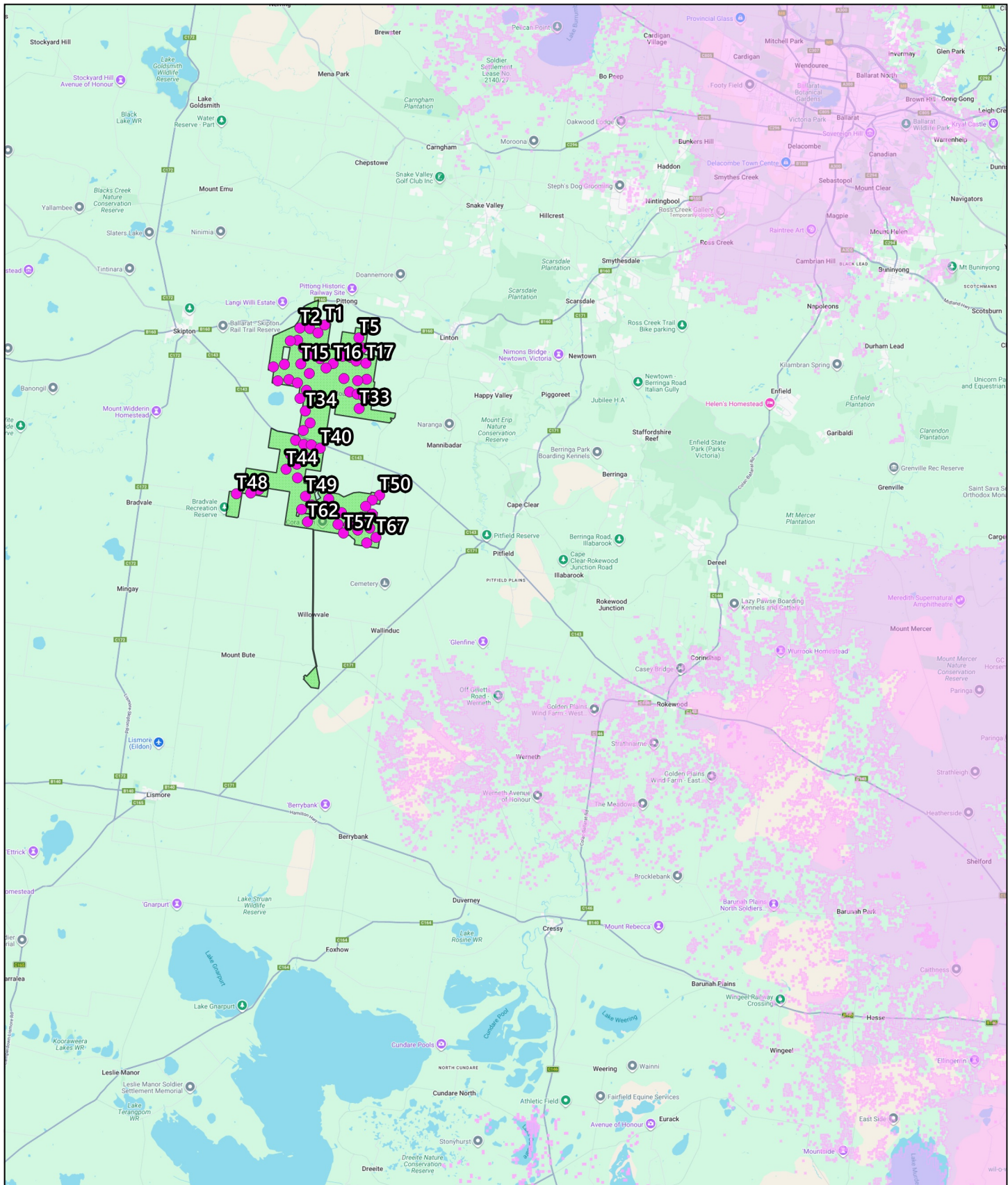
**SQUADRON
ENERGY**

Moreton Hill Wind Farm
EMI Impact Assessment

Telstra 4G and 5G Coverage

Project No. 12656042
Revision No. C02
Date. 02/02/2026

Figure 17

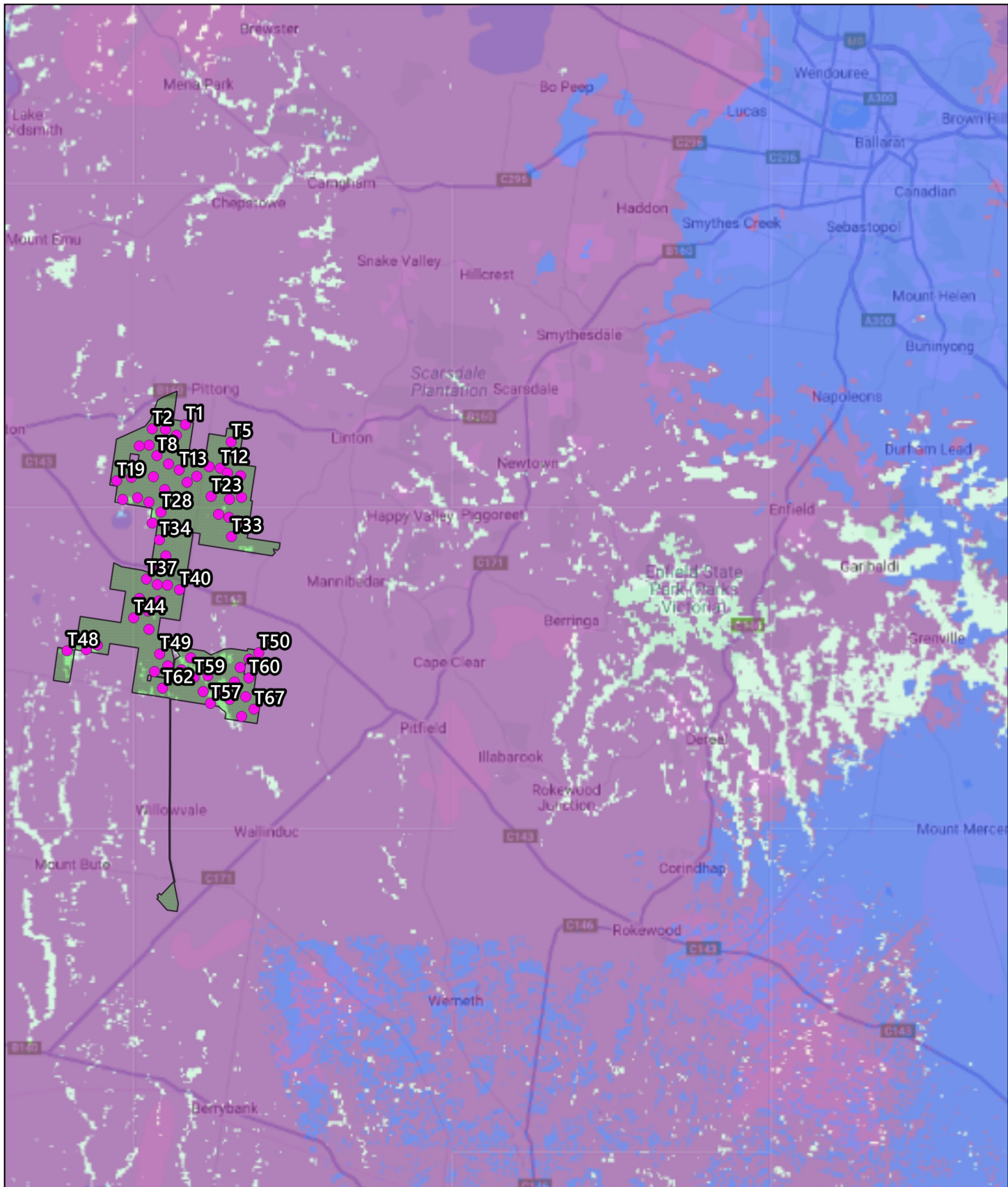


- LEGEND**
- Site Boundary
 - Proposed WTG
 - 5G Coverage

Paper Size A4 0 5 10 km Map Projection: Universal Transverse Mercator Horizontal Datum: Geocentric Datum of Australia 1994 Grid: Map Grid Of Australia, Zone 54			Moreton Hill Wind Farm EMI Impact Assessment Optus 5G Coverage	Project No. 12656042 Revision No. C02 Date. 02/02/2026
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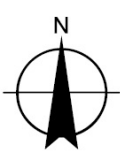
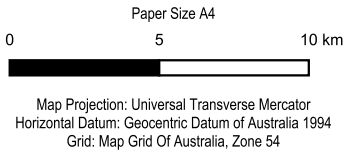
Figure 18

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LEGEND

- Site Boundary
- Proposed WTG
- 4G Coverage
- 5G Coverage



Moreton Hill Wind Farm
EMI Impact Assessment

Project No. 12656042
Revision No. C02
Date. 02/02/2026

Vodafone 4G and 5G Coverage

Figure 19

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Data source: Google Earth Imagery 2026. Created by: JR

Appendix D

Stakeholder Consultation

Figure 1

From: Peter Lausberg <peter.lausberg@refuture.com.au>
Sent: Monday, 30 June 2025 9:42 AM
To: Conway, David; Josephine Radford
Cc: Brendan Siebert; Allan Macdonald; Whan Khamthara; David Shapero; Laura Jeffrey
Subject: Re: Powercor Australia - Moreton Hill Wind Farm Analysis

Follow Up Flag: Follow up
Flag Status: Completed

Good Morning David and Josephine

Thank you for all your work on this matter.

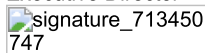
In relation to your findings and on behalf of Squadron Energy (REFuture is Squadron's development partner) we would like to inform you of the following.

- T32 has been micro sited approximately 200m NNW and therefore should no longer be an issue.
- T37 remains un micro sited and seems to be clear of the second Fresnel zone as described by GHD. Because the layout is finalised for issue to DTP we propose that T32 can be micro sited as per DTP standard permit conditions by 100m in any direction after permit. With this discretion available to us we feel confident that we will be able to avoid impact to the Mt Shadwell – Linton link if the project is constructed.

We hope this helps in your assessments

Kind Regards

Pete Lausberg
Executive Director

signature_713450
747

REF Developments Pty Ltd

M: +41 79 250 7356

E: peter.lausberg@refuture.com.au

W: <http://www.refuture.com.au>

From: Conway, David <DConway@powercor.com.au>
Date: Monday, 30 June 2025 at 08:41
To: Josephine Radford <Josephine.Radford@ghd.com>
Cc: Brendan Siebert <Brendan.Siebert@ghd.com>, Allan Macdonald <Allan.Macdonald@ghd.com>, Whan Khamthara <Whan.Khamthara@ghd.com>, Peter Lausberg <peter.lausberg@refuture.com.au>
Subject: RE: Powercor Australia - Moreton Hill Wind Farm Analysis

Good Morning Josephine

Thank you for your reply and your proposed changes.

I will review and respond in due course.

Regards

David

David Conway
Communications Systems Manager

CitiPower Pty Ltd, Powercor Australia Ltd and United Energy Services Pty Ltd
Level 7, 40 Market Street Melbourne VIC 3000
Locked Bag 14090 Melbourne VIC 8001
citipower.com.au | powercor.com.au | unitedenergy.com.au

T +61 3 9683 4258 | M +61 407 948 990 | E dconway@powercor.com.au



From: Josephine Radford <Josephine.Radford@ghd.com>
Sent: Friday, 27 June 2025 3:45 PM
To: Conway, David <DConway@powercor.com.au>
Cc: Brendan Siebert <Brendan.Siebert@ghd.com>; Allan Macdonald <Allan.Macdonald@ghd.com>; Whan Khamthara <Whan.Khamthara@ghd.com>; peter.lausberg@refuture.com.au
Subject: RE: Powercor Australia - Moreton Hill Wind Farm Analysis

Hi David,

Getting in contact to discuss the separation requirements highlighted by Powercor. International best practice is to be outside of the point-to-point links' second Fresnel zone. What additional requirements does Powercor have regarding this?

Through our own analysis of the point-to-point link and turbines T32 and T37 we concluded:

- T32 was encroaching on the link 1149179/2 by approximately 40 meters.
 - As a result, we have advised the client (Squadron Energy) to microsite the turbine north-west by 40 meters, to which they have agreed to do.
- T37 was not found to encroach on the second Fresnel zone of the link.
 - This turbine is located approximately 22 meters north-west of the link.

Due to these findings, GHD foresees nil to negligible impacts to the point-to-point links operation, we have applied this methodology to multiple successful wind farm projects including third party link operator buy in and we hope this is acceptable for Powercor. We are willing to work with Powercor and Squadron Energy (the developer) to reach a mutually agreeable outcome to coexist within the area.

Thanks,

Josephine Radford
B. Maths and Computer Sciences with B. Finance
Graduate Telecommunications and Security Engineer

GHD
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211 Victoria Square, Level 4, Adelaide South Australia 5000
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From: Conway, David <DConway@powercor.com.au>
Sent: Thursday, 19 June 2025 10:59 AM
To: Josephine Radford <Josephine.Radford@ghd.com>
Cc: Brendan Siebert <Brendan.Siebert@ghd.com>; Allan Macdonald <Allan.Macdonald@ghd.com>; Whan Khamthara <Whan.Khamthara@ghd.com>
Subject: RE: Powercor Australia - Moreton Hill Wind Farm Analysis

Hi Josephine

I hope all is going well.

We have completed analysis of potential impacts on the 3 of Powercor radio links highlighted with respect to the Morton Hill Wind Farm proposal, as requested.

Our findings are summarised as follows:-

There are two turbines in the proposed Moreton Hill Wind Farm that will impact the existing Powercor Mt Shadwell – Linton link: -

Significant impact on the link when T32 is constructed and operated.

Construction of T37 will be very likely to also impact on the Mt Shadwell – Linton link due to its intrusion on the second Fresnel zone area around the link.

A change in the proposed locations of the T32 and T37 turbines will mitigate any impacts from these two turbines on the existing Mt Shadwell – Linton link. The separation required is 120m between the edge of the link's second Fresnel zone and the blade rotation envelope.

As such Powercor requests the following changes to the proposed Wind Farm Design:-

That the T32 Turbine be moved towards the north-west by approximately 200m.

That the T37 be moved towards the north-west by approximately 130m.

With respect to the other 2 links highlighted, the Moreton Wind Farm is unlikely to have any direct impact on the existing Camperdown – Linton or the Colac East – Linton Radio links.

Regards

David

David Conway

Communications Systems Manager

CitiPower Pty Ltd, Powercor Australia Ltd and United Energy Services Pty Ltd
Level 7, 40 Market Street Melbourne VIC 3000
Locked Bag 14090 Melbourne VIC 8001
citipower.com.au | powercor.com.au | unitedenergy.com.au

T +61 3 9683 4258 | M +61 407 948 990 | E dconway@powercor.com.au



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Figure 2

From: Virginia Maiava <virginiamaiava@nbnc.com.au>
Sent: Monday, 2 June 2025 2:50 PM
To: Josephine Radford
Cc: Brendan Siebert; Allan Macdonald; Whan Khamthara; Network_Capacity_Enquiries
Subject: RE: [External] NBN - Moreton Hill Wind Farm Analysis [Commercial - Anyone]

Follow Up Flag: Follow up
Flag Status: Completed

CompleteRepository: 12656042
Description: Moreton Hill Wind Farm - EMI Assessment
JobNo: 12656042
OperatingCentre: -
RepoEmail: 12656042@ghd.com
RepoType: Project
SubJob: -

Hello Josephine,

Apologies for delayed response on this request. Our Fixed Wireless Engineering team have come back with the following:

To meet NBN's MW link performance KPI's which remains regional Australia's critical infrastructure, NBN's process of designing a microwave link in the vicinity of wind turbines considers the below mentioned key points:

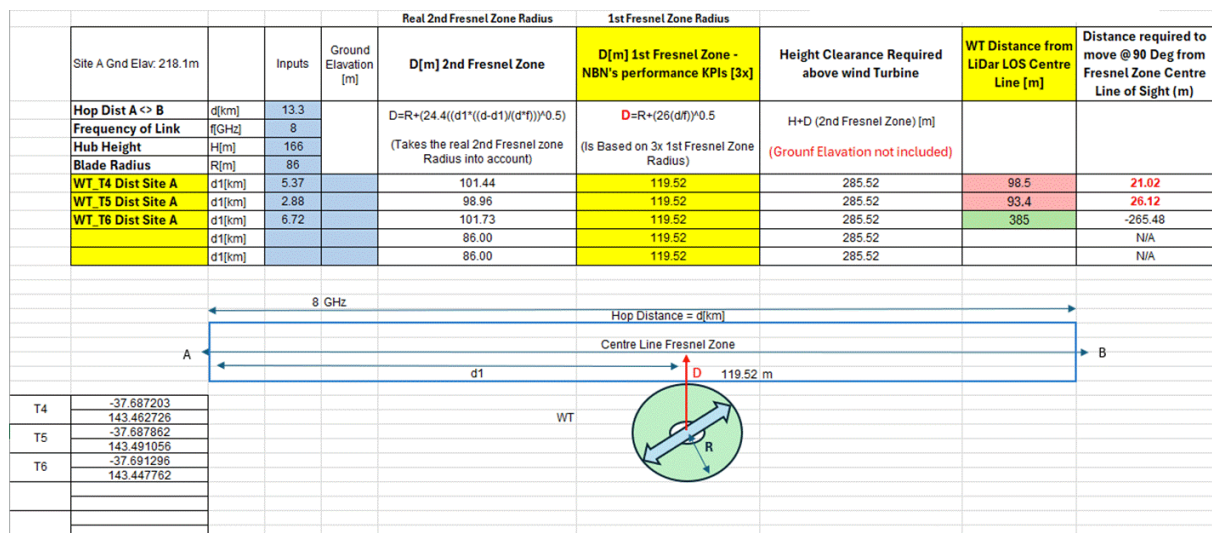
1. Avoid obstacles in the near field of the antennas
2. Keep the first and second Fresnel zone clear of obstacles
3. Pay special attention to reflections when running a microwave link in parallel to a long string of wind turbines

Based on the above points, minimum separation we require between Wind Turbines and the Link Line of Sight is **119.52m** in this case, please find below the analysis for 2 of the closest wind turbines, **WT_T4** and **WT_T5**:

- Wind Turbine T4 – is **98.5m** @ 90 degrees to the Link Line of Sight and must require **to be moved away by 21.02m**
- Wind Turbine T5 – is **93.4m** @ 90 degrees to the Link Line of Sight and must require **to be moved away by 26.12m**
- Wind Turbine T6 is within this minimal separation zone – 385m @ 90 degrees to the Link Line of Sight and does not require to be moved

Please let us know if further information is required.

Thanks.



Thanks,
V

Kind Regards,

Virginia Maiava
Escalations & Complaints Business Partner, Regional Development & Engagement
M +61 428 063 329 E virginiamaiava@nbnc.com.au
Wurundjeri County

727 Collins St, Melbourne VIC 3008 Australia



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From: Virginia Maiava
Sent: Friday, 9 May 2025 5:25 PM
To: Josephine Radford <Josephine.Radford@ghd.com>
Cc: Brendan Siebert <Brendan.Siebert@ghd.com>; Allan Macdonald <Allan.Macdonald@ghd.com>; Whan Khamthara <Whan.Khamthara@ghd.com>; Network_Capacity_Enquiries <Network_Capacity_Enquiries@nbnco.com.au>
Subject: RE: [External] NBN - Moreton Hill Wind Farm Analysis [Commercial - Anyone]

Thanks Josephine

I've sent the below to the Engineering Team. If they have any further questions or need more information, I'll let you know otherwise my next response to you will be their completed assessment outcome.

Have a good weekend!

Cheers,
V

Kind Regards,

Virginia Maiava
Escalations & Complaints Business Partner, Regional Development & Engagement
M +61 428 063 329 E virginiamaiava@nbnco.com.au
Wurundjeri County
727 Collins St, Melbourne VIC 3008 Australia



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From: Josephine Radford <Josephine.Radford@ghd.com>
Sent: Friday, 9 May 2025 5:19 PM
To: Virginia Maiava <virginiamaiava@nbnco.com.au>
Cc: Brendan Siebert <Brendan.Siebert@ghd.com>; Allan Macdonald <Allan.Macdonald@ghd.com>; Whan Khamthara <Whan.Khamthara@ghd.com>; Network_Capacity_Enquiries <Network_Capacity_Enquiries@nbnco.com.au>
Subject: RE: [External] NBN - Moreton Hill Wind Farm Analysis [Commercial - Anyone]

EXTERNAL SENDER – Be cautious opening Links and Attachments

Hi Virginia,

Client has only given generic specs, no particular model has been identified.

The turbine dimensions are:
Hub height: 166m
Rotor radius: 86m

Sorry had accidentally written rotor diameter before, was meant to be rotor radius.

Thanks,

Josephine Radford
B. Maths and Computer Sciences with B. Finance
Graduate Telecommunications and Security Engineer

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From: Virginia Maiava <virginiamaiava@nbnc.com.au>
Sent: Wednesday, 23 April 2025 1:49 PM
To: Josephine Radford <Josephine.Radford@ghd.com>
Cc: Brendan Siebert <Brendan.Siebert@ghd.com>; Allan Macdonald <Allan.Macdonald@ghd.com>; Whan Khamthara <Whan.Khamthara@ghd.com>;
Network_Capacity_Enquiries <Network_Capacity_Enquiries@nbnc.com.au>
Subject: RE: [External] NBN - Moreton Hill Wind Farm Analysis [Commercial - Anyone]

Some people who received this message don't often get email from virginiamaiava@nbnc.com.au. [Learn why this is important](#)
Hello Josephine,

Our Fixed Wireless Engineering team have almost completed the analysis for this site; however, they have a query on the rotor diameter/blade radius.

Could you please share the rotor dimensions spec sheet?

Thanks,
V

Kind Regards,

Virginia Maiava
Escalations & Complaints Business Partner, Regional Development & Engagement
M +61 428 063 329 E virginiamaiava@nbnc.com.au
Wurundjeri Country
727 Collins St, Melbourne VIC 3008 Australia



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From: Virginia Maiava <virginiamaiava@nbnc.com.au>
Sent: Friday, 11 April 2025 1:09 PM
To: Josephine Radford <Josephine.Radford@ghd.com>
Cc: Brendan Siebert <Brendan.Siebert@ghd.com>; Allan Macdonald <Allan.Macdonald@ghd.com>; Whan Khamthara <Whan.Khamthara@ghd.com>;
Network_Capacity_Enquiries <Network_Capacity_Enquiries@nbnc.com.au>
Subject: RE: [External] NBN - Moreton Hill Wind Farm Analysis [Commercial - Anyone]

Hi Josephine,

Thanks for sending through this request. I've sent this to our Fixed Wireless Engineering Team to review and requested they provide their analysis feedback.

I will share the feedback as soon as it comes through.

Kind Regards,

727 Collins St, Melbourne VIC 3008 Australia



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Subject: [External] NBN - Moreton Hill Wind Farm Analysis

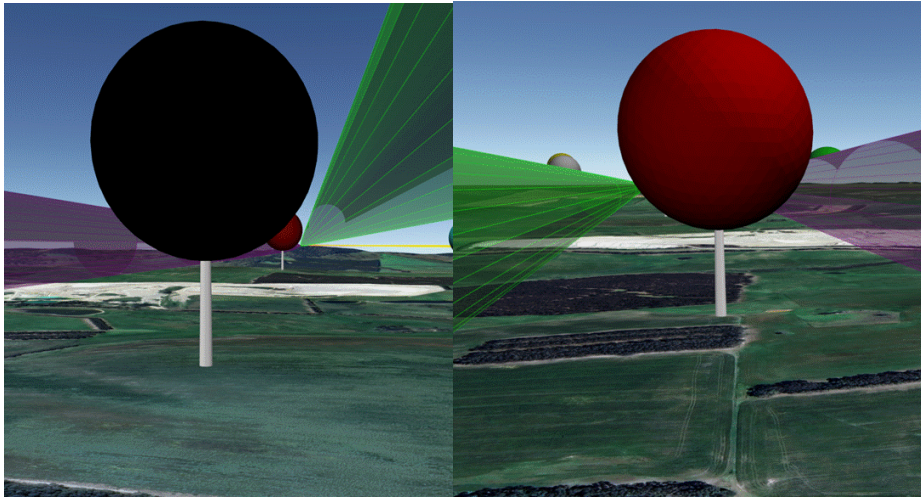
GHD are conducting an Electromagnetic Interference Assessment for Squadron Energy for a proposed Moreton Hill Wind Farm site in Skipton, Victoria. The proposed layout has 68 site locations, however, only 62 are to be constructed. Find the attached .shp of these sites (also shown below).



The turbine dimensions are:
Hub height: 166m
Rotor diameter: 86m

Initial analysis has determined that the area surrounding the site has minimal coverage from NBN and that construction will cause minimal interference. Additionally, it has been determined that the turbines T4 and T5 do not enter the second Fresnel zone of the PTP link 12186312/2, therefore, there is no identified risk.

Further 3D modelling was conducted as shown below.



Finally, the site is further than 5 kilometres from any transmission sites, meaning there is no identified impact to these. With this information would you be able to advise on any risks to your infrastructure, potential mitigations and provide analysis from your end.

Regards,

Josephine Radford
B. Maths and Computer Sciences with B. Finance
Graduate Telecommunications and Security Engineer

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Figure 3

From: Josephine Radford
Sent: Friday, 11 April 2025 8:32 AM
To: 'Ron.Vesely@optus.com.au'
Cc: Brendan Siebert; Whan Khamthara; Allan Macdonald; 'michael.odogwu@optus.com.au'
Subject: Optus - Moreton Hill Wind Farm Analysis
Attachments: TurbineCoordinates.xlsx; 20250325 MHWF PPA_ER Site Boundary.shp; 20250325 MHWF PPA_ER WTGS_68.shp

CompleteRepository: 12656042
Description: Moreton Hill Wind Farm - EMI Assessment
JobNo: 12656042
OperatingCentre: -
RepoEmail: 12656042@ghd.com
RepoType: Proposal
SubJob: -

Hi,

Hope you are well,

GHD are conducting an Electromagnetic Interference Assessment for Squadron Energy for a proposed Moreton Hill Wind Farm site in Skipton, Victoria.

The proposed layout has 68 site locations, however, only 62 are to be constructed. Find the attached .shp of these sites (also shown below).



The turbine dimensions are:
Hub height: 166m

Rotor diameter: 86m

Initial analysis has determined that the area surrounding the site has minimal 5G coverage from Optus and that construction will cause minimal interference.

Additionally, the site boundary overlaps two PTP links owned by Optus, 11684906/2 and 11691807/1. Neither of these links are obstructed by the proposed turbine locations.

Finally, the site is close to your transmission site Bute Scenic Reserve Government Road LINTON.

With this information would you be able to advise on any risks to your infrastructure, potential mitigations and provide analysis from your end.

Regards,

Josephine Radford

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Graduate Telecommunications and Security Engineer**

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Figure 4

From: Josephine Radford
Sent: Friday, 11 April 2025 11:17 AM
To: 'fleetadmin@chw.net.au'
Cc: Brendan Siebert; Allan Macdonald; Whan Khamthara
Subject: Central Highland Region Water Corporation - Moreton Hill Wind Farm

CompleteRepository:	12656042
Description:	Moreton Hill Wind Farm - EMI Assessment
JobNo:	12656042
OperatingCentre:	-
RepoEmail:	12656042@ghd.com
RepoType:	Proposal
SubJob:	-

Hi,

Hope you are well, I just contacted your general enquiries line and they directed me to this email, if there is someone better to contact, please let me know.

GHD are conducting an Electromagnetic Interference Assessment for Squadron Energy for a proposed Moreton Hill Wind Farm site in Skipton, Victoria.

The proposed layout has 68 site locations, however, only 62 are to be constructed. Find the attached .kml of these sites (also shown below).



The turbine dimensions are:
Hub height: 166m
Rotor diameter: 86m

Initial analysis has determined that proposed turbines T1, T2 and T3 do not enter the second Fresnel zone of the PTP link 1566085/1. Additionally, the site is close to the transmission assignment sites Water Storage Tank Skipton - Beaufort Road SKIPTON and Bute Scenic Reserve Government Road LINTON. With this information would you be able to advise on any additional risks to your infrastructure, potential mitigations and provide analysis from your end.

Regards,

Josephine Radford
B. Maths and Computer Sciences with B. Finance
Graduate Telecommunications and Security Engineer

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Figure 5

From: Stephanie Osborne <stephanie.osborne@bom.gov.au>
Sent: Tuesday, 13 May 2025 9:52 AM
To: Josephine Radford
Cc: windfarmenquiries; Brendan Siebert; Allan Macdonald; Whan Khamthara; Energy; Stephen Duggan
Subject: Moreton Hill Wind Farm Analysis regarding CAS-108837-Q4X2H5 [SEC=OFFICIAL] CRM:0399000241

Some people who received this message don't often get email from stephanie.osborne@bom.gov.au. [Learn why this is important](#)
In reply please quote: CAS-108837-Q4X2H5

Date: 13/05/2025

Dear Josephine,

Thank you for your continued patience.

Our assessment of the current Moreton Hill wind farm proposal has determined that, under normal atmospheric conditions, it poses a manageable risk to Bureau assets.

As a result, the Bureau has no objections to the proposed development proceeding, as detailed in the documentation provided for assessment.

Any modifications to the wind farms parameters, including layout designs, turbine locations, or heights, will require a new assessment.

Please contact us if you have any further enquiries.

Kind regards,

Stephanie Osborne (nee MacDonald)
Energy and Resources
The Bureau of Meteorology



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----- Original Message -----

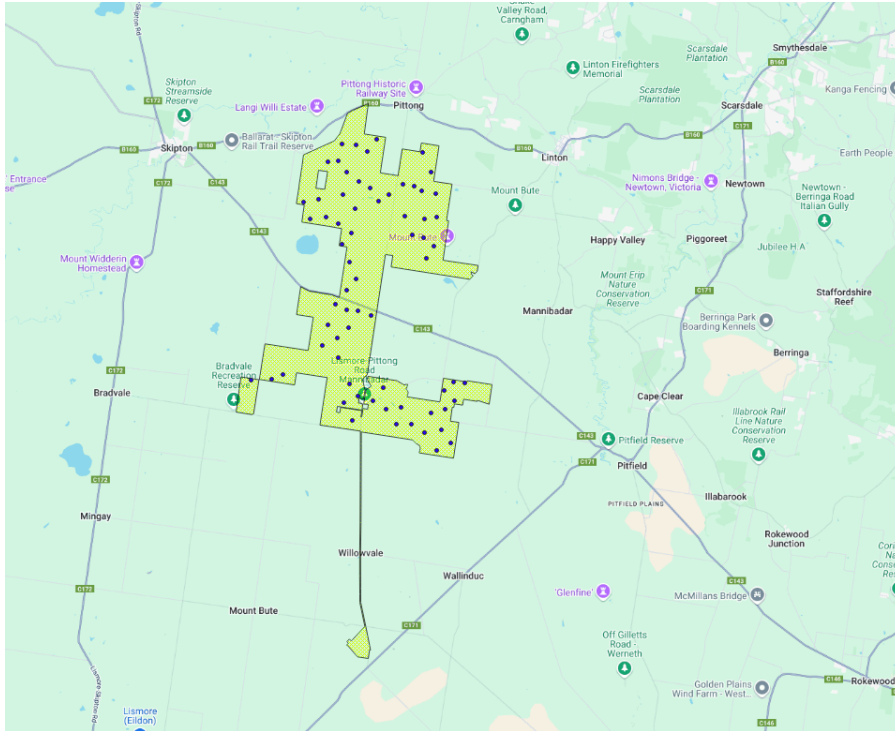
OFFICIAL

From: Josephine Radford <Josephine.Radford@ghd.com>
Sent: Friday, 11 April 2025 8:59 AM
To: windfarmenquiries <windfarmenquiries@bom.gov.au>
Cc: Brendan Siebert <Brendan.Siebert@ghd.com>; Allan Macdonald <Allan.Macdonald@ghd.com>; Whan Khamthara <Whan.Khamthara@ghd.com>; Mohammad Zomorodi <Mohammad.Zomorodi@bom.gov.au>
Subject: BOM - Moreton Hill Wind Farm Analysis

Hi,

Hope you are well,

GHD are conducting an Electromagnetic Interference Assessment for Squadron Energy for a proposed Moreton Hill Wind Farm site in Skipton, Victoria.
The proposed layout has 68 site locations, however, only 62 are to be constructed. Find the attached .shp of these sites (also shown below).



The turbine dimensions are:
 Hub height: 166m
 Rotor diameter: 86m

Initial analysis has determined that the area surrounding the site has reasonable coverage from both the Rainbow radar to the Northwest and the Melbourne radar to the Southeast.
 With this information would you be able to advise on any risks to your infrastructure, potential mitigations and provide analysis from your end.

Regards,

Josephine Radford
 B. Maths and Computer Sciences with B. Finance
 Graduate Telecommunications and Security Engineer

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Figure 6

From: Airport Developments <Airport.Developments@AirservicesAustralia.com>
Sent: Thursday, 19 June 2025 1:12 PM
To: Josephine Radford
Cc: Brendan Siebert; Allan Macdonald; Whan Khamthara; CASA
Subject: Airservices response: VIC-WF-074 - Moreton Hill Wind Farm Analysis

OFFICIAL

Good morning,

I refer to your request for an Airservices assessment of the proposed activity at Moreton Hill Windfarm, VIC.

Airspace Procedures

With respect to procedures designed by Airservices in accordance with ICAO PANS-OPS and Doc 9905, at a maximum height of 638.2m/2094ft AHD the wind farm will not affect any sector or circling altitude, nor any instrument approach or departure procedure at Ballarat aerodrome nor any route LSALT.

Note: Procedures not designed by Airservices at Ballarat aerodrome were not considered in this assessment.

Communications/Navigation/Surveillance (CNS) Facilities

We have assessed the proposed activity to the above specified height for any impacts to Airservices Precision/Non-Precision Navigation Aids, Anemometers, HF/VHF/UHF Communications, A-SMGCS, Radar, PRM, ADS-B, WAM or Satellite/Links and have no objections to it proceeding.

Note: Meteorological instruments not owned by Airservices were not considered in this assessment. In accordance with Part 139 (Aerodromes) Manual of Standards, Chapter 19, we recommend consulting with the Bureau of Meteorology (the Bureau) to ensure that the proposed activity does not adversely affect their equipment. The Bureau can be contacted at airport.developments@bom.gov.au

Air Traffic Control (ATC) Operations

There are no additional instructions/concerns from ATC.

Summary

The proposed activity does not impact Airservices operations or facilities at Ballarat aerodrome nor any route LSALT.

Vertical Obstacle Notification

As this proposed activity is more than 30m (99ft) AGL, please follow the below notification process:

1. Complete the Vertical Obstacle Notification Form: [ATS-FORM-0085_Vertical_Obstruction_Data_Form.pdf \(airservicesaustralia.com\)](#)
2. Submit completed form to: VOD@airservicesaustralia.com as soon as the development reaches the maximum height.

For further information regarding the reporting of tall structures, please contact the VOD team:

- Phone - (02) 6268 5622
- Email - VOD@airservicesaustralia.com
- Or refer to: [Civil Aviation Safety Regulation Part 175 — Airservices and You - Airservices \(airservicesaustralia.com\)](#)

If you have any queries, please let our team know.

Thanks, and regards,

Airspace Development & Protection

Email: airport.developments@airservicesaustralia.com

Phone: 0436 325 205



I acknowledge Aboriginal and Torres Strait Islander peoples as the traditional custodians of country throughout Australia where we live, learn and work.

OFFICIAL

From: Josephine Radford <Josephine.Radford@ghd.com>
Sent: Friday, 9 May 2025 5:11 PM
To: Airport Developments <Airport.Developments@AirservicesAustralia.com>
Cc: Brendan Siebert <Brendan.Siebert@ghd.com>; Allan Macdonald <Allan.Macdonald@ghd.com>; Whan Khamthara <Whan.Khamthara@ghd.com>
Subject: Airservices Australia - Moreton Hill Wind Farm Analysis

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Figure 7

From: Positioning Operations and Support <gnss@ga.gov.au>
Sent: Monday, 14 April 2025 8:43 AM
To: Josephine Radford
Cc: Ryan Ruddick; Client Services; Brendan Siebert; Allan Macdonald; Whan Khamthara
Subject: RE: CLIENT ENQUIRY: Geosciences Australia - Moreton Hill Wind Farm Analysis [SEC=OFFICIAL]

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Good morning Josephine,

Thank you for sending through this information. Geoscience Australia do not foresee any interference to our GNSS infrastructure as a result of the proposed Moreton Hill Wind Farm in VIC.

Kind regards,

Austin Lico | Operations Officer
GNSS Infrastructure and Informatics Section | Positioning Australia Branch
Space Division

t +61 2 6249 9004 ga.gov.au

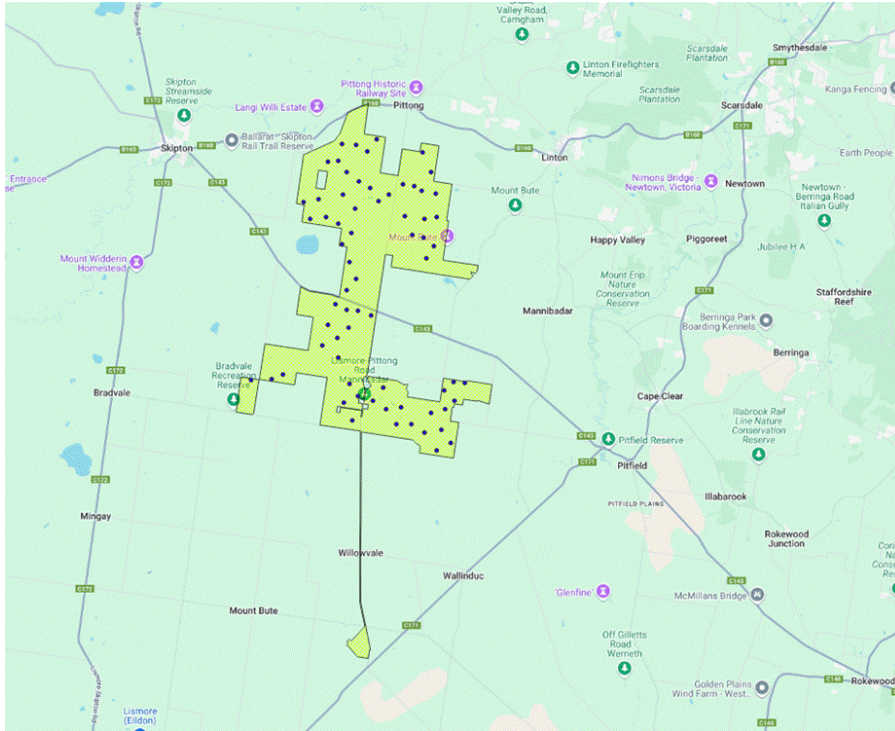
Geoscience Australia acknowledges the traditional owners and custodians of Country throughout Australia and acknowledges their continuing connection to land, waters and community. We pay our respects to the people, the cultures and the elders past and present

From: Josephine Radford <Josephine.Radford@ghd.com>
Sent: Friday, 11 April 2025 9:02 AM
To: Client Services <ClientServices@ga.gov.au>; Ryan Ruddick <Ryan.Ruddick@ga.gov.au>
Cc: Brendan Siebert <Brendan.Siebert@ghd.com>; Allan Macdonald <Allan.Macdonald@ghd.com>; Whan Khamthara <Whan.Khamthara@ghd.com>
Subject: Geosciences Australia - Moreton Hill Wind Farm Analysis

Hi,

Hope you are well,

GHD are conducting an Electromagnetic Interference Assessment for Squadron Energy for a proposed Moreton Hill Wind Farm site in Skipton, Victoria.
The proposed layout has 68 site locations, however, only 62 are to be constructed. Find the attached .shp of these sites (also shown below).



The turbine dimensions are:
 Hub height: 166m
 Rotor diameter: 86m

Initial analysis has determined that the area surrounding the site has no relevant transmitters and will cause minimal impact to operations. With this information would you be able to advise on any risks to your infrastructure, potential mitigations and provide analysis from your end.

Regards,

Josephine Radford
 B. Maths and Computer Sciences with B. Finance
 Graduate Telecommunications and Security Engineer

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 D +61 8 8111 6604 | E josephine.radford@ghd.com

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Figure 8

From: Deutschmann, Anthony MR <anthony.deutschmann@defence.gov.au> on behalf of SEG Land Planning and Regulation <land.planning@defence.gov.au>
Sent: Friday, 11 April 2025 12:57 PM
To: Josephine Radford
Cc: Williams, Matt MR 7
Subject: RE: Dep. Defence - Moreton Hill Wind Farm Analysis [SEC=OFFICIAL]

OFFICIAL

Hi Josephine,

The Department of Defences' (Defences') SME's only have capacity to undertake preliminary assessments of Aviation Impact Assessments (AIA), which would support Environmental Impact Statements (EIS) for the determination of environment and planning approvals of wind farm proposals.

The subject matter below (i.e. electromagnetic interference) would be addressed in the AIA.

To facilitate the efficient assessment of AIA's and provision of comments by SME's within Defence it is requested that all submissions of AIA's for Defence's consolidated comments be accompanied by a KMZ file which encompasses the following attributes for mapping purposes:

- Structure ID
- Geographical co-ordinates (latitude and longitude) and universal transverse mercator (UTM) grid co-ordinates (easting and northing)
- Terrain Elevation (m AHD)
- Structure Height AGL (m)
- Maximum Tower Elevation m AHD)
- Maxim Tower Elevation (ft AMSL)

Could you advise if an AIA has been prepared for the Moreton Hill Wind Farm proposal?

Regards
Anthony

Anthony Deutschmann | Assistant Director
Land Planning and Regulation Directorate - Estate Planning Branch

Department of Defence
Infrastructure Division | Security and Estate Group
BP26-1-A003 | 26 Brindabella Park Circuit, Brindabella Business Park, ACT 2609
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From: Josephine Radford <Josephine.Radford@ghd.com>
Sent: Friday, 11 April 2025 9:00 AM
To: SEG Land Planning and Regulation <land.planning@defence.gov.au>; Adam.Murray3@defence.gov.au; Williams, Matt MR 7 <matt.williams7@defence.gov.au>
Cc: Brendan Siebert <Brendan.Siebert@ghd.com>; Allan Macdonald <Allan.Macdonald@ghd.com>; Whan Khamthara <Whan.Khamthara@ghd.com>
Subject: Dep. Defence - Moreton Hill Wind Farm Analysis

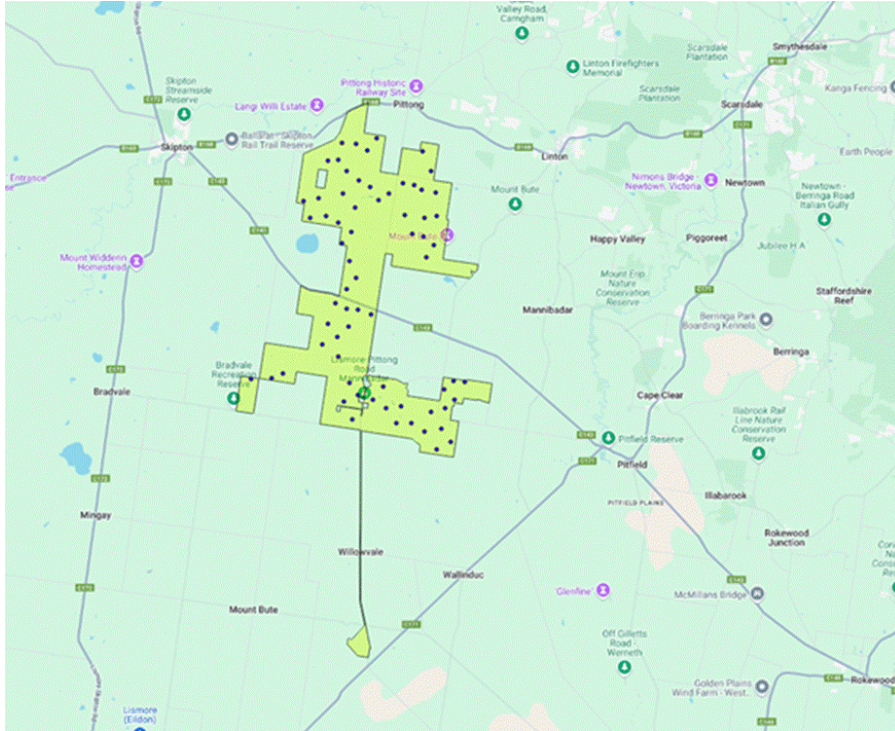
 **EXTERNAL EMAIL:** Do not click any links or open any attachments unless you trust the sender and know the content is safe. .

Hi,

Hope you are well,

GHD are conducting an Electromagnetic Interference Assessment for Squadron Energy for a proposed Moreton Hill Wind Farm site in Skipton, Victoria.

The proposed layout has 68 site locations, however, only 62 are to be constructed. Find the attached .shp of these sites (also shown below).



The turbine dimensions are:
Hub height: 166m
Rotor diameter: 86m

Is this information sufficient for the Department of Defence to determine the impact on their communications services?
If sufficient would you be able to advise on any risks to your infrastructure, potential mitigations and provide analysis from your end.

Regards,

Josephine Radford
B. Maths and Computer Sciences with B. Finance
Graduate Telecommunications and Security Engineer

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Figure 9

From: John Tinha (DJCS) <John.Tinha@justice.vic.gov.au>
Sent: Monday, 2 June 2025 1:41 PM
To: Josephine Radford
Cc: Tony Scerri (DJCS)
Subject: RE: Moreton Hill Wind Farm analysis.

CompleteRepository: 12656042
Description: Moreton Hill Wind Farm - EMI Assessment
JobNo: 12656042
OperatingCentre: -
RepoEmail: 12656042@ghd.com
RepoType: Project
SubJob: -

Hi Josephine,

Our Emergency Alerting System O&M Contractor (Ventia) has reviewed and commented that they do not foresee any impact to the EAS coverage from the Moreton Hill Wind Farm Project.

If you require any further comments or have any questions, please reach out to me or Tony Scerri.

John Tinha (DJCS)

John Tinha

Emergency Alert Site Lease Officer
Emergency Management Technology and Data
Department of Justice and Community Safety
23/121 Exhibition Street Melbourne VIC 3000
Email: John.Tinha@justice.vic.gov.au | **Mobile:** 0467 016 586



We acknowledge the Traditional Owners of country throughout Victoria and pay our respects to them, their culture and their Elders, past, present and future.

DJCS is a diverse and inclusive workplace. | Please consider the environment before printing this email.

From: Josephine Radford <Josephine.Radford@ghd.com>
Sent: Tuesday, 13 May 2025 10:41 AM
To: Tony Scerri (DJCS) <Tony.Scerri@justice.vic.gov.au>
Cc: Janet M Rowe (DJCS) <Janet.Rowe@justice.vic.gov.au>; John Tinha (DJCS) <John.Tinha@justice.vic.gov.au>; Glenn G Cumming (DJCS) <Glenn.Cumming@justice.vic.gov.au>; Brendan Siebert <Brendan.Siebert@ghd.com>; Allan Macdonald <Allan.Macdonald@ghd.com>; Whan Khamthara <Whan.Khamthara@ghd.com>
Subject: RE: Moreton Hill Wind Farm analysis.

Hi Tony,

Glad this reached you, sorry it was a struggle to find a contact.

Attached the .shp files as they're generally more user friendly.

Thanks,

Josephine Radford

B. Maths and Computer Sciences with B. Finance
Graduate Telecommunications and Security Engineer

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From: Tony Scerri (DJCS) <Tony.Scerri@justice.vic.gov.au>
Sent: Tuesday, 13 May 2025 9:45 AM
To: Josephine Radford <Josephine.Radford@ghd.com>
Cc: Janet M Rowe (DJCS) <Janet.Rowe@justice.vic.gov.au>; John Tinham (DJCS) <John.Tinham@justice.vic.gov.au>; Glenn G Cumming (DJCS) <Glenn.Cumming@justice.vic.gov.au>
Subject: Moreton Hill Wind Farm analysis.

You don't often get email from tony.scerri@justice.vic.gov.au. [Learn why this is important](#)
Good morning, Josephine .

I am the State Contract Manager for the Emergency Alerting Service – and thank you for your email of 11 April 2025 to the Department of Justice and Community Safety regarding wind farm activity at the Moreton Hill site.

The email finally ended up in the right place – with the DJCS Emergency Management Technology and Data team.

In your email of 11/5, you mentioned that there was a .kmz file attached to the original email. It appears to have dropped off the email chain as it was bounced around our various teams.

Could you resend the .kmz file to me, please? It will be of great assistance to our service provider.

Please contact me should you wish to talk further about this issue.

Tony Scerri
Contract Manager, EAS/MDEMS/SAS
EM ICN, Commercial and Budget
EM Technology and Data

Emergency Management | Department of Justice & Community Safety
23/121 Exhibition Street Melbourne VIC 3000
M 0427 842 819 | E Tony.Scerri@justice.vic.gov.au



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