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HumeLink

Air Quality Impact Assessment
Addendum
Technical Report 17

HumeLink

Technical Report 17 – Air Quality Impact Assessment Addendum

Transgrid

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Basis of Report

This report has been prepared by SLR Consulting Australia (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with Transgrid (the Client). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

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Executive Summary

Background

Transgrid proposes to increase the energy network capacity in southern New South Wales (NSW) through the development of around 365 kilometres (km) of new 500 kilovolt (kV) high-voltage transmission lines and associated infrastructure between Wagga Wagga, Bannaby and Maragle. This project is collectively referred to as HumeLink. The project would be located across six Local Government Areas (LGAs) including Wagga Wagga City, Snowy Valleys, Cootamundra-Gundagai Regional, Upper Lachlan Shire, Yass Valley and Goulburn Mulwaree. HumeLink is a priority project for the Australian Energy Market Operator (AEMO) and the Commonwealth and NSW governments and has been declared as Critical State Significant Infrastructure (CSSI). The project would deliver a cheaper, more reliable and more sustainable grid by increasing the amount of renewable energy that can be delivered across the national electricity grid, helping to transition Australia to a low carbon future.

An EIS was prepared in accordance with the requirements of Division 5.2 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). The EIS was placed on public exhibition by the NSW Department of Planning, Housing and Infrastructure (DPHI) (formerly the NSW Department of Planning and Environment (DPE)) for a period of 42 days, between 30 August 2023 and 10 October 2023.

Purpose of this report

This report has been prepared to support the HumeLink Amendment Report. The purpose of this report is to assess the potential additional (or changed) risk of adverse air quality impacts due to proposed amendments and refinements and forms an addendum to *Technical Report 17 - Air Quality Impact Assessment* (SLR, 2023) prepared for the EIS.

Other than the changes to the project footprint and the locations of some of the accommodation facilities and construction compounds being assessed, the key difference between this assessment and *Technical Report 17 - Air Quality Impact Assessment* is the inclusion of more detail regarding proposed access tracks along the amended project footprint. The amended or new worker accommodation facilities and construction compounds and substation considered in this report are as follows:

- Proposed Gugaa 500 kV substation
- Amended Gregadoo Road compound (C06)
- Amended Honeysuckle Road compound (C07)
- Amended Bannaby 500 kV substation compound (C12)
- Amended Memorial Avenue compound (C14)
- Ardrossan Headquarters Road compound (C17)
- Snubba Road compound (C18)
- Gadara Road compound (C19)
- Ellerslie Road compound (C21)
- Tarcutta accommodation facility and compound (AC03)
- Adjungbilly accommodation facility and compound (AC04)
- Yass accommodation facility and compound (AC05)
- Crookwell accommodation facility and compound (AC06)

- Green Hills accommodation facility and compound (AC07).

Compared with *Technical Report 17 - Air Quality Impact Assessment*, the following construction compounds/accommodation facilities have been removed from the project scope:

- Snowy Mountains Highway compound (C02)
- Snubba Road compound (C03)
- Red Hill Road compound (C08)
- Adjungbilly Road compound (C09)
- Woodhouselee Road compound (C11)
- Bowmans Lane compound (C15)
- Snubba Road compound (C16)
- Tumbarumba accommodation facility (AC1).

There has been no change to the following construction compounds/ substations compared with *Technical Report 17 - Air Quality Impact Assessment* and thus they are not assessed in this AQIA Addendum report:

- Wagga 330 kV substation compound (C01)
- Maragle 500 kV substation compound (C05)
- Yass substation compound (C10)
- Bannaby 500 kV substation
- Maragle 500 kV substation
- Wagga 330 kV substation.

Assessment methodology

The same methods used in *Technical Report 17 - Air Quality Impact Assessment* to assess air quality impacts from the identified emission sources were applied in this AQIA Addendum. This report should be read in conjunction with *Technical Report 17 - Air Quality Impact Assessment*.

Impact assessment

The emphasis of the IAQM Guidance is on classifying the risk of dust impacts from a construction site based on the scale of the proposed work and sensitivity of the surrounding environment (with no mitigation measures applied) (refer to **Section 6.1**).

The risk of adverse air quality effects occurring at sensitive receptor locations if no mitigation measures were applied to control emissions were concluded to be as summarised in **Table ES-1**. This is considered to be conservative as dust emissions related to construction of the transmission line and substations would be short-term and temporary and there are likely to be many locations along the amended project footprint where minimal (if any) dust-generating activities would occur and/or there are no sensitive receptors that could experience any adverse effects.

Mitigation measures were identified (refer to **Section 9.0**) to reduce the risk of adverse air quality effects at the sensitive receptors to a negligible level. Separation distances from sensitive receptors have also been recommended in accordance with relevant guidelines to minimise the potential for adverse air quality impacts.

Professional judgement has been used in the risk assessment and recommended separation distances from sensitive receptors have been provided to minimise the potential for adverse air quality impacts.

Air quality impacts due to products of combustion from vehicles and plant for construction were also updated using a qualitative risk-based assessment approach. This assessment concluded that these emissions pose a negligible risk of adverse air quality impacts.

Impacts of the project amendments on air quality

When compared with *Technical Report 17 - Air Quality Impact Assessment* prepared for the EIS, with the application of the mitigation measures, the air quality impacts are considered to be consistent with EIS outcomes.

As noted above, several construction compounds and one worker accommodation facility have been removed from the project scope and therefore any air quality impacts identified in *Technical Report 17 - Air Quality Impact Assessment* related to these locations will not eventuate.

For the construction compounds and substations identified above as having no change, any air quality impacts identified in *Technical Report 17 - Air Quality Impact Assessment* remain unchanged.

Mitigation measures

In tandem with outcomes of this assessment, Transgrid will draw on their previous experience and proven industry practices in the management of dust emissions to control air quality impacts during construction. The management of dust and other air pollutant emissions would be implemented through an Air Quality Management Plan (AQMP), which would include the following:

- identification of potential sources of air pollution
- air quality management objectives consistent with any relevant published NSW Environment Protection Authority (EPA) and/or DPE guidelines
- mitigation and suppression measures to be implemented
- methods to manage work during strong winds or other adverse weather conditions
- a progressive rehabilitation strategy for exposed surfaces
- monitoring of air quality within the project footprint (if needed)
- methods for dealing with complaints.

Table ES 1 Summary of dust risk without and with mitigation measure

Activity	Dust risk		Location and dust risk with no mitigation
	No mitigation	With mitigation	
Construction along the transmission line corridor including access tracks	Medium to High	Negligible	Referring to **Figure 4-1**, the following transmission line sections: • High: o Section 1: Wagga 330 kV substation to Wondalga o Section 2a: Wondalga to Snubba Road compound (C18) o Section 3: Wondalga to Adjungbilly o Section 4: Adjungbilly to Yass • Medium: o Section 2b: Snubba Road compound (C18) to future Maragle 500 kV substation o Section 5: Yass to Roslyn o Section 6: Roslyn to Bannaby
Substations	High	Negligible	Proposed Gugaa 500 kV substation
Construction compounds and accommodation facilities	Negligible to High	Negligible	• High o Green Hills accommodation facility and compound (AC07) • Medium o Ardrossan Headquarters Road compound (C17) o Ellerslie Road compound (C21) • Low o Tarcutta accommodation facility and compound (AC03) o Adjungbilly accommodation facility and compound (AC04) o Yass accommodation facility and compound (AC05) • Negligible o Amended Gregadoo Road compound (C06) o Amended Memorial Avenue compound (C14) o Snubba Road compound (C18) o Gadara Road compound (C19) o Crookwell accommodation facility and compound (AC06) o Amended Honeysuckle Road compound (C07)

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Acronyms and Abbreviations

Abbreviation	Description
ACT	Australian Capital Territory
AEMO	Australian Energy Market Operator
AQMP	Air Quality Management Plan
AQMS	Air Quality Monitoring Station
CSSI	Critical State Significant Infrastructure
DPE	Department of Planning and Environment
DPHI	Department of Planning, Housing and Infrastructure
DSEWPC	Department of Sustainability, Environment, Water, Population and Communities
EIS	Environmental Impact Statement
EP&A Act	*Environmental Planning and Assessment Act 1979*
EPL	environment protection licence
IAQM	Institute of Air Quality Management
kL	kilolitre
km	kilometres
kV	kilovolt
LGA	Local Government Area
m^3	cubic metres
MW	megawatts
NO_x	oxides of nitrogen
NT	Northern Territory
NSW	New South Wales
NSW EPA	New South Wales Environment Protection Authority
PM	particulate matter
$PM_{2.5}$	particulate matter with an aerodynamic diameter of 2.5 microns or less
PM_{10}	particulate matter with an aerodynamic diameter of 10 microns or less
POEO Act	*Protection of the Environment Operations Act 1997*
REZ	Renewable Energy Zone
SA	South Australia
SEARs	Planning Secretary's Environmental Assessment Requirements
SO_2	sulfur dioxide
Victoria	VIC
VNI West	Victoria to NSW Interconnector West
VOC	volatile organic compound
WA	Western Australia

Glossary of Terms

Term	Description
access routes	Roads providing the access to and from the project footprint.
air quality study area	All land within the 350 metre and 500 metre buffer around the project footprint.
amended project (the)	The CSSI project “HumeLink” which was the subject of the Amendment Report and inclusive of the proposed amendments and project refinements to the project as described in the EIS. The project involves the construction and operation of high voltage transmission lines and associated infrastructure between Wagga Wagga, Bannaby and Maragle.
amended project footprint (the)	The area that has been assumed for the purpose of the Amendment Report to be directly affected by the construction and operation of the project. It includes the indicative location of project infrastructure, the area that would be directly disturbed during construction and any easement required during operation.
amendment	A change in what the proponent is seeking approval for following the public exhibition of the EIS. It requires changes to the project description in the EIS and amendments to the associated infrastructure application.
brake and winch site	A brake and winch site is a temporarily cleared area where plant and equipment are located to spool and winch conductors into place on transmission line structures. The locations of the brake and winch sites may or may not be within the nominated transmission line easement. These sites are only required for construction of the project and do not need to be maintained during operation.
construction compounds	Main construction compounds proposed for construction of the project. Each main construction compound would accommodate a range of facilities which may include (but not be limited to): • laydown areas • site offices • amenities • construction support facilities such as vehicle and equipment storage, maintenance sheds, chemical/fuel stores and stockpile areas • concrete batching plants • helipads • crushing/screening plants • parking.
EIS project (the)	The project described and assessed in the EIS.
EIS project footprint (the)	The area that was assumed for the purpose of the EIS to be directly affected by the construction and operation of the project. It includes the indicative location of project infrastructure, the area that would be directly disturbed during construction and any easement required during operation.
future Maragle 500 kV substation	The future Maragle 500/330 kV substation that would be built under the approved Snowy 2.0 Transmission Connection Project, which is subject to separate planning approval (reference SS1-9717, EPBC 2018/836)

Term	Description
particulate matter	A category of airborne particles which is classified in relation to its size as either: • PM_{10} particles which are sufficiently small enough to penetrate the large airways of the lungs • $PM_{2.5}$ particles which are generally small enough to be drawn in and deposited into the deepest portions of the lungs.
proponent	The entity seeking approval for the CSSI application, which for the HumeLink project is NSW Electricity Networks Operations Pty Ltd (referred to as Transgrid).
refinement	Refinements to the project are defined as aspects of the project that generally fit within the limits set by the project description in the EIS. Refinements do not change what is being sought for approval or require an amendment to the infrastructure application for the project.
sensitive receptor	A location where people are likely to work or reside; this may include a dwelling, school, hospital, office or public recreational area.
the Approved Methods	*Approved Methods for the Modelling and Assessment of Air Pollutants in NSW* (NSW EPA, 2022).
Transgrid	The project is proposed to be undertaken by NSW Electricity Networks Operations Pty Ltd (referred to as Transgrid). Transgrid is the operator and manager of the main high voltage transmission network in NSW and the ACT and is the Authorised Network Operator for the purpose of an electricity transmission or distribution network under the provisions of the *Electricity Network Assets (Authorised Transactions) Act 2015*.
transmission line corridor	An area generally 200 metres wide that the transmission line route and easement would be located within.
transmission line easement	A legal right attached to a parcel of land that enables the non-exclusive use of the land by a third party other than the owner. For transmission lines, an easement defines the corridor area where the lines are located and that allows access, construction and maintenance work to take place. The easements for the 500 kV transmission lines would typically be 70 metres wide. However, a few select locations would require wider easements up to 130 metres wide for specific engineering or property reasons. The easement grants a right of access and for construction, maintenance and operation of the transmission line and other operational assets.
transmission line route	The location of the transmission line structures along the middle of the transmission line easement.
transmission line structure	Proposed free standing structures to support the transmission lines.
worker accommodation facilities	Temporary worker accommodation facilities that would be established for the construction workers.

1.0 Introduction

1.1 Background

Transgrid proposes to increase the energy network capacity in southern New South Wales (NSW) through the development of around 365 kilometres (km) of new 500 kilovolt (kV) high-voltage transmission lines and associated infrastructure between Wagga Wagga, Bannaby and Maragle. This project is collectively referred to as HumeLink. The project would be located across six Local Government Areas (LGAs) including Wagga Wagga City, Snowy Valleys, Cootamundra-Gundagai Regional, Upper Lachlan Shire, Yass Valley and Goulburn Mulwaree. HumeLink is a priority project for the Australian Energy Market Operator (AEMO) and the Commonwealth and NSW governments and has been declared as Critical State Significant Infrastructure (CSSI). The project would deliver a cheaper, more reliable and more sustainable grid by increasing the amount of renewable energy that can be delivered across the national electricity grid, helping to transition Australia to a low carbon future.

An EIS was prepared in accordance with the requirements of Division 5.2 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). The EIS was placed on public exhibition by the NSW Department of Planning, Housing and Infrastructure (DPHI) (formerly the NSW Department of Planning and Environment (DPE)) for a period of 42 days, between 30 August 2023 and 10 October 2023.

Transgrid has proposed amendments and refinements to the project as described in the EIS. The amendments provide functional improvements to the design and construction methodology of the project. The proposed amendments take into account submissions received during the public exhibition of the EIS and ongoing design and construction methodology development following the selection of the construction contractors. Project refinements have also been made as part of the ongoing design and construction methodology development since the EIS was exhibited. These amendments and refinements have been described and considered in relevant impact assessments.

1.2 Key features of the project (as publicly exhibited)

The key components of the project as outlined and assessed in the EIS included:

- construction and operation of around 360 kilometres of new double circuit 500 kV transmission lines and associated infrastructure between Wagga Wagga, Bannaby and Maragle
- construction of a new 500/330 kV substation at Gregadoo (Gugaa 500 kV substation) approximately 11 kilometres south-east of the existing Wagga 330/132 kV substation (Wagga 330 kV substation)
- demolition and rebuild of a section of Line 51 (around two kilometres in length) as a double circuit 330 kV transmission line connecting into the Wagga 330 kV substation
- modification of the existing Wagga 330 kV substation and Bannaby 500/330 kV substation (Bannaby 500 kV substation) to accommodate the new transmission line connections
- connection of transmission lines to the future Maragle 500/330 kV substation (Maragle 500 kV substation, approved under the Snowy 2.0 Transmission Connection Project (SSI-9717))
- provision of one optical repeater telecommunications hut and associated connections to existing local electrical infrastructure
- establishment of new and/or upgraded temporary and permanent access tracks

- ancillary works required for construction of the project such as construction compounds, worker accommodation facilities, utility connections and/or relocations, brake and winch sites, and helipad/helicopter support facilities.

1.3 Overview of the proposed amendments

Since the public exhibition of the EIS, several amendments and refinements to the project have been proposed.

The proposed amendments to the project include:

- changes to the transmission line corridor, including the realignment of the route through Green Hills State Forest to the west of Batlow
- change to the number and location of construction ancillary facilities, including worker accommodation facilities and construction compounds
- nomination of access tracks to support the construction and operation of the project
- additional telecommunications connections to existing substations.

The proposed refinements to the project include:

- transmission line and substation design refinements at Gregadoo
- identification of areas where controlled blasting may be required
- use of approved water sources
- use of helicopters and drones.

Refer to **Chapter 2.0** of this report for a detailed description of amendments and refinements relevant to this assessment.

Figure 1-1 shows the location of the amended project and **Figure 1-2** shows the key components of the amended project.

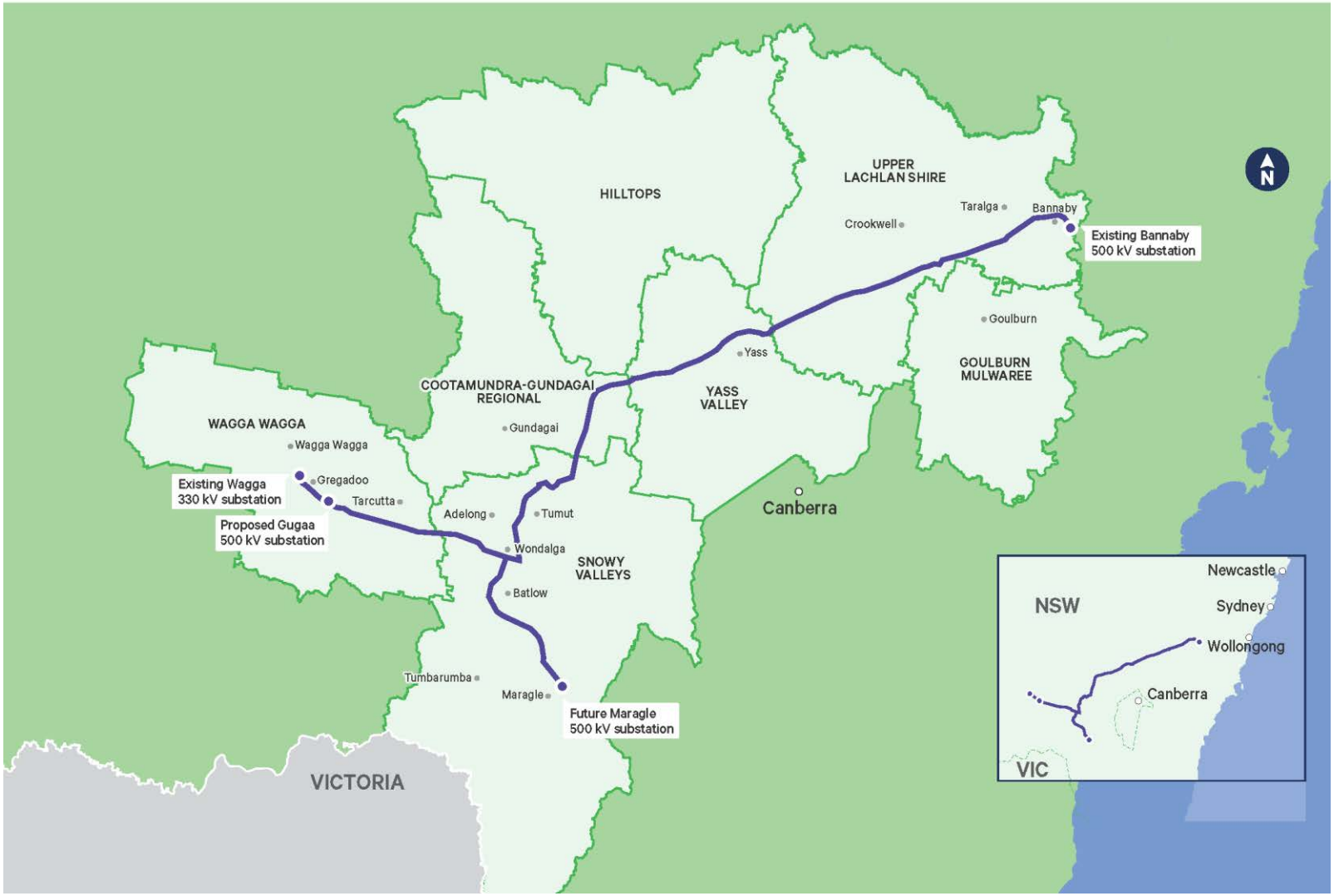
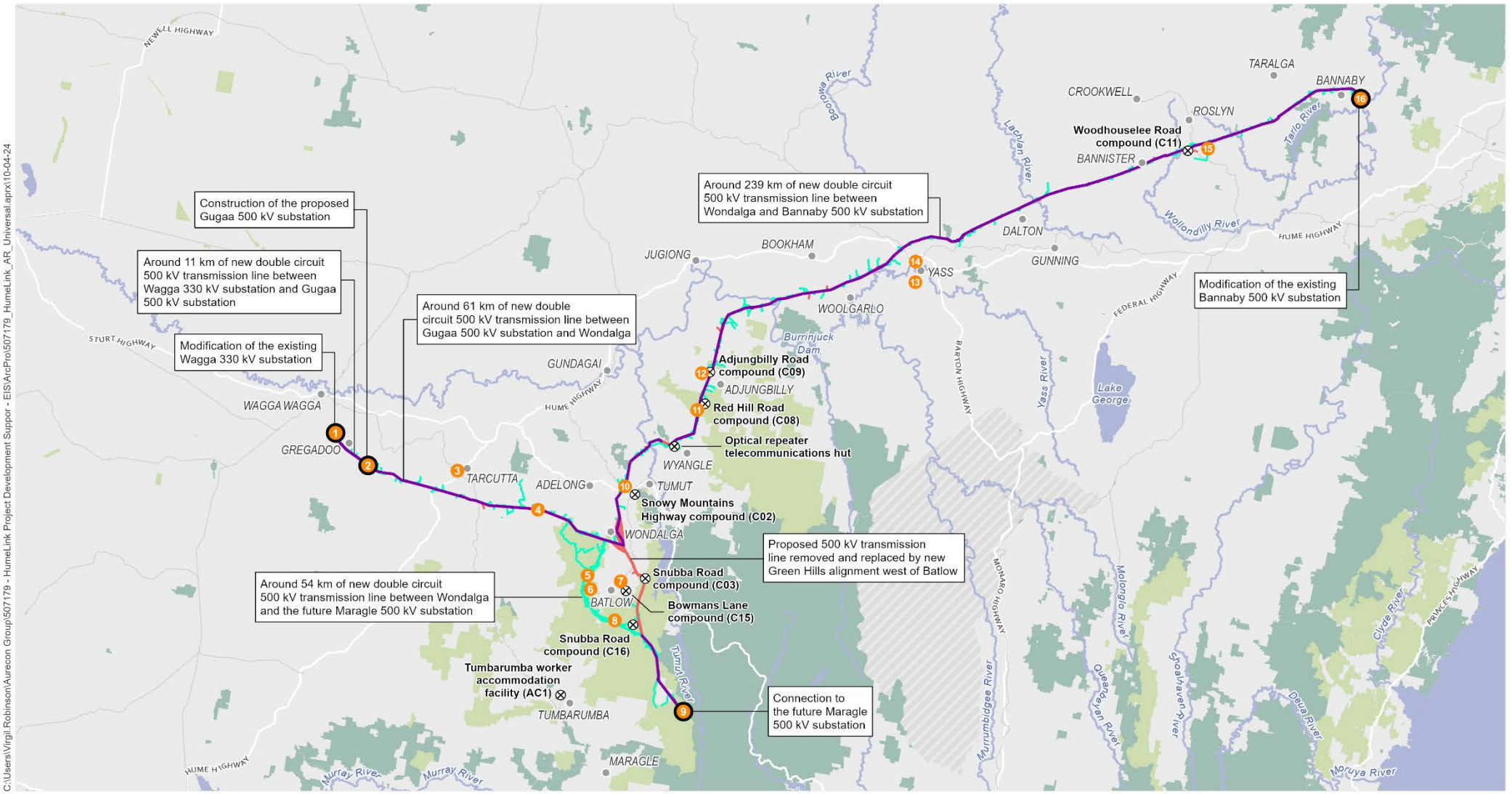


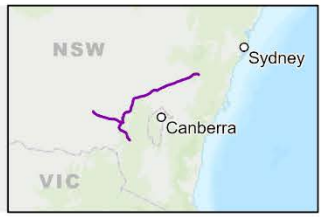
Figure 1-1 Overview of amended project location



Construction ancillary facilities

1. Wagga 330 kV substation compound (C01)
2. Amended Gregadoo Road compound (C06)
3. Tarcutta accommodation facility and compound (AC03)
4. Ellerslie Road compound (C21)
5. Ardrossan Headquarters Road compound (C17)
6. Green Hills accommodation facility and compound (AC07)
7. Amended Memorial Avenue compound (C14)
8. Snubba Road compound (C18)
9. Maragle 500 kV substation compound (C05)
10. Gadara Road compound (C19)
11. Amended Honeysuckle Road compound (C07)
12. Adjungbilly accommodation facility and compound (AC04)
13. Yass substation compound (C10)
14. Yass accommodation facility and compound (AC05)
15. Crookwell accommodation facility and compound (AC06)
16. Amended Bannaby 500 kV substation compound (C12)

EIS project footprint
Removed footprint
Amendments
Removed project facility
National park and reserve
State forest
Waterbody
Waterway
Major road
Railway



Source: *Aurecon, Transgrid, Spatial Services (DCS), ESRI Basemap*

1:925,000
0 20 40km

Projection: GDA 1994 MGA Zone 55

C:\Users\Virgil.Robinson\Aurecon Group\507179 - HumeLink Project Development Suppor - EIS\ArcPro\507179_HumeLink_AR_Universal.aprx\10-04-24

Figure 1-2: Key components of the amended project

1.4 Purpose and structure of this report

This report forms an addendum to *Technical Report 17 – Air Quality Impact Assessment* prepared for the EIS. The purpose of this report is to support the HumeLink Amendment Report by assessing the potential impacts to air quality associated with the proposed amendments and refinements to the project.

This report is structured as follows:

- **Chapter 1.0** (Introduction) – provides an overview of the project, the proposed amendments, and the purpose of this report.
- **Chapter 2.0** (Summary of the proposed amendments and refinements) – provides a description of the proposed amendments to the project.
- **Chapter 3.0** (Legislative and policy context) – provides an outline of the key legislative requirements and policy guidelines relating to the proposed amendments to the project.
- **Chapter 4.0** (Methodology) – provides an outline of the methodology used for the preparation of this report.
- **Chapter 5.0** (Existing environment) – describes the existing environment with reference to the potential air quality impacts.
- **Chapter 6.0** (Assessment of construction impacts) – describes the potential construction impacts associated with the proposed amendments to the amended project.
- **Chapter 7.0** (Assessment of operation impacts) – describes the potential operation impacts associated with the proposed amendments to the project.
- **Chapter 8.0** (Cumulative impacts) – describes the potential for cumulative impacts with other projects.
- **Chapter 9.0** (Management of impacts) – outlines the proposed mitigation measures for the proposed amendments to the project.
- **Chapter 10.0** (Conclusion) – provides a conclusion of the potential impacts of the proposed amendments to the project with reference to the potential for air quality impacts.
- **Chapter 11.0** (References) – identifies the key information sources (including reports and documents) used to generate the assessment.

1.5 Key project terms

The key project terms used in this assessment include:

- Amended project – The CSSI project “HumeLink”, which is the subject of the Amendment Report and inclusive of the proposed amendments and project refinements to the project as described in the EIS. The project involves the construction and operation of high voltage transmission lines and associated infrastructure between Wagga Wagga, Bannaby and Maragle.
- Amended project footprint – The area that has been assumed for the purpose of the Amendment Report to be directly affected by the construction and operation of the project. It includes the indicative location of project infrastructure, the area that would be directly disturbed during construction and any easement required during operation.

- EIS project footprint – The area that was assumed for the purpose of the EIS to be directly affected by the construction and operation of the project. It includes the indicative location of project infrastructure, the area that would be directly disturbed during construction and any easement required during operation.
- Air quality study area – The air quality study area comprises a 350 metre and 500 metre buffer around the amended project footprint. In accordance with the IAQM Guidance, a 350 metre buffer has been mapped around the amended project footprint, to identify potentially affected sensitive receptors during construction. The IAQM Guidance also recommends consideration of sensitive receptors up to 500 metres from the access point to the construction site, and therefore a 500 metre buffer around the amended project footprint, including access tracks.

2.0 Summary of the proposed amendments

Transgrid has identified several proposed amendments and refinements to the project as described in the EIS. These amendments and refinements reflect functional improvements to the design and construction methodology of the project. They consider:

- feedback received from stakeholders prior to and during the public exhibition of the EIS
- comments made in formal submissions on the EIS
- ongoing design and construction methodology development by the construction contractors.

Amendments to the project are defined as changes in what the proponent is seeking approval for following the public exhibition of the EIS. Project amendments require changes to the project description in the EIS and amendments to the associated infrastructure application.

The proposed amendments to the project include:

- changes to the transmission line corridor including the realignment of the route through Green Hills State Forest to the west of Batlow
- changes to the number and location of construction ancillary facilities including worker accommodation facilities and construction compounds
- nomination of access tracks to support the construction and operation of the project
- additional telecommunications connections to existing substations.

Refinements to the project are defined as aspects of the project that generally fit within the limits set by the project description in the EIS. Refinements do not change what is being sought approval for or require an amendment to the infrastructure application for the project. For completeness, these refinements have been considered in this report.

The proposed refinements to the project include:

- transmission line and substation design refinements at Gregadoo identification of areas where controlled blasting may be required
- use of approved water sources
- use of helicopters and drones.

Table 2-1 describes the proposed amendments and refinements relevant to this technical report. A full description of the amended project is provided in Chapter 3 (Description of the amended project) of the Amendment Report. The construction contractors will continue to refine and confirm the design and construction methodology during detailed design and construction planning.

Table 2-1 Proposed amendments and refinements

AMENDMENT / REFINEMENT	DESCRIPTION
Amendments	
Changes to the transmission line corridor	The amended project includes the preferred western route through Green Hills State Forest. The new 32.5 km route extends from Wondalga through the Green Hills State Forest before travelling to the west and south of Batlow and connecting to the EIS project transmission line corridor in Bago State Forest. In addition, the following minor changes have been made to the transmission line corridor following design considerations and feedback from landholders: • 1.4 km realignment of the corridor to the north between Ashfords Road to Ivydale Road, Gregadoo • 2.5 km realignment of the corridor to the south across Kyeamba Creek and Tumbarumba Road, Book Book • 2.7 km realignment of the corridor to the east near Snowy Mountains Highway, Gadara • 1.4 km realignment of the corridor to the east adjacent Minjary National Park at Gocup • 5.9 km realignment of the corridor from north of the crossing of Tumut River to south of the crossing of Killimicat Creek, Killimicat (including a minor 50 m shift to the north for 2.1 km and a 2.6 km shift to the south from Brungle Road to before the crossing of Killimicat Creek) • 0.4 km realignment of the corridor to the north at Bannister, about 2.7 km west of Crookwell Road/Goulburn Road • narrowing of the project footprint at Wondalga, Gobarralong and Bowning.
Updates to construction ancillary facilities including worker accommodation facilities and construction compounds (refer Table 2-2 for more information on these facilities)	**Changes to construction compounds** Following further construction planning and consultation with landowners, the following compounds described and assessed in the EIS have been removed from the project: • Snowy Mountains Highway compound (C02) • Snubba Road compound (C03) • Red Hill Road compound (C08) • Adjungbilly Road compound (C09) • Woodhouselee Road compound (C11) • Bowmans Lane compound (C15) • Snubba Road compound (C16). These have been replaced with the following compounds: • Ardrossan Headquarters Road compound (C17) – located about 7.6 km west of Batlow • Snubba Road compound (C18) – located about 7.7 km south of Batlow • Gadara Road compound (C19) – located about 4.9 km west of Tumut • Ellerslie Road compound (C21) – located about 13.1 km south-west of Adelong. The proposed footprint for the Gregadoo Road compound (C06), Honeysuckle Road compound (C07), Bannaby substation compound (C12) and Memorial Avenue compound (C14) have also been revised. Following these changes, there are now 11 standalone construction compounds proposed.

AMENDMENT / REFINEMENT	DESCRIPTION
	Changes to accommodation facilities The Tumbarumba accommodation facility (AC01) is no longer required. The amended project includes the following new combined worker accommodation facilities and compounds: • Tarcutta accommodation facility and compound (AC03) – located about 1.5 km south-west of Tarcutta • Adjungbilly accommodation facility and compound (AC04) – located about 21.7 km east of Gundagai • Yass accommodation facility and compound (AC05) – located on the north-western outskirts of the Yass township • Crookwell accommodation facility and compound (AC06) – located off Graywood Siding Road, about 18.1 km north of Goulburn • Green Hills accommodation facility and compound (AC07) – located about 6.5 km west of Batlow.
Nomination of access tracks	New access tracks or upgrades to existing access tracks are proposed to connect construction areas and the transmission line easement to the existing road network. Existing unsealed local roads, forest roads, and tracks proposed for use as part of the access arrangements may also require minor improvement work, such as grading or resurfacing, or drainage work.
Additional telecommunications connections to existing substations	Removal of the telecommunications hut at Killimicat from the scope and inclusion of additional telecommunications connections to existing substation: • Gadara 132 kV substation • Gullen Range 330 kV substation • Crookwell 2 330 kV substation.
Refinements	
Transmission line and substation design refinements at Gregadoo	The transmission line between the existing Wagga 330 kV substation and the proposed Gugaa 500 kV substation has been assessed as operating at 500 kV for the amended project. However, energisation to 500 kV would only occur at the commissioning stage of the Victoria to NSW Interconnector West (VNI West) project, which is subject to a separate Planning Approval. Until such time, the line will operate at 330 kV.
	Associated changes with energisation to 500 kV include additional infrastructure at the proposed and relocated Gugaa 500 kV substation. The area of land required for the proposed Gugaa 500 kV substation has also increased in size.
Identification of areas where controlled blasting may be required	Preliminary geotechnical investigations and further consideration of terrain along the amended project alignment have identified several potential areas where controlled blasting may be required.
Use of approved water sources	Further analysis of water sources has been carried out for the project which complements the analysis carried out in the EIS. In addition, a process has been proposed to assist with selecting the preferred water sources to be used during construction.
Use of helicopters and drones	Additional information and assessment for the use of helicopters and drones for stringing transmission lines is now available with the engagement of construction contractors and this information has been presented in the Amendment Report. Drones are also expected to be used for additional construction activities such as, but not limited to, surveys and vegetation management. With the use of helicopters confirmed by the construction contractors and the proposed changes to ancillary facilities, the potential helipad locations have also been revised.

Table 2-2 provides further details of the construction compounds and/or accommodation facilities that have changed compared to the EIS and been used as the basis of this addendum AQIA.

The indicative earthwork volumes for the amended project are presented in **Table 2-3**.

Table 2-2 Changes to assumptions for construction compounds/accommodation facilities compared with EIS

ID / name in EIS	ID / name in Amendment Report	Comments	Ancillary facilities relevant to amended AQIA	Energy Source
Wagga 330 kV substation compound (C01)	Wagga 330 kV substation compound (C01)	No change proposed	None	Grid
Snowy Mountains Highway compound (C02)	N/A	Removed from project scope		
Snubba Road compound (C03)	N/A	Removed from project scope		
Maragle 500 kV substation compound (C05)	Maragle 500 kV substation compound (C05)	No change proposed	Potential helipad/helicopter facility	Grid
Gregadoo Road compound (C06)	Amended Gregadoo Road compound (C06)	Area of land has been revised	Potential helipad/helicopter facility Wastewater treatment facilities	Grid
Honeysuckle Road compound (C07)	Amended Honeysuckle Road compound (C07)	Area of land has been revised	Concrete batching plant Potential helipad/helicopter facility	Diesel generator
Red Hill Road compound (C08)	N/A	Removed from project scope		
Adjungbilly Road compound (C09)	N/A	Removed from project scope		
Yass substation compound (C10)	Yass substation compound (C10)	No change proposed	None	Diesel generator
Woodhouselee Road compound (C11)	N/A	Removed from project scope		
Bannaby 500 kV substation compound (C12)	Amended Bannaby 500 kV substation compound (C12)	Area of land has been revised	Concrete batching plant Potential helipad/helicopter facility Wastewater treatment facilities	Grid
Memorial Avenue compound (C14)	Amended Memorial Avenue compound (C14)	Area of land has been slightly revised to provide primary and secondary access points and avoid vegetation clearance	None	Grid
Bowmans Lane compound (C15)	N/A	Removed from project scope		
Snubba Road compound (C16)	N/A	Removed from project scope		

ID / name in EIS	ID / name in Amendment Report	Comments	Ancillary facilities relevant to amended AQIA	Energy Source
N/A	Ardrossan Headquarters Road compound (C17)	New construction compound	Concrete batching plant Potential helipad/ helicopter facility	Diesel generator
N/A	Snubba Road compound (C18)	New construction compound	Concrete batching plant Potential helipad/ helicopter facility	Diesel generator
N/A	Gadara Road compound (C19)	New construction compound	Potential helipad/ helicopter facility	Diesel generator
N/A	Ellerslie Road compound (C21)	New construction compound	Potential helipad/ helicopter facility	Diesel generator
Tumbarumba accommodation facility (AC1)	N/A	Removed from project scope		
N/A	Tarcutta accommodation facility and compound (AC03)	New accommodation facility and compound	Concrete batching plant Potential helipad/ helicopter facility	Diesel generator
N/A	Adjungbilly accommodation facility and compound (AC04)	New accommodation facility and compound	Concrete batching plant Potential helipad/ helicopter facility	Diesel generator
N/A	Yass accommodation facility and compound (AC05)	New accommodation facility and compound	Concrete batching plant Potential helipad/ helicopter facility	Diesel generator
N/A	Crookwell accommodation facility and compound (AC06)	New accommodation facility and compound	Concrete batching plant Potential helipad/ helicopter facility	Diesel generator
N/A	Green Hills accommodation facility and compound (AC07)	New accommodation facility and compound	Concrete batching plant Potential helipad/ helicopter facility	Diesel generator

Table 2-3 Indicative earthworks volumes

Site	Indicative cut volume (cubic metres)	Indicative fill volume (cubic metres)
Wagga 330 kV substation	5,000	5,000
Proposed Gugaa 500 kV substation	60,000	100,000
Bannaby 500 kV substation	40,000	30,000
Transmission line – construction of structures, and associated construction compound establishment	570,000	780,000
Transmission line – construction of access tracks	890,000	940,000
Total	**1,565,000**	**1,855,000**

Note:

Indicative earthwork volumes exclude topsoil strip. Many areas will require localised cut to fill operations which will be developed and optimised during further detailed design and construction planning and are not accounted for in this table. The indicative earthwork volumes are based on the assumption that cut material can be used as fill for the project.

3.0 Legislative and policy context

3.1 Protection of the Environment Operations Act 1997 and Protection of the Environment Legislation Amendment Act 2011

Whilst there have been no changes to the *Protection of the Environment Operations Act 1997* (POEO Act) compared with that presented in Chapter 4 of *Technical Report 17 - Air Quality Impact Assessment*, there is a need to clarify that concrete batching plants do not require an environment protection licence (EPL), regardless of their operating or material handling capacity. This is stated under Clause 6(1) of Schedule 1 of the POEO Act, ie:

"6. Cement or lime works

(1) This clause applies to the following activities—

cement or lime handling, meaning the handling of cement, fly ash, powdered lime (other than agricultural lime) or any other similar dry cement products, but not if the handling occurs as part of the production of pre-mixed concrete (concrete batching)."

However, there are other proposed activities such as crushing and screening (excluding that occurring at borrow pits) and helicopter related activities at construction compounds that may require an EPL subject to the below provisions:

- Crushing, grinding or separating – Clause 16(2) of Schedule 1 of the POEO Act deems this to be a scheduled activity that requires an EPL if the crushing, grinding or separating plant has the capacity to process:
  - more than 150 tonnes of materials per day, or
  - 30,000 tonnes of materials per year
- Helicopter related activities – Clause 20(1) of the POEO Act deems this to be a scheduled activity that requires an EPL if:
  - the activity has an intended use of more than 30 flight movements per week (where take-off and landing are separate flight movements), and
  - the activity is conducted within one kilometre of a residence not associated with the landing, take-off or parking of helicopters.

3.2 IAQM Guidance

Whilst the United Kingdom Institute of Air Quality Management's *Guidance on the Assessment of Dust from Demolition and Construction* (IAQM Guidance) (Holman, 2014) was updated in September 2023, for consistency with *Technical Report 17 - Air Quality Impact Assessment*, the 2014 version has been applied to this addendum. *Technical Report 17 - Air Quality Impact Assessment* should be read in conjunction with this addendum.

3.3 Guidelines on recommended separation distances

As stated in Section 4.6 of the EIS Air Quality Impact Assessment, recommended separation distances (or 'buffer' distances) refer to the appropriate level of separation between a source of emissions and sensitive land uses in order to avoid the impacts of intended and unintended emissions on people.

The application of minimum recommended separation distances provides a valuable screening tool to judge whether a detailed assessment is required to evaluate the potential risk of conflicting land use/activities. This approach is consistently applied in this assessment.

There are no separation guidelines issued by NSW Environment Protection Authority (EPA), hence guidelines set by other regulatory agencies in Australia have been referred to, consistent with the approach applied in the EIS. These include:

- Australian Capital Territory (ACT): *Separation Distance Guidelines for Air Emissions* (ACT Government, 2018)
- Northern Territory (NT): *Guideline: Recommended Land Use Separation Distances* (NT EPA, 2017)
- South Australia (SA): *Evaluation Distances for Effective Air Quality and Noise Management* (SA EPA, 2016)
- Victoria (VIC): *Recommended Separation Distances for Industrial Residual Air Emissions*[1] (VIC EPA, 2013)
- Western Australia (WA): *Recommended Separation Distances for Industrial Residual Air Emissions* (WA EPA, 2005).

These recommended separation distances have been developed to be applied to sensitive uses, such as residential residences, schools, hospitals and childcare centres. The most conservative recommended separation distances provided in the above documentation that are relevant to the project activities are provided in **Table 3-1**.

Table 6-16 identifies potential constraints with respect to the location of helipads, diesel-fuelled generators, concrete batching plants and crushing/screening activities and the recommended separation distances presented in **Table 3-1**.

[1] EPA Victoria released an updated draft separation guideline in December 2022 that is due to be finalised by the end of 2023 (https://engage.vic.gov.au/separation-distances-and-landfill-buffers).There are no changes to the recommended distance for concrete plants compared with the 2013 document referenced in **Table 3-1**.

Table 3-1 Recommended separation distances

Activity	Scale	Recommended minimum separation distance (metres)	Reference	Relevance to the project
Electric power generation	Electrical power generation using fuel other than natural gas:		NT EPA, 2017	Locations where diesel-fuelled generators would be used (such as construction compounds and accommodation camps)
	Greater than or equal to 10 megawatts in aggregate	1,000		
	Greater than or equal to 100 kilowatts but less than 10 megawatts in aggregate	500		
Concrete plant	Greater than 5,000 tonnes per year	100	(VIC EPA, 2013)	Locations where concrete batching plants would be located that would produce greater than 5,000 tonnes per annum (such as construction compounds)
Crushing, grinding or milling	Rock, ores or minerals excluding lease or private mine or wet sand	500	ACT Government, 2018	Locations where crushing or grinding activities would be undertaken (such as construction compounds)
Screening of materials	Premises on which material extracted from the ground is screened, washed, crushed, ground, milled, sized or separated.		NT EPA, 2017	Locations where screening of materials would be undertaken (such as construction compounds)
	Greater than 5,000 but less than 50,000 tonnes per year	500		
	Greater than 50,000 tonnes per year	1,000		
Crushing of building material	Crushing or cleaning of waste building or demolition material	1,000	WA EPA, 2015	Locations where crushing of waste building or other demolition materials would be undertaken (such as construction compounds)
Extractive industries	Hard rock quarrying (including controlled blasting), crushing and screening	1,500	WA EPA, 2015	Locations where controlled blasting would be required)

4.0 Methodology

4.1 Key tasks

The following provides a high-level summary of the approach taken to assess the air quality impacts of the amended project:

- definition of the air quality study area and identification of sensitive receptors (**Section 4.2**)
- qualitative assessment of dust emissions due to construction activities (that is, particulate matter (PM) including nuisance dust) (as detailed in **Section 4.3**)[2,3]
- risk-based assessment of impacts due to emissions of dust during operation and products of combustion during construction and operation (as detailed in **Section** 4.4)
- identification of activity data for use in the assessment (**Section 4.4.2**)
- assessment of air quality impacts during construction (**Chapter 6.0**)
- assessment of air quality impacts during operation (**Chapter 7.0**)
- cumulative impact assessment (**Chapter 8.0**)
- recommendation of mitigation measures (**Chapter 9.0**).

4.2 Air quality study area and sensitive receptors

Consistent with the approach taken for *Technical Report 17 – Air Quality Impact Assessment* prepared for the EIS, the first step in the assessment for the amended project was to identify the revised air quality study area and the location of sensitive receptors in relation to the amended project footprint, as detailed below.

In accordance with the IAQM Guidance, as shown on **Figure 4-1**, a 350 metre buffer has been mapped around the amended project footprint between the existing Wagga 330 kV substation and the future Maragle 500 kV substation, and Bannaby 500 kV substation, to identify potentially affected sensitive receptors during construction.

The IAQM Guidance also recommends consideration of sensitive receptors up to 500 metres from the access point to the construction site, and therefore a 500 metre buffer around the amended project footprint, including access tracks, is also shown on **Figure 4-1** with the land within this buffer considered to form the revised air quality study area.

Only those sensitive receptors inside the 350 metre and 500 metre buffers around the amended project footprint are considered by the IAQM Guidance to have the potential to be affected by air emissions during the construction period. However, professional judgment has been applied during the assessment to take account of current uncertainties related to, for example, the scale of activities, helipads, diesel generators and controlled blasting.

[2] The IAQM Guidance states that professional judgement should also be applied to determine how proposed activities will affect the dust emission magnitude. For example, scale of activities, use of mobile crushing and screening equipment, diesel generators, controlled blasting etc

[3] The assessment of impacts related to construction activities is focussed on the major dust-generating activities at the substations, construction compounds and along the amended transmission line corridor. Minor construction activities, and utility work have not been explicitly assessed. Regardless of this, appropriate management measures would be implemented to minimise the potential for adverse air quality impacts from these other activities.

A one kilometre buffer has been added to the locations where helipads and/or diesel generators may be in use, to allow assessment against the recommended separation distances presented in **Table 3-1**.

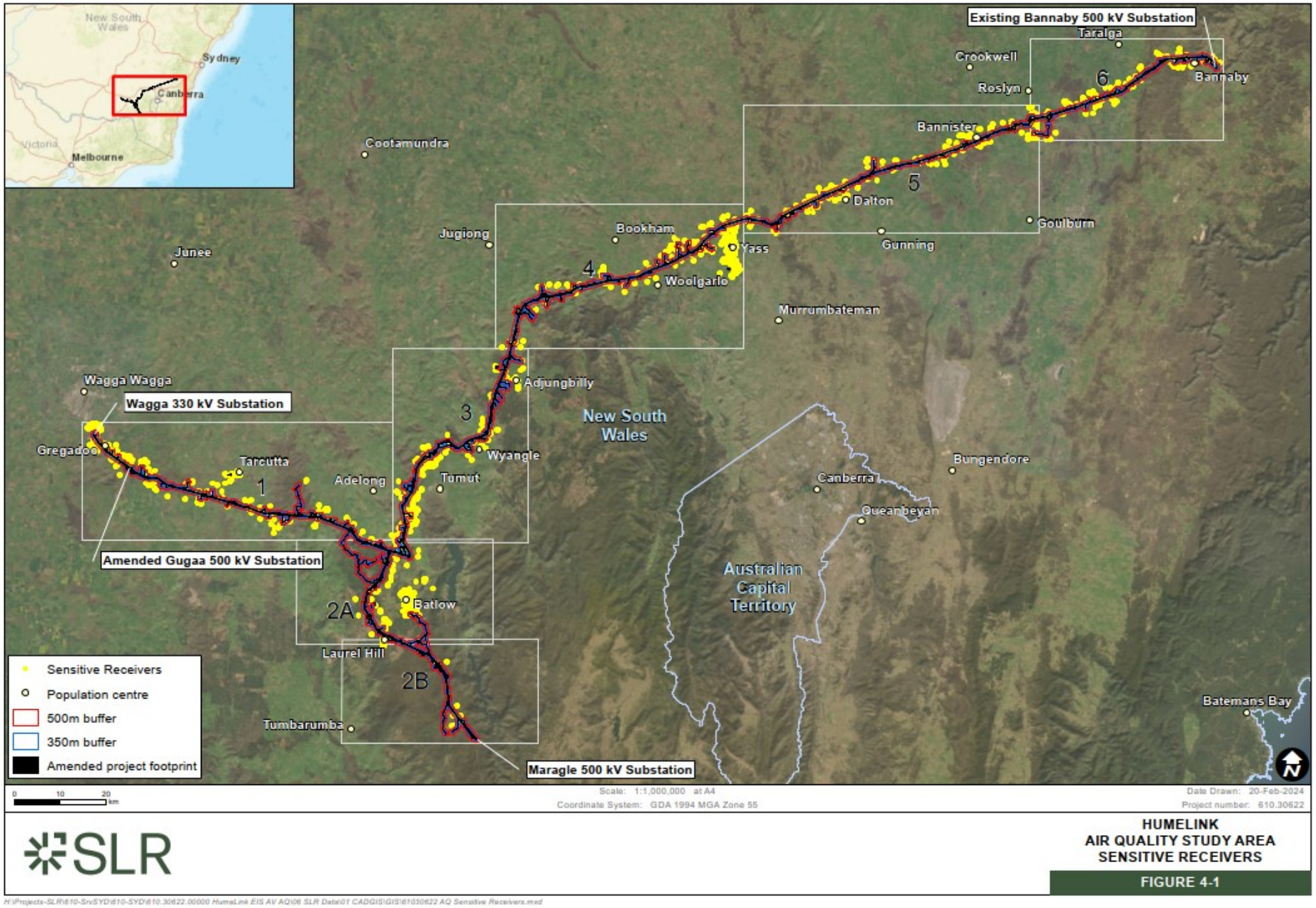
The amended project covers a total length of approximately 365 kilometres and comprises transmission line construction, substation works, and several construction compounds and accommodation facilities. In order to identify the relative locations of sensitive receptors in the vicinity of each it has been necessary to consider each of the construction compound/ accommodation facilities locations in isolation, and to split the amended project footprint into sections (refer to **Section 6.1.1**).

Sensitive receptors identified within the buffers have been identified and included in the assessment and where relevant, professional judgement has also been applied to determine how proposed activities would affect the dust emission magnitude.

The identified sensitive receptors[4] in the revised study area are shown in **Figure 4-1**, together with the buffers per the IAQM Guidance and the sections of the project footprint are discussed in **Section 6.1.1.1**.

Due to the large number of identified sensitive receptors in the revised study area, it has not been possible to label them on **Figure 4-1**. However, the specific sensitive receptors that have been identified as having potential to be affected by air emissions from the amended project are discussed in further detail in **Chapter 6.0**.

[4] The NSW EPA Approved Methods defines a sensitive receptor as "*A location where people are likely to work or reside; this may include a residences, school, hospital, office or public recreational area. An air quality impact assessment should also consider the location of known or likely future sensitive receptors*"


New South Wales
Sydney
Canberra
Victoria
Melbourne
Existing Bannaby 500 kV Substation
Taralga
Crookwell
Roslyn
Bannaby
6
Bannister
5
Cootamundra
Dalton
Goulburn
Jugiong
Bookham
Yass
Gunning
Junee
4
Woolgarlo
Murrumbateman
Wagga Wagga
Wagga 330 kV Substation
Adjungbilly
3
New South Wales
Gregadoo
Tarcutta
Wyangle
Bungendore
Adelong
Tumut
Canberra
1
Queanbeyan
Amended Gugaa 500 kV Substation
Australian Capital Territory
Batlow
2A
Laurel Hill
2B
Sensitive Receivers
Population centre
500m buffer
350m buffer
Amended project footprint
Tumbarumba
Batemans Bay
Maragle 500 kV Substation
0 10 20 km
Scale: 1:1,000,000 at A4
Coordinate System: GDA 1994 MGA Zone 55
Date Drawn: 20-Feb-2024
Project number: 610.30622
SLR
HUMELINK
AIR QUALITY STUDY AREA
SENSITIVE RECEIVERS
FIGURE 4-1
H:\Projects-SLR\610-SrvSYD\610-SYD\610.30622.00000 HumeLink EIS AV AQI06 SLR Data\01 CADGIS\GIS\610306622 AQ Sensitive Receivers.mxd

4.3 Construction dust assessment

The construction dust assessment was completed using the same IAQM Guidance detailed in *Technical Report 17 - Air Quality Impact Assessment*. An overview of the method is provided in **Figure 4-2.**

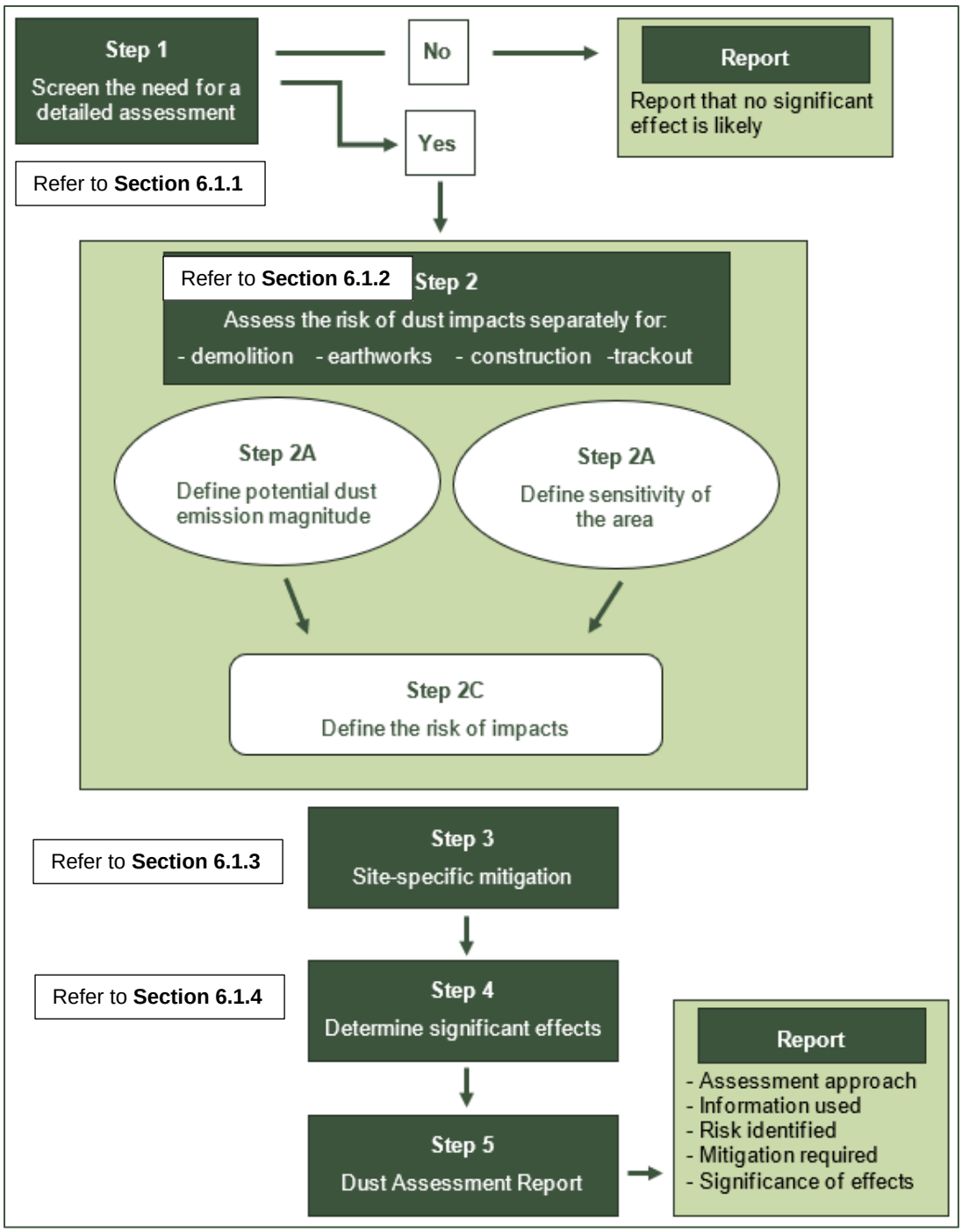


Figure 4-2 IAQM Guidance – Steps to perform a dust assessment for the amended project elements

4.4 Products of combustion assessment

4.4.1 Introduction

Emissions of products of combustion from mobile equipment were assessed using the same risk-based approach detailed in *Technical Report 17 - Air Quality Impact Assessment* for operational dust emissions.

During construction only, as listed in **Table 4-1**, up to ten of the construction compounds and combined construction compounds and worker accommodation facilities are expected to use diesel-fuelled generators for electrical power.

Table 4-1 Locations with potential use of diesel generators

Location Name
Amended Honeysuckle Road compound (C07)
Ardrossan Headquarters Road compound (C17)
Snubba Road compound (C18)
Gadara Road compound (C19)
Ellerslie Road compound (C21)
Tarcutta accommodation facility and compound (AC03)
Adjungbilly accommodation facility and compound (AC04)
Yass accommodation facility and compound (AC05)
Crookwell accommodation facility and compound (AC06)
Green Hills accommodation facility and compound (AC07)

4.4.2 Activity data used in calculations

A summary of the activity data used during construction assessment of air quality impacts due to products of combustion is presented in **Table 4-2**. To estimate the emissions from products of combustion, the diesel and petrol emission factors for miscellaneous industrial and light duty vehicles were sourced from the NPI *Emission Estimation Technique Manual for Combustion Engines* (DSEWPC, 2008). These are shown in **Table 4-3** (miscellaneous industrial vehicles) and **Table 4-4** (light duty vehicles).

The fuel consumption data are consistent with those presented in *the EIS*.

Changed values are highlighted in bold text and green shading. It is noted that the power supply option (ie grid-connected or relying on diesel generators) for each site may change over the construction period (eg initially generators with later connection to the grid if feasible), and conservative estimates have been made to allow for the uncertainties associated with this and other variabilities such as changes in worker numbers etc during project delivery. As detailed in mitigation measure AQ6, worker accommodation facilities and construction compounds will connect to the electricity network where possible. In addition, there may be the potential for hybrid generation systems to be installed at worker accommodation facilities with solar power supplementing other power sources. Actual fuel and electricity consumption rates may therefore be lower than the conservative values used in the calculations.

Table 4-2 Activity data used in the products of combustion risk assessment for the construction phase

Emission source	Activity data	Units	Previous value (EIS)	Revised value (Amendment Report)
Consumption of diesel	Transmission line land clearing and construction, including transport of construction materials	kL	3,315	3,545
	Bannaby 500 kV substation work	kL	4,182	4,182
	Proposed Gugaa 500 kV substation construction	kL	8,240	8,240
	Wagga 330 kV substation work	kL	3,446	3,446
	Construction compounds (power generation)	kL	205	**922**
	Accommodation facilities (power generation)	kL	0	**12,700**
	Light vehicles for surveys, supervision, engineering and management support	kL	545	545
	Staff transport – daily buses to/from site	kL	0	**254**
	Staff commuting – from major cities to camp	kL	23	**158**
Consumption of unleaded petrol	Bannaby 500 kV substation work	kL	279	**68.4**
	Proposed Gugaa 500 kV substation construction	kL	542	**120**
	Wagga 330 kV substation work	kL	249	**57.6**
	Staff commuting – from major cities to camp	kL	99	**186**
	Light vehicle use for survey work, supervision, engineering and management support	kL	0	**163**

Source: Table 4-4 EIS Technical Report 18 – Greenhouse Gas Assessment (SLR,2023)

Table 4-3 NPI emission factors for miscellaneous industrial vehicles

Pollutant	Diesel emission factor (kg/L)[(a)]	Unleaded petrol emission factor (kg/L) [(b)]
CO	0.018	0.48
Formaldehyde	0.0008	0.000536
NO_x	0.044	0.0117
$PM_{2.5}$	0.003	0.000679
PM_{10}	0.004	0.000731
PAHs	0.00000165	0.0000000077
SO_2	0.00002394	0.00040
VOC	0.0041	0.0157

Notes:
(a) Source: Table 35 of DSEWPC, 2008 multiplied by 3 to convert from kg/kWh to kg/L (per footnote 3 of Table 35)
(b) Source: Table 40 of DSEWPC, 2008 multiplied by 1.8 to convert from kg/kWh[3] to kg/L (per footnote 3 of Table 40)

Table 4-4 NPI emission factors for light duty vehicles

Pollutant	Diesel emission factor (kg/L)[(a)]
CO	0.0194
Formaldehyde	-
NO_x	0.00889
$PM_{2.5}$	0.00234
PM_{10}	0.00239
PAHs	0.000000165
SO_2	0.0000167
VOC	0.000423

Note:
(a) Source: Table 15 of DSEWPC, 2008 divided by 1000 to convert from kg/m[3] to kg/L

4.5 Limitations and uncertainties

Air quality experienced at any location is a result of emissions generated by natural and anthropogenic sources on a variety of scales (local, regional, and global). The relative contributions of sources at each of these scales to the air quality at a location varies, based on a wide number of factors including the type, location, proximity and strength of the emission source(s), prevailing meteorology, land uses and other factors affecting the emission, dispersion, and fate of those pollutants.

The risk-based assessments applied are related to the scale of anticipated activity based on preliminary design information provided by Transgrid.

The IAQM method is not explicitly designed for assessing the impact of linear projects (such as HumeLink). A conservative approach is taken in this addendum assessment, consistent with the EIS assessment, by splitting the transmission line corridor and access tracks into seven sections (refer to **Section 6.1.1.1**). The major source of dust emissions related to construction of the transmission line would occur where the structures are installed, however, in reality there are likely to be many locations within each of these sections where minimal (if any) dust-generating activities would occur.

At the time of writing, neither the precise location, nor scale of activity, for the proposed helipads, diesel-fuelled generators, concrete batching plants, and crushing/screening activities was known. Professional judgement has been used in the risk assessment and recommended separation distances from sensitive receptors have been provided to minimise the potential for adverse air quality impacts.

The following assumptions have also been applied:

- The location of sensitive receptors are as shown on **Figure 4-1**.
- Location and the scale of proposed construction activities are based on the amended project description provided to SLR from Transgrid, including estimates of disturbance areas, cut and fill volumes and traffic movements.
- Water would be available for dust suppression as required.
- Consistent with *Technical Report 17 - Air Quality Impact Assessment*, it is assumed that existing ambient air quality in the vicinity of the amended project footprint would be similar to that at the nearest NSW Government air quality monitoring station (AQMS) (refer to **Section 4.3**).

4.5.1 Updated sensitive receptors

During the development of the Amendment Report and this assessment, several minor updates to the assessed sensitive receptors have been identified based on landowner feedback. The receptor updates include reclassifying sensitive receptors to remove non sensitive buildings, removing receptors that have been demolished, relocating receivers, and one additionally identified receptors. It is noted that sensitive receptors will continue to be reviewed during the detailed design process and as part of ongoing stakeholder engagement.

The updated receptors are not included in the risk assessment in this report, however the potential implications to the assessment outcomes are summarised below.

There are 27 removed receptors structures that have been assessed as residential receivers in this assessment but have since been confirmed to be sheds, uninhabited, demolished or similar. The relocated receptors vary in distance to the amended project footprint and only two of these (O12 and O52) are identified as being at risk of being impacted by dust in this assessment based on their previous classification as residential receptors. Removing these receptors would not change the recommended approach to air quality management and mitigation at other receptors.

There are 10 previously assessed residential receptors that have had their location adjusted to represent the dwelling location more accurately. The change in distance between the receptors and the amended project footprint is generally small, around 10 metres to 30 metres. Only two of these (O12 and O52) are identified as being at risk of being impacted by dust in this assessment. The slight relocation of these receptors does not change the assessment outcomes.

None of the newly identified residential receptors are in the vicinity of the construction activities assessed in this report and do not change the assessment outcomes.

5.0 Existing environment

The same information presented in *Technical Report 17 - Air Quality Impact Assessment* with respect to the existing environment were applied to this addendum assessment including:

- topography
- climate
- existing emission sources.

The annual average background PM_{10} concentrations assumed for the assessment of construction impacts applied the same approach as *Technical Report 17 - Air Quality Impact Assessment* ie existing air quality was based on the five-year annual average of the air quality monitoring data of the closest monitoring station, and are as presented in **Table 5-1**.

Table 5-1 Assumed background concentrations for construction dust risk assessment – annual average PM_{10} ($\mu g/m^3$)

Project footprint location	Assumed annual average PM_{10} concentration ($\mu g/m^3$)	AQMS data source
Construction compounds/accommodation facilities		
C06 – Amended Gregadoo Road compound	22.7	Wagga Wagga North
C07 – Amended Honeysuckle Road compound	22.7	Wagga Wagga North
C12 – Amended Bannaby 500 kV substation compound	14.3	Bargo
C14 – Amended Memorial Avenue compound	22.7	Wagga Wagga North
C17 – Ardrossan Headquarters Road compound	22.7	Wagga Wagga North
C18 – Snubba Road compound	22.7	Wagga Wagga North
C19 – Gadara Road compound	22.7	Wagga Wagga North
C21 – Ellerslie Road compound	22.7	Wagga Wagga North
AC03 – Tarcutta accommodation facility and compound	22.7	Wagga Wagga North
AC04 - Adjungbilly accommodation facility and compound	22.7	Wagga Wagga North
AC05 - Yass accommodation facility and Compound	10.0	Goulburn
AC06 - Crookwell accommodation facility and compound	14.3	Bargo
AC07 - Green Hills accommodation facility and compound	22.7	Wagga Wagga North
Substations		
Proposed Gugaa 500 kV substation	22.7	Wagga Wagga North
Bannaby 500 kV substation (amended)	14.3	Bargo
Amended footprint and access tracks		
Transmission line corridor and access tracks section 1	22.7	Wagga Wagga North
Transmission line corridor and access tracks section 2a	22.7	Wagga Wagga North
Transmission line corridor and access tracks section 2b	22.7	Wagga Wagga North
Transmission line corridor and access tracks section 3	22.7	Wagga Wagga North
Transmission line corridor and access tracks section 4	22.7	Wagga Wagga North
Transmission line corridor and access tracks section 5	10.0	Goulburn
Transmission line corridor and access tracks section 6	14.3	Bargo

6.0 Construction impacts

6.1 Dust emissions

During construction, dust emissions can occur during site preparation activities (eg demolition, land clearing and earth moving). Emissions can vary substantially from day to day, depending on:

- the activities being undertaken (earthmoving, number of vehicles and plant, etc)
- the duration of the activities
- the size of the site
- the meteorological conditions (wind speed, direction and rainfall)
- the proximity of receptors to the activities
- the adequacy of mitigation measures applied to reduce or eliminate dust
- the sensitivity of receptors to dust.

A large proportion of the dust emissions during construction would result from construction plant and vehicles moving over temporary roads or access tracks and open ground. If mud is tracked onto local roads, dust emissions can occur at some distance from the originating site. The scale of these impacts depends on the dust suppression and other mitigation measures applied.

A qualitative risk assessment has been undertaken in accordance with the IAQM Guidance (Holman, 2014) to assess the potential dust impacts of dust emissions during construction.

6.1.1 IAQM Guidance Step 1 – screening the need for a detailed assessment

In accordance with the IAQM Guidance, a detailed assessment is required where sensitive receptors are located:

- within 350 metres of the boundary of a site (in this case, the project footprint)
- 50 metres from route(s) used by construction vehicles on a public highway
- up to 500 metres from the site entrance(s).

As the amended project covers a total length of approximately 365 kilometres and comprises various construction compounds/worker accommodation facilities, sensitive receptors have been identified for the different sections of the amended footprint including access tracks (refer to **Section 6.1.1.1**), amended substations (refer to **Section 6.1.1.2**) and the amended/new construction compounds/worker accommodation facility (refer to **Section 6.1.1.3**).

All sensitive receptors within 500 metres have been considered in accordance with the IAQM Guidance assessment.

Other than the changes to the project footprint, and the locations of some of the sites being assessed, the key difference between this assessment and the AQIA completed for the EIS is the inclusion of more detailed siting of access tracks along the amended project footprint.

6.1.1.1 Amended project footprint including access tracks

As noted in **Section 4.5**, the IAQM method is not explicitly designed for assessing the impact of linear projects (such as HumeLink).

Due to the length of the project, and the need to consider impacts of construction activities at a local level, the potential impact on air quality of construction activities has been considered in seven sections (refer to **Figure 4-1**)[5]:

- transmission line corridor and access tracks section 1: Wagga 330 kV substation to Wondalga
- transmission line corridor and access tracks section 2a: Wondalga to Snubba Road compound (C18)
- transmission line corridor and access tracks section 2b: Snubba Road compound (C18) to future Maragle 500 kV substation
- transmission line corridor and access tracks section 3: Wondalga to Adjungbilly
- transmission line corridor and access tracks section 4: Adjungbilly to Yass
- transmission line corridor and access tracks section 5: Yass to Roslyn
- transmission line corridor and access tracks section 6: Roslyn to Bannaby.

Sensitive receptors identified within 350 metres and 500 metres of the transmission line corridor and access tracks are listed in **Table 6-1** and shown in **Figure 6-1** to **Figure 6-7**.

As there are sensitive receptors within 350 metres and 500 metres of the project footprint in all seven sections of the amended footprint and access tracks, based on the IAQM Guidance, further assessment is required.

This is considered to be a conservative approach as the major source of dust emissions related to construction of the amended footprint and associated access tracks and compounds would only occur during construction activities at any given location. There are likely to be many locations within each of these seven sections where minimal (if any) dust-generating activities would occur and/or there are no sensitive receptors that could experience any adverse effects.

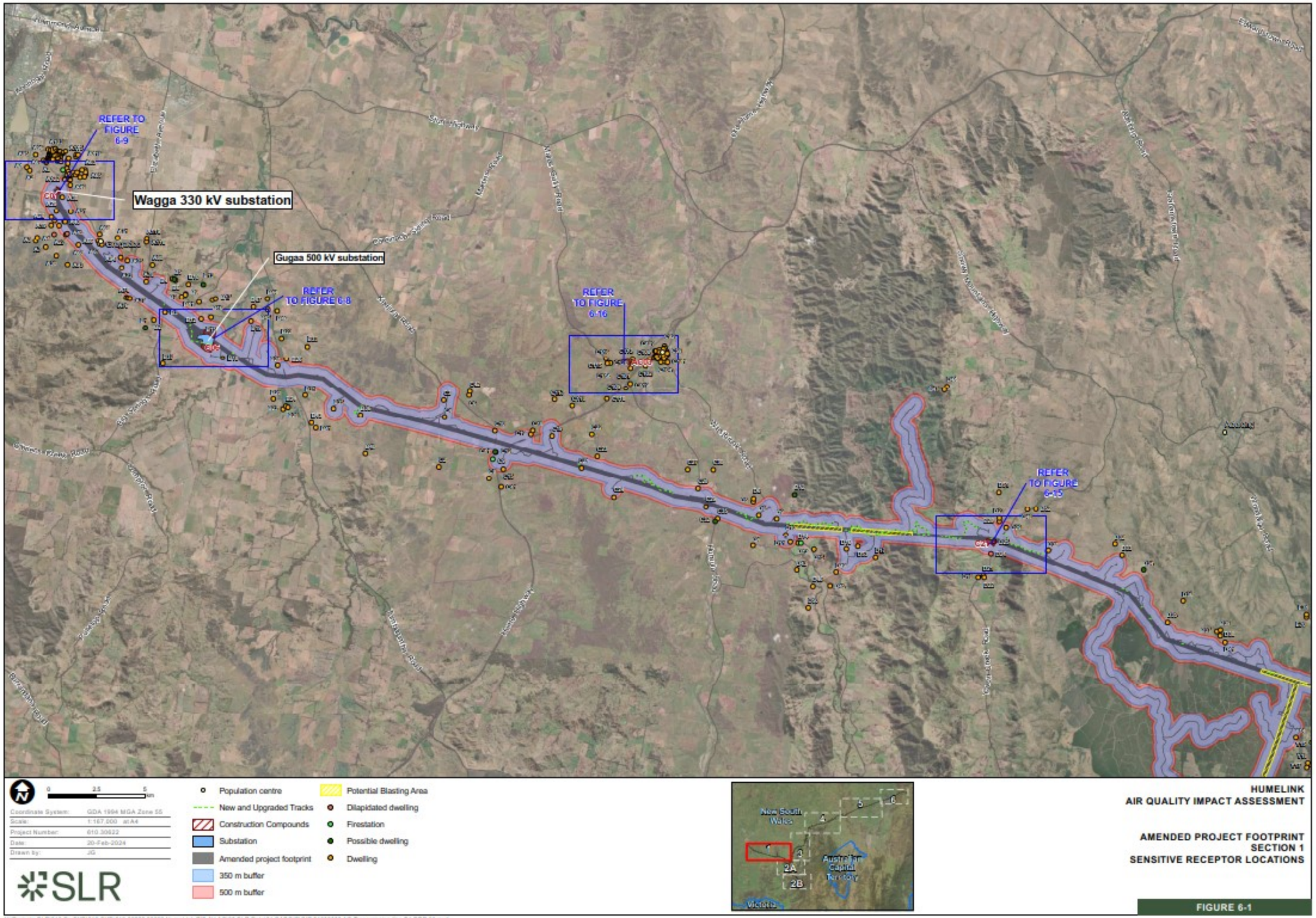
In addition, the location of the construction of the transmission line would move as the construction progresses, with active construction work sites being exposed for up to four months. The most dust-intensive works would occur as a result of transmission line structure foundation works which are likely to last approximately four days per transmission line structure. The remaining time would be dedicated to structural works that have minimal potential for dust-generation.

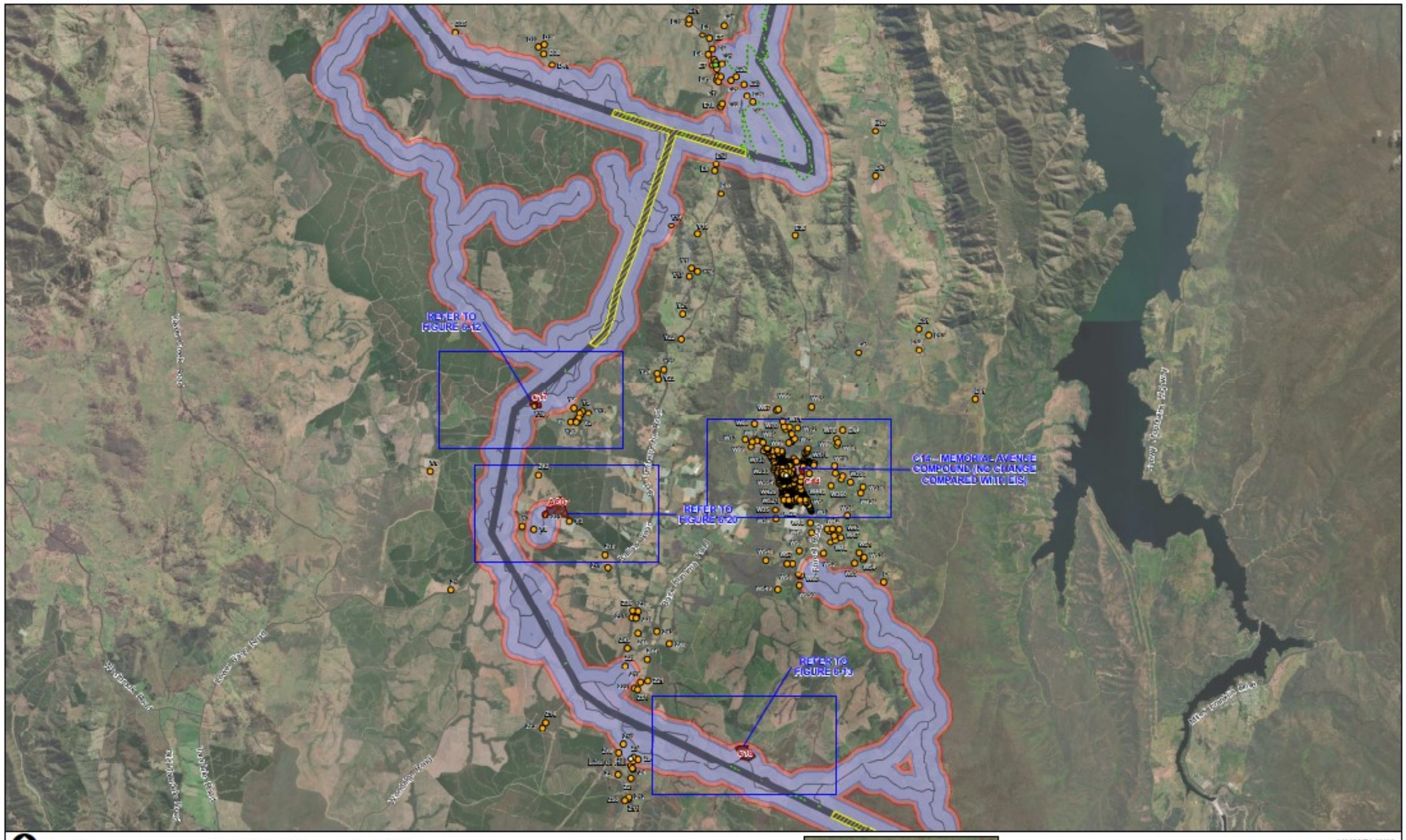
[5] The EIS Air Quality Impact Assessment used six sections to assess impacts from the construction along the project footprint. For the purposes of assessing the amended project footprint. Section 2 has been split into Section 2a and Section 2b for better presentation and analysis purposes.

Table 6-1 Step 1: Screening assessment - Amended footprint and access tracks – identified sensitive receptors

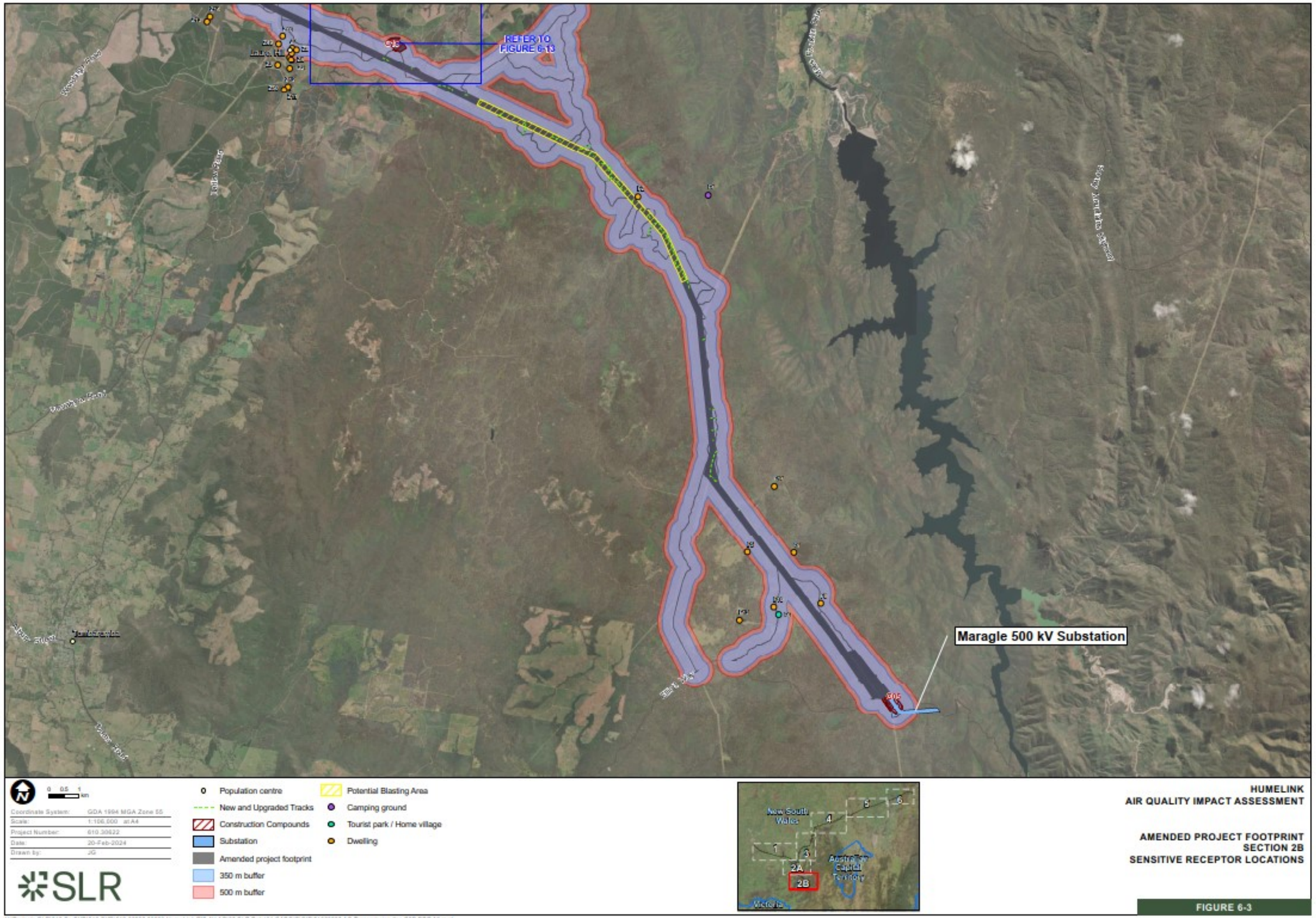
Location ID	Sensitive receptors within 350 m	Receptor type	Sensitive receptors within 350m to 500 m	Receptor type	Further assessment needed?
Amended footprint including access tracks section 1 (**Figure 6-1**)	A73, A29, A38, A40, A41, A51, A60, A67, A75, B18, B21, B35, B36, B3, C3, C4, C19, C21, C29, D8, D9, D10, D11, D16, D25, D29, D31, D53	Dwelling	A28, A33, A66, A69, A78, A94, B12, C10, C12, C15, C17, C24, C28, C35, D17, D35, A120	Dwelling	Yes
	A45	Dilapidated dwelling	C11	Possible dwelling	
	C9	Firestation	D24	Dilapidated dwelling	
Amended footprint including access tracks section 2a (**Figure 6-2**)	E8, E12, E14, E21, E25, E26, E29, E68, Y19, Z6, Z7, Z8, Z10, Z20	Dwelling	D41, E13, E16, E19, E27, E7, W60, W59, W58, Y14, Z9, Z49	Dwelling	Yes
	E11	Firestation			
Amended footprint including access tracks section 2b (**Figure 6-3**)	F10, F2, F8	Dwelling	F5	Dwelling	Yes
	F6	Tourist Park / Home Village			
Amended footprint including access tracks section 3 (**Figure 6-4**)	N67, H38, H33, H25, H24, H23, H21, H11, H13, H16, H19, K20, K46, K49, K48, K47, K45, K44, K41, K40, K39, K37, K35, K27, K26, K23, K22, N12, N2, N8	Dwelling	E6, H20, K21, K50, K43, M67	Dwelling	Yes
	H53	Possible dwelling	H12	Possible dwelling	

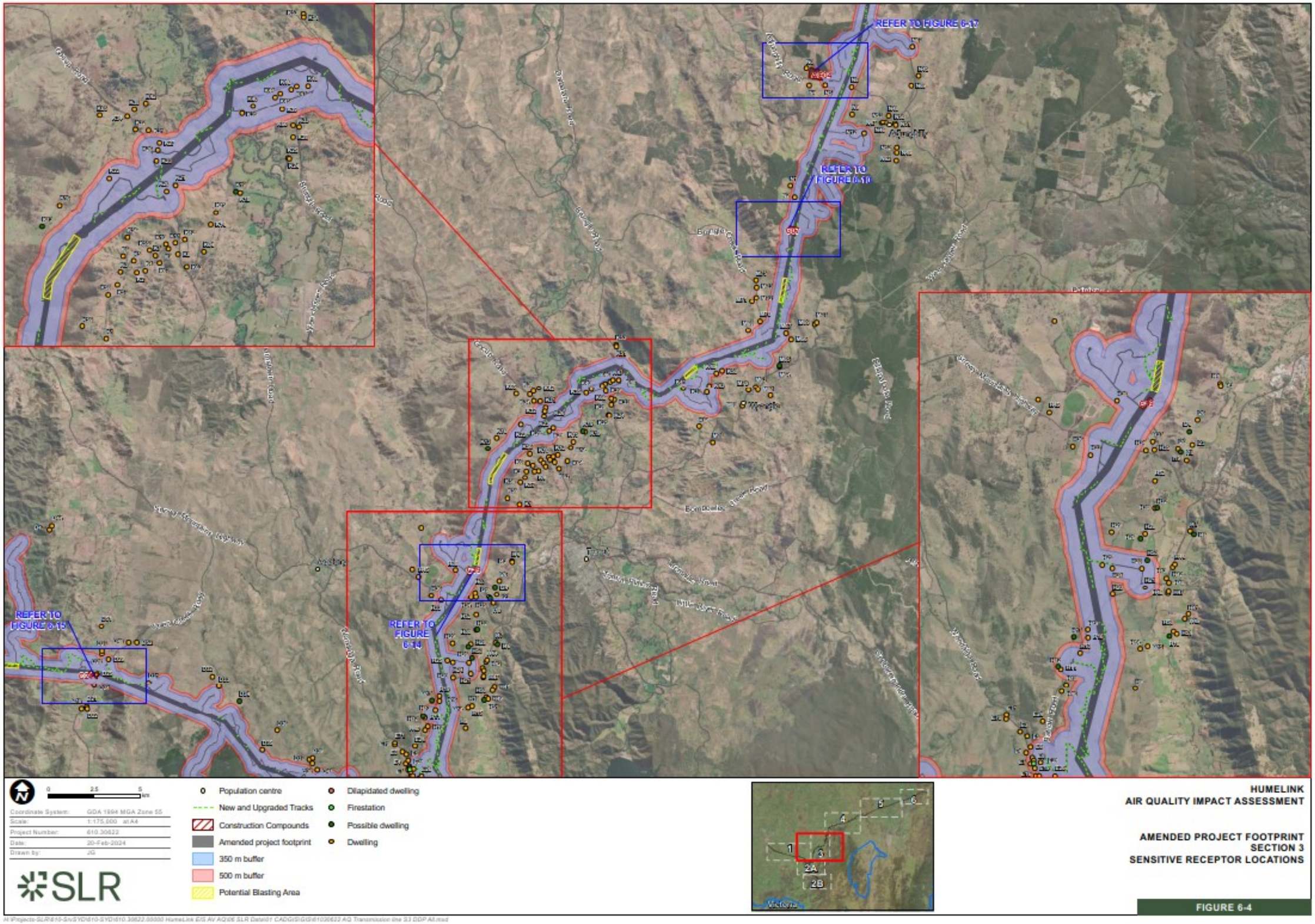
Location ID	Sensitive receptors within 350 m	Receptor type	Sensitive receptors within 350m to 500 m	Receptor type	Further assessment needed?
Amended footprint including access tracks section 4 (**Figure 6-5**)	N35, N37, N29, N31, N32, N28, N18, N17, N13, N11, O5, O8, O10, O11, O12, O13, O19, O31, O32, O34, O37, O42, O43, O45, O46, Q62, Q10, Q19, O626, O628, O631, O652, O653, O654, O684	Dwelling	O2, O9, O16, O20, O27, O29, O40, O47, O49, O52, Q15	Dwelling	Yes
	N38, N25	Dilapidated dwelling			
	O6	Camping Ground			
Amended footprint including access tracks section 5 (**Figure 6-6**)	Q21, Q27, Q34, Q35, Q36, Q39 Q40, Q42, Q43, Q44, Q45, Q49, Q53, Q61, Q63, Q88, Q89, R3, R5, R20, R21, R23, R24, R26, R27, R28, R32, R40, R45, R50, R70, R72, R73, R78, S3, S4, S6, S7, S10, S12, S15, S16, S18, S19, S29, S30, S37, S43, T3, T4, T14, T19,	Dwelling	Q20, Q32, R4, R13, R19, R36, R41, R43, R44, R46, R79, T1, T8, T9, T10, T11, T16,	Dwelling	Yes
	Q58	Possible dwelling	Q31	Possible dwelling	
	R12	Place of Worship	T15	Place of Worship	
Amended footprint including access tracks section 6 (**Figure 6-7**)	T24, T32, T39, T43, T49, T50, T54, T55, U5, U6, U9, U17, U18, U24, U25, U28, V7, V10, V13, V14, V15, V16, V17, V21, V27, V29, V35, V41	Dwelling	T22, T23, T33, T54, U7, U12, U27, V6, V12, V16, V26, V38	Dwelling	Yes
	U19	Dilapidated dwelling			

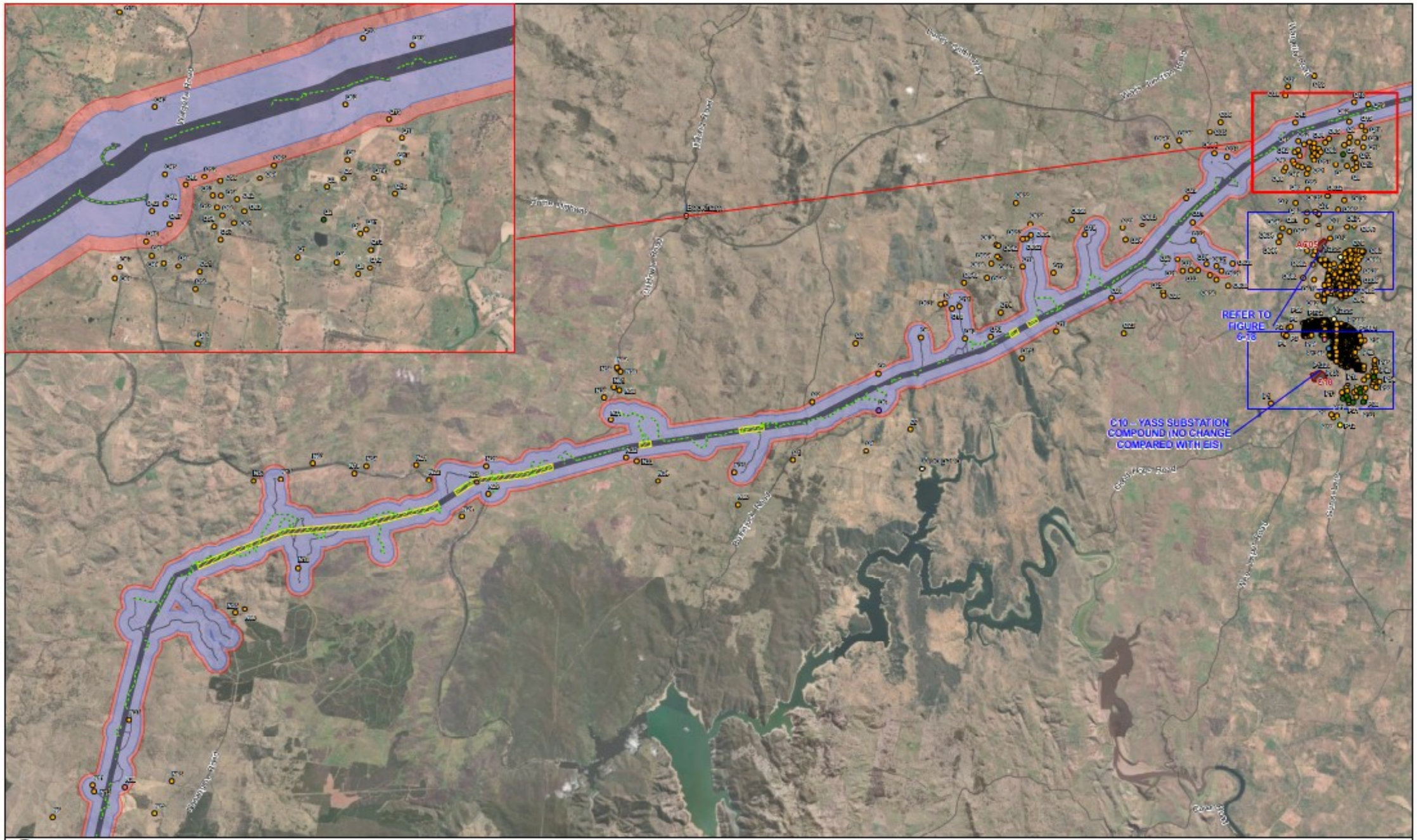

REFER TO FIGURE 6-9
Wagga 330 kV substation
Gugaa 500 kV substation
REFER TO FIGURE 6-8
REFER TO FIGURE 6-16
REFER TO FIGURE 6-15
0 2.5 5 km
Coordinate System: GDA 1994 MGA Zone 55
Scale: 1:167,000 at A4
Project Number: 610.30822
Date: 20-Feb-2024
Drawn by: JG
SLR
Population centre
New and Upgraded Tracks
Construction Compounds
Substation
Amended project footprint
350 m buffer
500 m buffer
Potential Blasting Area
Dilapidated dwelling
Firestation
Possible dwelling
Dwelling
New South Wales
Australian Capital Territory
Victoria
1
2
2A
2B
4
5
6
HUMELINK
AIR QUALITY IMPACT ASSESSMENT
AMENDED PROJECT FOOTPRINT
SECTION 1
SENSITIVE RECEPTOR LOCATIONS
FIGURE 6-1

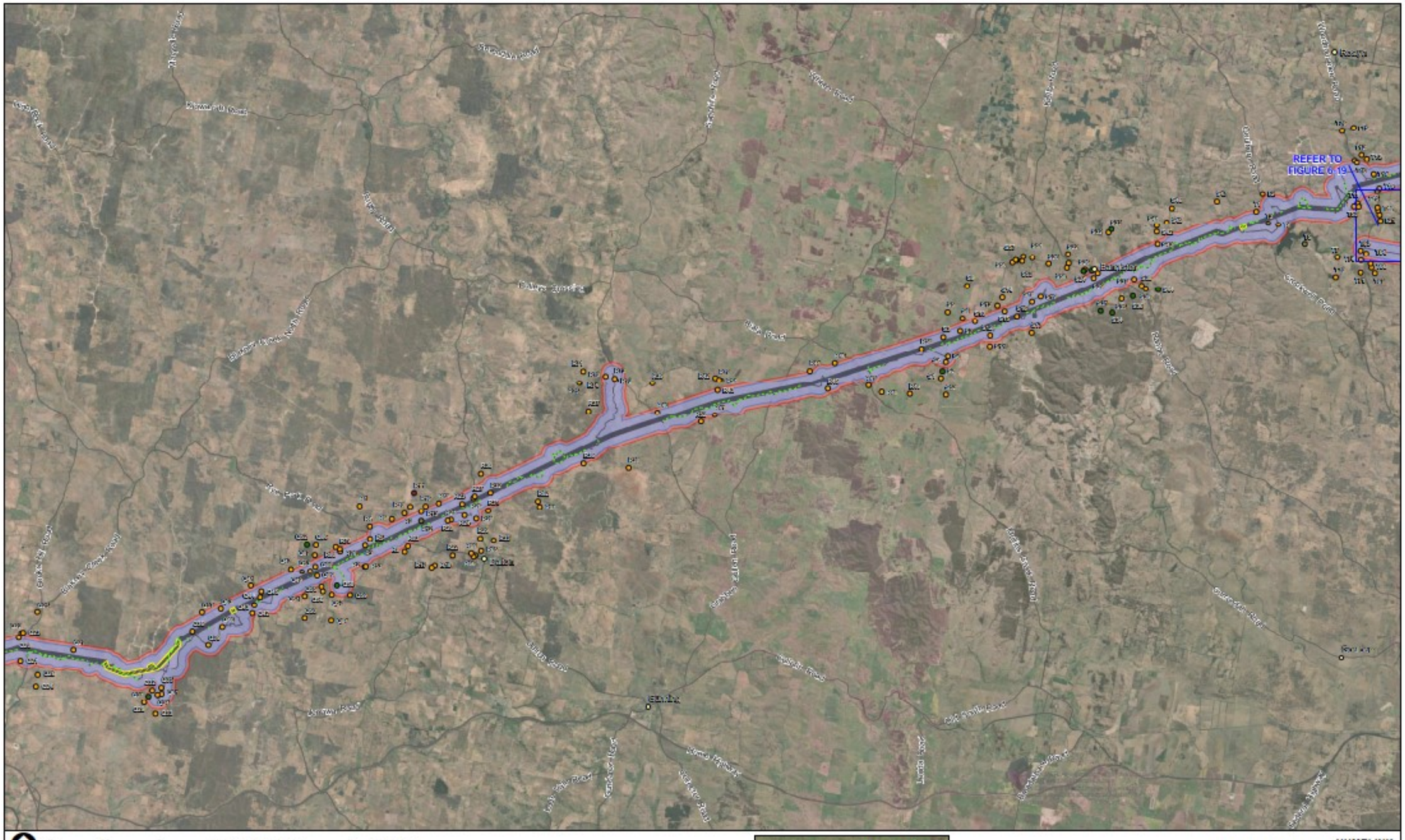


H:\Projects-SLR\610-Snv\SYD\610-SYD\610.30622.00000 HumeLink EIS AV AQ\06 SLR Data\01 CAD\GIS\GIS\610306222 AQ Transmission line S2A DDP A4.mxd

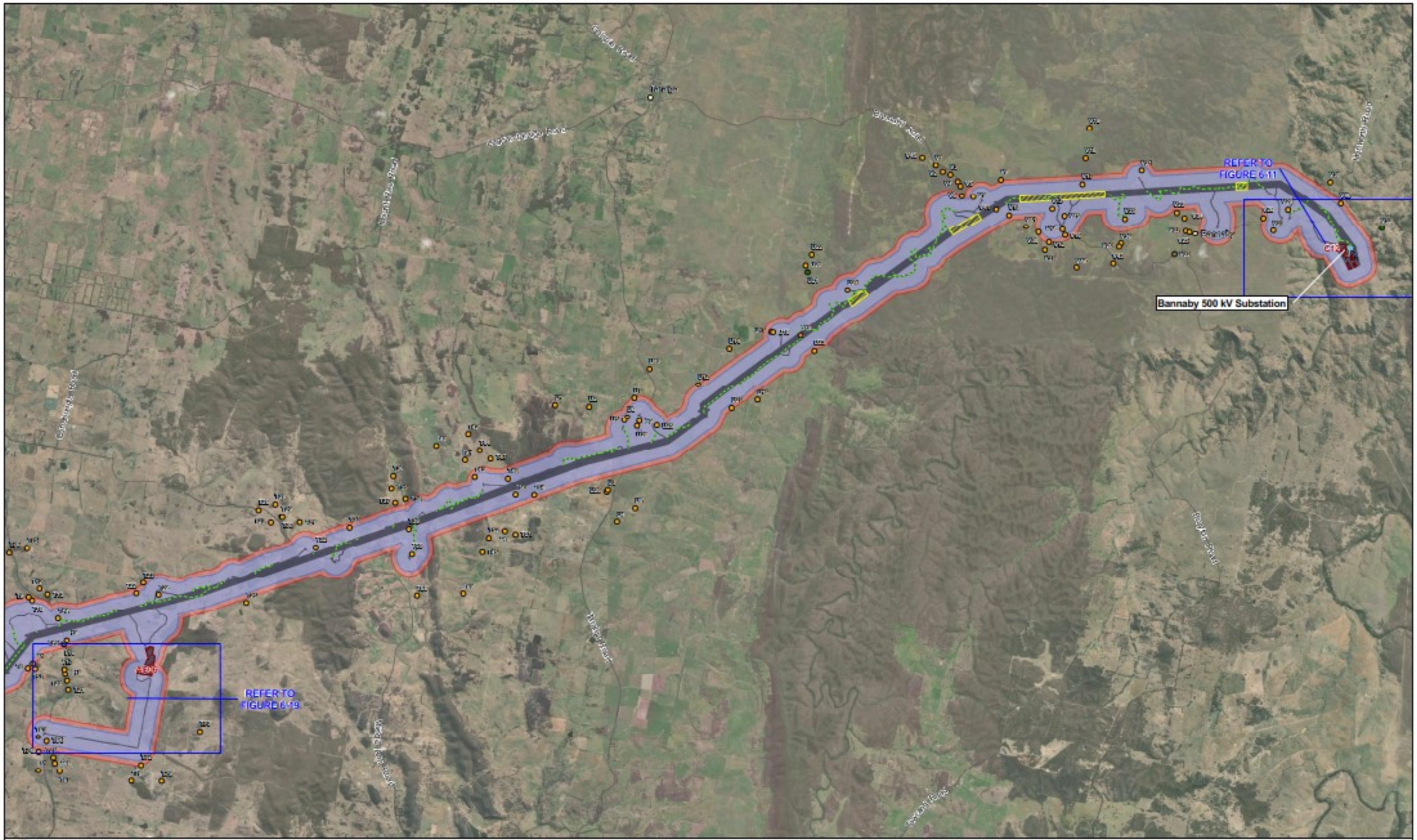

REFER TO FIGURE 6-13
Maragle 500 kV Substation
0 0.5 1 km
Coordinate System: GDA 1994 MGA Zone 55
Scale: 1:106,000 at A4
Project Number: 610.30622
Date: 20-Feb-2024
Drawn by: JG
SLR
Population centre
New and Upgraded Tracks
Construction Compounds
Substation
Amended project footprint
350 m buffer
500 m buffer
Potential Blasting Area
Camping ground
Tourist park / Home village
Dwelling
New South Wales
Australian Capital Territory
Victoria
1
2A
2B
3
4
5
6
HUMELINK
AIR QUALITY IMPACT ASSESSMENT
AMENDED PROJECT FOOTPRINT
SECTION 2B
SENSITIVE RECEPTOR LOCATIONS
FIGURE 6-3


REFER TO FIGURE 6-17
REFER TO FIGURE 6-16
REFER TO FIGURE 6-15
REFER TO FIGURE 6-14
0
2.5
5
km
Coordinate System: GDA 1994 MGA Zone 55
Scale: 1:175,000 at A4
Project Number: 610.30622
Date: 20-Feb-2024
Drawn by: JG
SLR
Population centre
New and Upgraded Tracks
Construction Compounds
Amended project footprint
350 m buffer
500 m buffer
Potential Blasting Area
Dilapidated dwelling
Firestation
Possible dwelling
Dwelling
HUMELINK
AIR QUALITY IMPACT ASSESSMENT
AMENDED PROJECT FOOTPRINT
SECTION 3
SENSITIVE RECEPTOR LOCATIONS
FIGURE 6-4


REFER TO FIGURE 6-18
C10 - YASS SUBSTATION COMPOUND (NO CHANGE COMPARED WITH EIS)
Coordinate System: GDA 1994 MGA Zone 55
Scale: 1:135,000 at A4
Project Number: 610.30622
Date: 20-Feb-2024
Drawn by: JG
Population centre
New and Upgraded Tracks
Construction Compounds
Amended project footprint
350 m buffer
500 m buffer
Potential Blasting Area
Camping ground
Club
Dilapidated dwelling
Golf course
Place of worship
Possible dwelling
Racecourse
Dwelling
New South Wales
Australian Capital Territory
Victoria
HUMELINK
AIR QUALITY IMPACT ASSESSMENT
AMENDED PROJECT FOOTPRINT
SECTION 4
SENSITIVE RECEPTOR LOCATIONS
FIGURE 6-5



H:\Projects-SLR\610-SrvSYD\610-SYD\610.30622.00000 HumeLink EIS AV AQ\06 SLR Data\01 CAD\GIS\GIS\610306622 AQ Transmission line S5 DDP All.mxd



HUMELINK
AIR QUALITY IMPACT ASSESSMENT

AMENDED PROJECT FOOTPRINT
SECTION 6
SENSITIVE RECEPTOR LOCATIONS

FIGURE 6-7

H:\Projects-SLR\610-Snv\SYD\610-SYD\610.30622.00000 HumeLink EIS AV AQ\06 SLR Data\01 CAD\GIS\GIS\610300622 AQ Transmission line S6 DDP Alt.mxd

6.1.1.2 Substations

This section presents the IAQM screening assessment (refer to **Table 6-2**) for the following amended substation activities:

- construction of the proposed Gugaa 500 kV substation
- modification of the existing amended Wagga 330 kV substation.

There has been no change to the following substations compared with the EIS and no further assessment has been performed:

- connection to the future Maragle 500 kV substation
- modification of the existing Bannaby 500 kV substation.

Proposed Gugaa 500 kV substation

The following changes are proposed at the proposed Gugaa 500 kV substation compared with EIS:

- adding three additional single phase transformers
- adding two shunt reactors (3 phase)
- additional earth works, foundations, steelwork, fencing, roads, drainage and electrical equipment/conductors to accommodate additions above.

The project footprint at the proposed Gugaa 500 kV substation and the IAQM screening distances are shown in **Figure 6-8**.

Whilst there are no sensitive receptors within the IAQM screening distances when considering the boundary of the site itself, B18 is located adjacent to the south-eastern access route to the site. The next closest sensitive receptors (B12 and B15) are located approximately 700 metres from the site boundary.

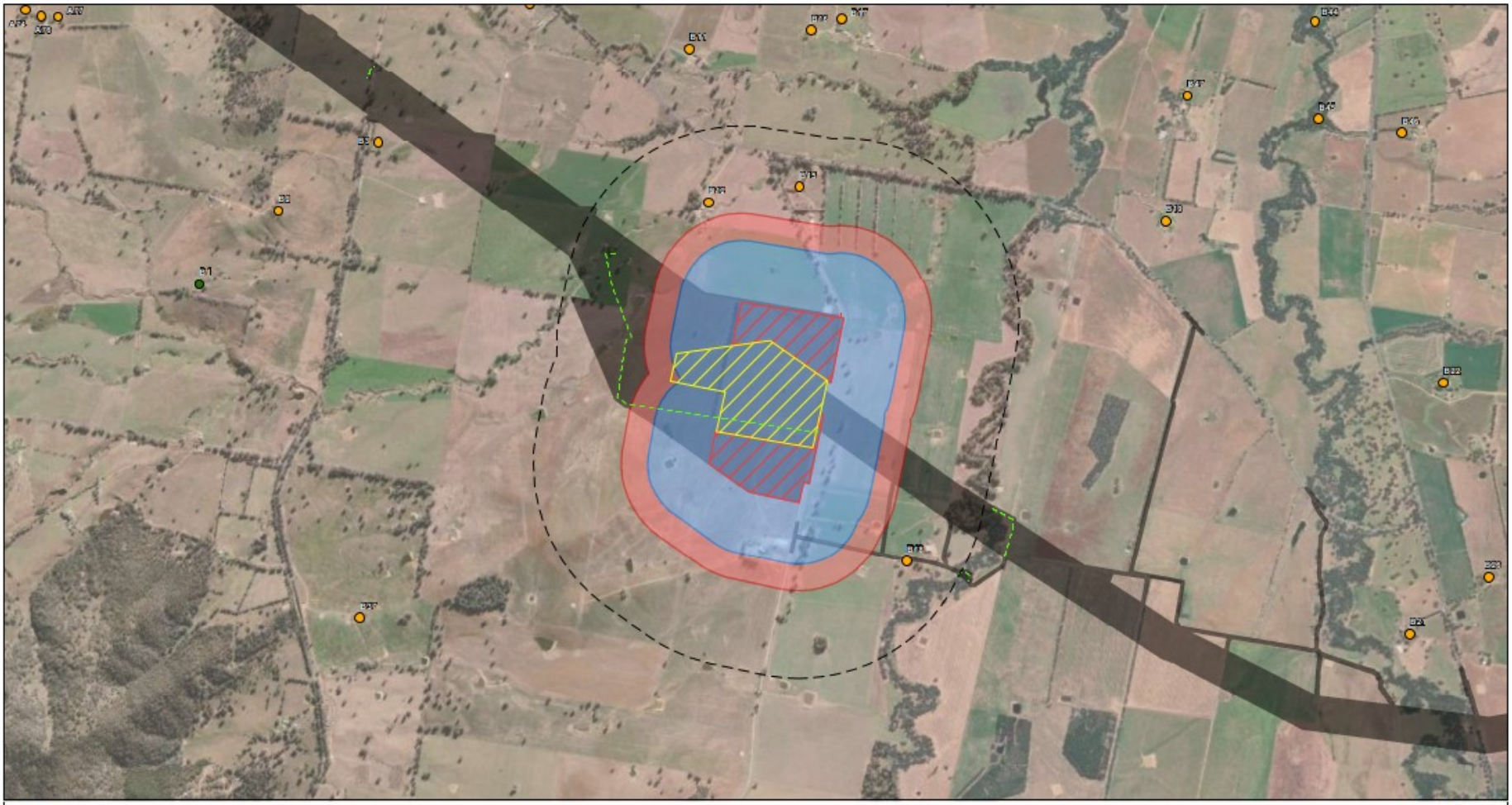
In addition, as the indicative earthworks at the proposed Gugaa 500 kV substation are the largest of the substations works, with cut and fill volumes of 60,000 cubic metres and 100,000 cubic metres respectively (refer to **Table 2-3**). It is therefore considered to present a greater risk than the other work sites and as such further assessment has been completed (refer to **Section 6.1.2**).

This approach is consistent with the application of professional judgement noted in the IAQM Guidance discussed at **Section 4.2.**

It is noted that a potential helipad may be in operation at the proposed Gugaa 500 kV substation which has potential to give rise to nuisance dust impacts, in addition to emissions of products of fuel combustion. As detailed in **Section 3.1**, should more than 30 flight movements per day be proposed, and there are sensitive receptors within one kilometre, an EPL would be required (Clause 20(1) of the POEO Act). Whilst **Figure 6-8** shows there are three sensitive receptors within one kilometre of the compound (B12, B15 and B18), land to the east and west within the site boundary has no sensitive receptors within one kilometre. A summary of potential constraints for the siting of helipads is presented at **Table 6-16** (refer to Amended Gregadoo Road compound (C06)).

Table 6-2 Step 1: Screening assessment – substations

Location ID	Sensitive receptors within 350 m	Sensitive receptors within 350 m to 500 m	Receptor type	Further assessment needed?	Notes
Proposed Gugaa 500 kV substation (**Figure 6-8**)	None	None	N/A	Yes	Whilst there are no sensitive receptors within the IAQM screening distances when considering the boundary of the site itself, B18 is located adjacent to the south-eastern access route to the site. The next closest sensitive receptors (B12 and B15) are located approximately 600 to 800 metres from the site boundary. The indicative earthworks are also the largest of the substation works (per **Table 2-3**) and it is therefore considered that further assessment should be completed (see **Section 6.1.2**). A helipad may be in operation at this location. As detailed in **Section 3.1**, should more than 30 flight movements per day be proposed, and there are sensitive receptors within 1 km, an EPL may be required. Whilst there are three sensitive receptors within 1 km of the compound (B12, B15 and B18) there is land to the east and west within the site boundary where no sensitive receptors are located within 1 km.


0 250 500 1,000 Metres
Coordinate System: GDA 1994 MGA Zone 55
Scale: 1:30,000 at A4
Project Number: 610.30622
Date: 20-Feb-2024
Drawn by: JG
New and Upgraded Tracks
Substation
Construction compounds
Amended project footprint
350 m buffer
500 m buffer
1 km buffer
Possible dwelling
Dwelling
New South Wales
Australian Capital Territory
Victoria
HUMELINK
AIR QUALITY IMPACT ASSESSMENT
AMENDED GUGAA 500 KV SUBSTATION AND AMENDED GREGADOO ROAD COMPOUND (C06) - SENSITIVE RECEPTOR LOCATIONS
FIGURE 6-8
H:\Projects-SLR\610-SrvSYD\610-SYD\610.30622.00000 HumeLink EIS AV AQ\06 SLR Data\01 CADGIS\GIS\61030622 AQ Compounds_C06 Amended Gregadoo Road compound.mxd

6.1.1.3 Construction compounds and combined worker accommodation facilities and construction compounds

As shown on **Figure 1-2**, in addition to the construction of the transmission line and the proposed substation work, the amended project includes a number of temporary construction compounds and combined worker accommodation facilities and construction compounds. This section presents the screening assessment for each of these locations. The site location numbers are the same as those shown on **Figure 1-2**.

During the screening assessment, consideration has also been given to the potential for dust emissions from helipads, blasting and access to the construction compounds.

At this stage, it is not known if there would be crushing/screening at all these locations. It has therefore been assumed that if present, activities would be below the threshold that require an EPL (as detailed in **Section 3.1**). For each location, consideration has also been given to the ability to meet the recommended separation distance of 500 metres (per **Table 3-1**), as summarised in **Table 6-16**.

Table 6-3 lists the sensitive receptors identified within the 350 metre and 500 metre screening distances from the amended project footprint at each location and identifies if further assessment is needed. It also identifies references to images of each construction compound with the IAQM screening distances and identified sensitive receptors overlaid. For the amended Gregadoo Road compound (C06) located at the proposed Gugaa 500 kV substation, the figure presented in **Section 6.1.1.1** is referred to in order to avoid repetition.

Table 6-3 Step 1: Screening assessment – construction compounds and combined construction compound and worker accommodation facility

Location ID	Sensitive receptors within 350 m	Sensitive receptors within 350 m to 500 m	Receptor type	Further assessment needed?	Notes
Amended Gregadoo Road compound (C06) (**Figure 6-8**)	None	None	None	Yes	Whilst there are no sensitive receptors within the IAQM screening distances when considering the boundary of the site itself, B18 is located adjacent to the south-eastern access route to the site. The next closest sensitive receptors (B12 and B15) are located approximately 600 to 800 metres from the site boundary. The indicative earthworks are also the largest of the substation works (per **Table 2-3**) and it is therefore considered that further assessment should be completed (see **Section 6.1.2**). A helipad may be in operation at this location. As detailed in **Section 3.1**, should more than 30 flight movements per day be proposed, and there are sensitive receptors within 1 km, an EPL may be required. Whilst there are three sensitive receptors within 1 km of the compound (B12, B15 and B18) there is land to the east and west within the site boundary where no sensitive receptors are located within 1 km.

Location ID	Sensitive receptors within 350 m	Sensitive receptors within 350 m to 500 m	Receptor type	Further assessment needed?	Notes
Amended Honeysuckle Road compound (C07) (**Figure 6-9**)	None	None	None	No	The closest sensitive receptor (N2) is located over 1 km from the site boundary, as such no further assessment is required. A helipad may be in operation at this location, however, there are no sensitive receptors within 1 km of the site boundary. It is also proposed that a concrete plant would be in use and that diesel-fuelled generators would be used for power generation at this site. As there are no sensitive receptors within 100 m of the site boundary, it is possible to meet the recommended separation distance detailed in **Table 3-1**.
Amended Bannaby 500 kV substation compound (C12) **(Figure 6-10**)	None	None	None	No	There are no sensitive receptors within the IAQM buffers, and thus no further assessment is required. A helipad may be in operation at this location, however, as there are no sensitive receptors within 1 km of the site. It is also proposed that a concrete plant would be in use at this site. As there are no sensitive receptors within 100 m of the site boundary, it is possible to meet the recommended separation distance detailed in **Table 3-1**.

Location ID	Sensitive receptors within 350 m	Sensitive receptors within 350 m to 500 m	Receptor type	Further assessment needed?	Notes
Ardrossan Headquarters Road compound (C17) (**Figure 6-11**)	Y19	No	Dwelling	Yes	There is one sensitive receptor (Y19) located adjacent to the access track to this site and thus further assessment is required. A helipad may be in operation at this location (which would utilise the existing FCNSW helipad). As detailed in **Section 3.1**, should more than 30 flight movements per day be proposed, and there are sensitive receptors within 1 km, an EPL may be required. Other than Y19 (the FCNSW helicopter pilot accommodation), which is unlikely to be used by FCNSW pilots if the project is using the helipad, there are no sensitive receptors within 1 km of the site. Please note, Y19 is only used seasonally by FCNSW as helicopter pilot accommodation. For the purposes of this AQ assessment this dwelling has been considered a sensitive receiver, even though there will be long periods when this dwelling will not be in use. There are several sensitive receptors just over 1 km to the south-east of the site. There is vacant land to north with no sensitive receptors within 1 km. It is also proposed that a concrete plant would be in use and that diesel-fuelled generators would be used for power generation at this site. As there is only one sensitive receptor within 100 m of the site boundary, it is possible to meet the recommended separation distances detailed in **Table 3-1**.

Location ID	Sensitive receptors within 350 m	Sensitive receptors within 350 m to 500 m	Receptor type	Further assessment needed?	Notes
Snubba Road compound (C18) **(Figure 6-12**)	No	No	None	No	There are no sensitive receptors within the IAQM buffers, and thus no further assessment is required. A helipad may be in operation at this location, however, there are no sensitive receptors within 1 km of the site. It is also proposed that a concrete plant would be in use and that diesel-fuelled generators would be used for power generation at this site. As there are no sensitive receptors within 100 m of the site boundary, it is possible to meet the recommended separation distances detailed in **Table 3-1**.
Gadara Road compound (C19) (**Figure 6-13**)	No	No	None	Yes	Whilst there are no sensitive receptors within the IAQM buffers, since there is potential for controlled blasting to occur within footprint, it is considered that further assessment should be completed due to the presence of sensitive receptor H37 and H38 (see **Section 6.1.2**). A helipad may be in operation at this location. As detailed in **Section 3.1**, should more than 30 flight movements per day be proposed, and there are sensitive receptors within 1 km, an EPL may be required. Whilst H37 and H38 are located within 1 km, land to the north within the site boundary has no sensitive receptors within 1 km. It is also proposed that diesel-fuelled generators would be used for power generation at this site. As there are no sensitive receptors within 100 m of the site boundary, it is possible to meet the recommended separation distances detailed in **Table 3-1**.

Location ID	Sensitive receptors within 350 m	Sensitive receptors within 350 m to 500 m	Receptor type	Further assessment needed?	Notes
Ellerslie Road compound (C21) (**Figure 6-14**)	D25	D24	Dwelling	Yes	There are two sensitive receptors within the IAQM buffers and thus further assessment Is required (see **Section 6.1.2**). A helipad may be in operation at this location. As detailed in **Section 3.1**, should more than 30 flight movements per day be proposed, and there are sensitive receptors within 1 km, an EPL may be required. Whilst D24, D25 and D29 are located within 1 km, land on the western side of the site has no sensitive receptors within 1 km. It is also proposed that diesel-fuelled generators would be used for power generation at this site. Consideration should be given to D24 (located to the south of the site), D29 (located to the north-east of the site) and D25 (located within the site boundary) with respect to the recommended separation distances detailed in **Table 3-1**. The area to the west within the site boundary is considered most suitable for the placement of diesel-fuelled generators.

Location ID	Sensitive receptors within 350 m	Sensitive receptors within 350 m to 500 m	Receptor type	Further assessment needed?	Notes
Tarcutta accommodation facility and compound (AC03) (**Figure 6-15**)	C101, C113, C120, C114, C101	C115	Dwelling	Yes	There are seven sensitive receptors within the IAQM buffers and thus further assessment Is required (see **Section 6.1.2**). A helipad may be in operation at this location. As detailed in **Section 3.1**, should more than 30 flight movements per day be proposed, and there are sensitive receptors within 1 km, an EPL may be required. There are seven sensitive receptors within 1 km of the site boundary and several located just over 1 km away to the east. There are no existing sensitive receptors located near the northern boundary of the site boundary. It is also proposed that a concrete plant would be in use and that diesel-fuelled generators would be used for power generation at this site and an accommodation facility is also planned that would introduce more sensitive receptors to the area. As there are existing sensitive receptors to the east, south and west of the site boundary, the northern boundary of the site would be most suitable to meet the recommended separation distances per **Table 3-1**.

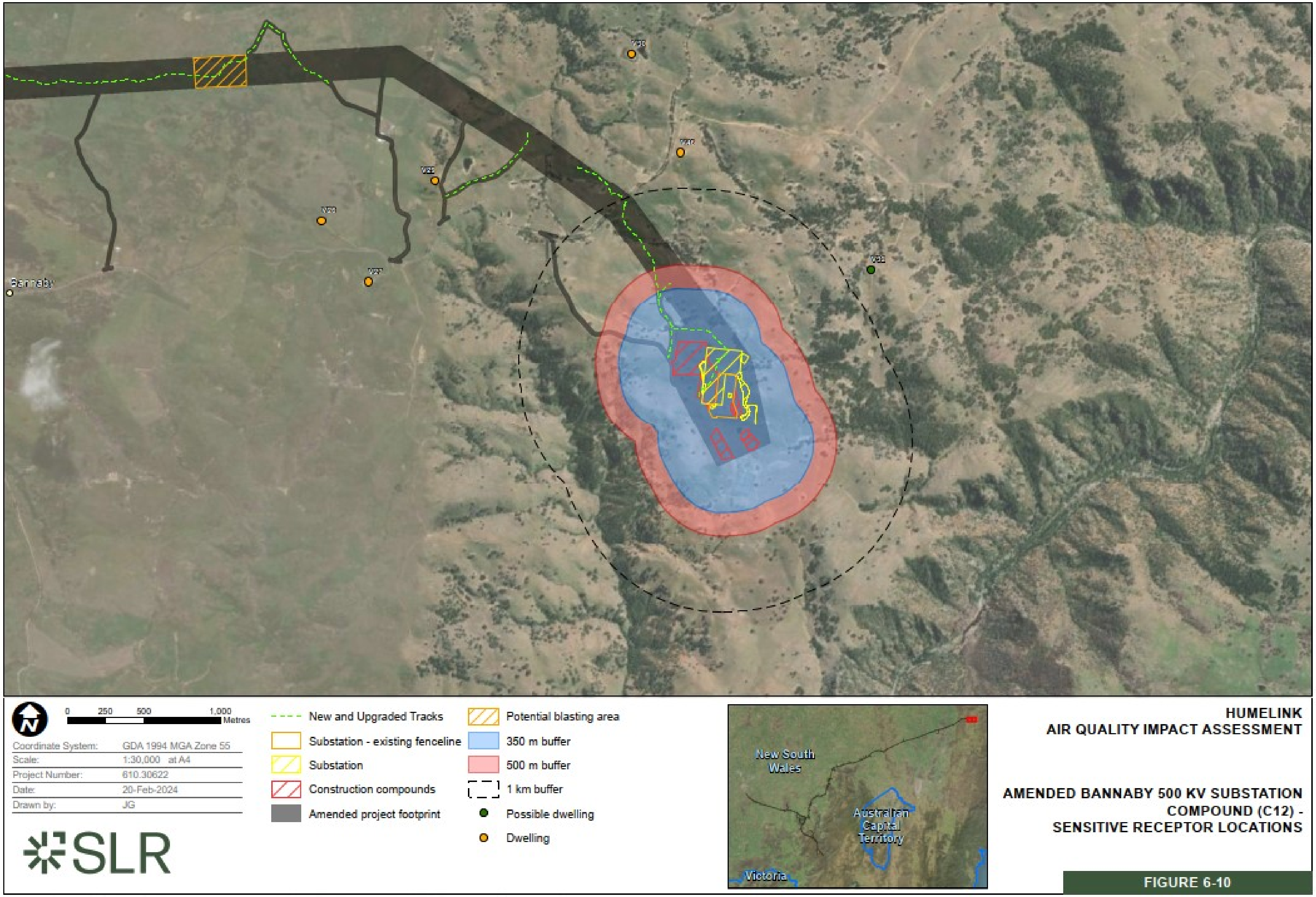
Location ID	Sensitive receptors within 350 m	Sensitive receptors within 350 m to 500 m	Receptor type	Further assessment needed?	Notes
Adjungbilly accommodation facility and compound (AC04) (**Figure 6-16**)	N3, N5	N4	Dwelling	Yes	There are three sensitive receptors within the IAQM buffers and thus further assessment Is required (see **Section 6.1.2**). A helipad may be in operation at this location. As detailed in **Section 3.1**, should more than 30 flight movements per day be proposed, and there are sensitive receptors within 1 km, an EPL may be required. There are three sensitive receptors within 1 km of the site and several located just over 1 km away to the east. There are no existing sensitive receptors located near the north-eastern boundary of the site. It is also proposed that a concrete plant would be in use and that diesel-fuelled generators would be used for power generation at this site. The north-eastern part of the site would be most suitable location for this plant and equipment to meet the recommended separation distances per **Table 3-1**.

Location ID	Sensitive receptors within 350 m	Sensitive receptors within 350 m to 500 m	Receptor type	Further assessment needed?	Notes
Yass accommodation facility and compound (AC05) (**Figure 6-17**)	O72, O87, O129, O430, O673, O674, O675, O676	O78, O156, O183, O309, O310, O406, O480, O576, O577	Dwelling	Yes	There are 17 sensitive receptors within the IAQM buffers and thus further assessment is required (see **Section 6.1.2**). A helipad may be in operation at this location. As detailed in **Section 3.1**, should more than 30 flight movements per day be proposed, and there are sensitive receptors within 1 km, an EPL may be required. There are 56 sensitive receptors within 1 km of the site boundary and several located just over 1 km away to the south-east. Land on the south-east and north-east within the site boundary are located furthest from sensitive receptors. It is also proposed that a concrete plant would be in use and that diesel-fuelled generators would be used for power generation at this site., The land to south-east and north-east within the site would be most suitable location for this plant and equipment to meet the recommended separation distances detailed in **Table 3-1**.
Crookwell accommodation facility and compound (AC06) (**Figure 6-18**)	T63, T64	None	Dwelling	No	There are no sensitive receptors within the IAQM buffers and therefore no further assessment is needed. It is noted that this is an existing compound and is located opposite the Crookwell Waste Facility. A helipad may be in operation at this location. As detailed in **Section 3.1**, should more than 30 flight movements per day be proposed, and there are sensitive receptors within 1 km, an EPL may be required. There are no sensitive receptors within 1 km of the site. It is also proposed that a concrete plant would be in use and that diesel-fuelled generators would be used for power generation at this site. As there are no sensitive receptors within 1 km, it is possible to meet the recommended separation distances detailed in **Table 3-1**.

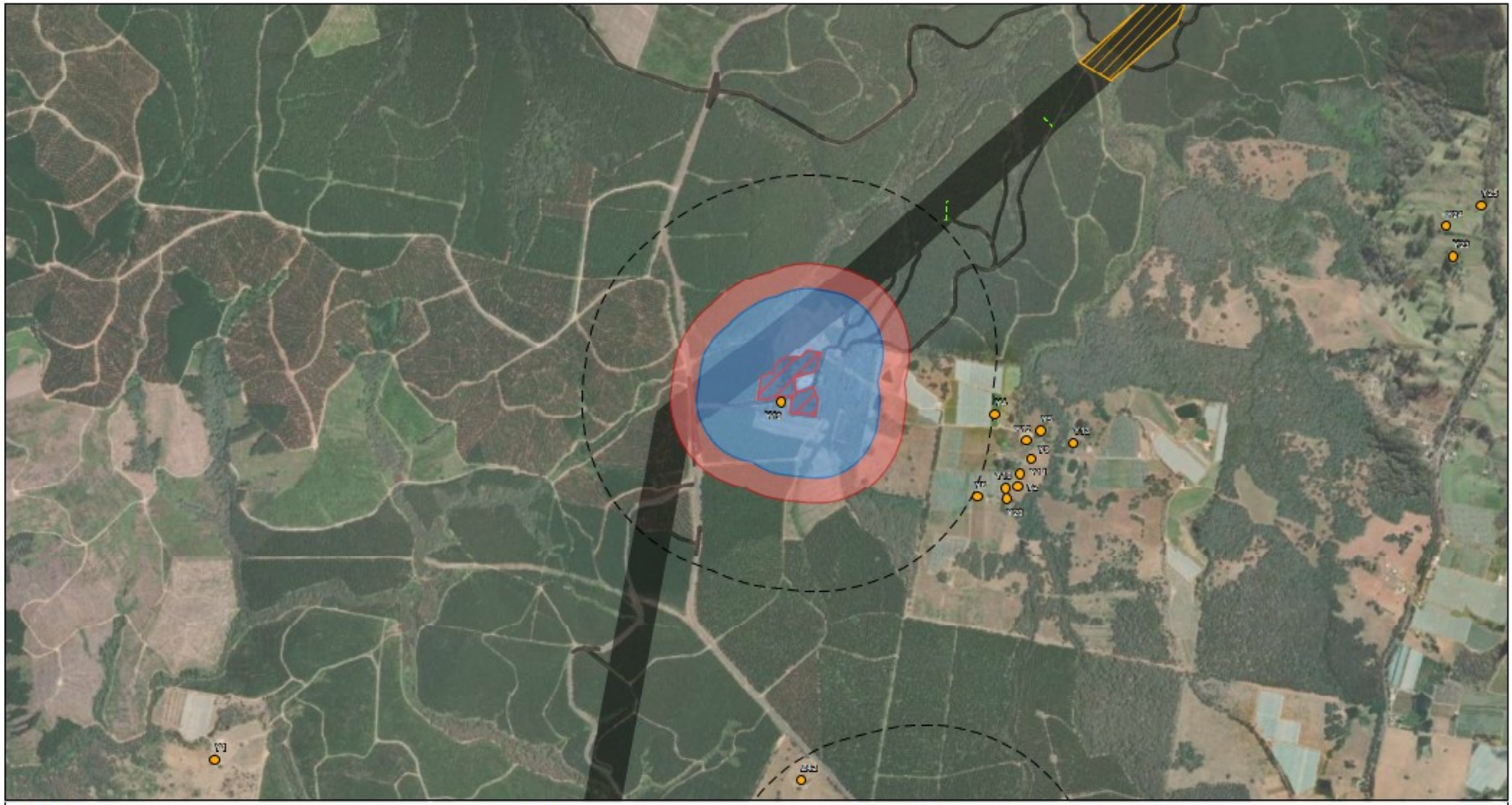
Location ID	Sensitive receptors within 350 m	Sensitive receptors within 350 m to 500 m	Receptor type	Further assessment needed?	Notes
Green Hills accommodation facility and compound (AC07) (**Figure 6-19**)	Y3, Z23	Y8	Dwelling	Yes	There are three sensitive receptors within the IAQM buffers and thus further assessment Is required (see **Section 6.1.2**). A helipad may be in operation at this location. As detailed in **Section 3.1**, should more than 30 flight movements per day be proposed, and there are sensitive receptors within 1 km an EPL may be required. There are five sensitive receptors within 1 km of the site and two located just over 1 km away to the south-east. Land to the north/north-east of the site has no sensitive receptors in the vicinity. It is also proposed that a concrete plant would be in use and that diesel-fuelled generators would be used for power generation at this site. As there are sensitive receptors in the vicinity of the site, the land to the north/north-east of the site would be most suitable location for this plant and equipment to meet the recommended separation distances detailed in **Table 3-1**. It is understood that the sensitive receptor within the site boundary (Z23) would be leased by Transgrid for the duration of the project and nobody would be living there.

Location ID	Sensitive receptors within 350 m	Sensitive receptors within 350 m to 500 m	Receptor type	Further assessment needed?	Notes
Amended Memorial Avenue compound (C14)	W140, W143, W145, Z146, W147, W148, W149, W150, W151, W154, W156, W157, W161, W162, W163, W164, W168, W169, W170, W172, W173, W174, W180, W182, W184, W188, W190, W193, W194, W196, W199, W228, W236, W242, W245, W246, W253, W255, W267, W271, W281, W284, W285, W288, W289, W301, W305, W319, W324, W333, W342, W348, W349	W260, W290, W361, W264, W270, W225, W192, W294, W352, W275, W353, W59, W186, W231, W356, W158, W205, W304, W312, W307, W60, W283, W243, W328, W221, W323, W321, W152, W249, W176, W114, W334, W336, W278, W340, W254, W208, W386, W308, W273, W166, W257, W314, W217, W195, W320, W392, W326, W262, W357, W106, W332, W355, W58, W222, W160, W396, W198, W341, W311, W344, W201, W104, W155, W377, W405, W230, W298, W277	Dwelling	Yes	There are multiple sensitive receptors within the IAQM buffers and thus further assessment Is required (see **Section 6.1.2**). The footprint of the compound is largely unchanged from that in the EIS. The site has been slightly extended to the north to include the sealed driveway that provides access to the compound.

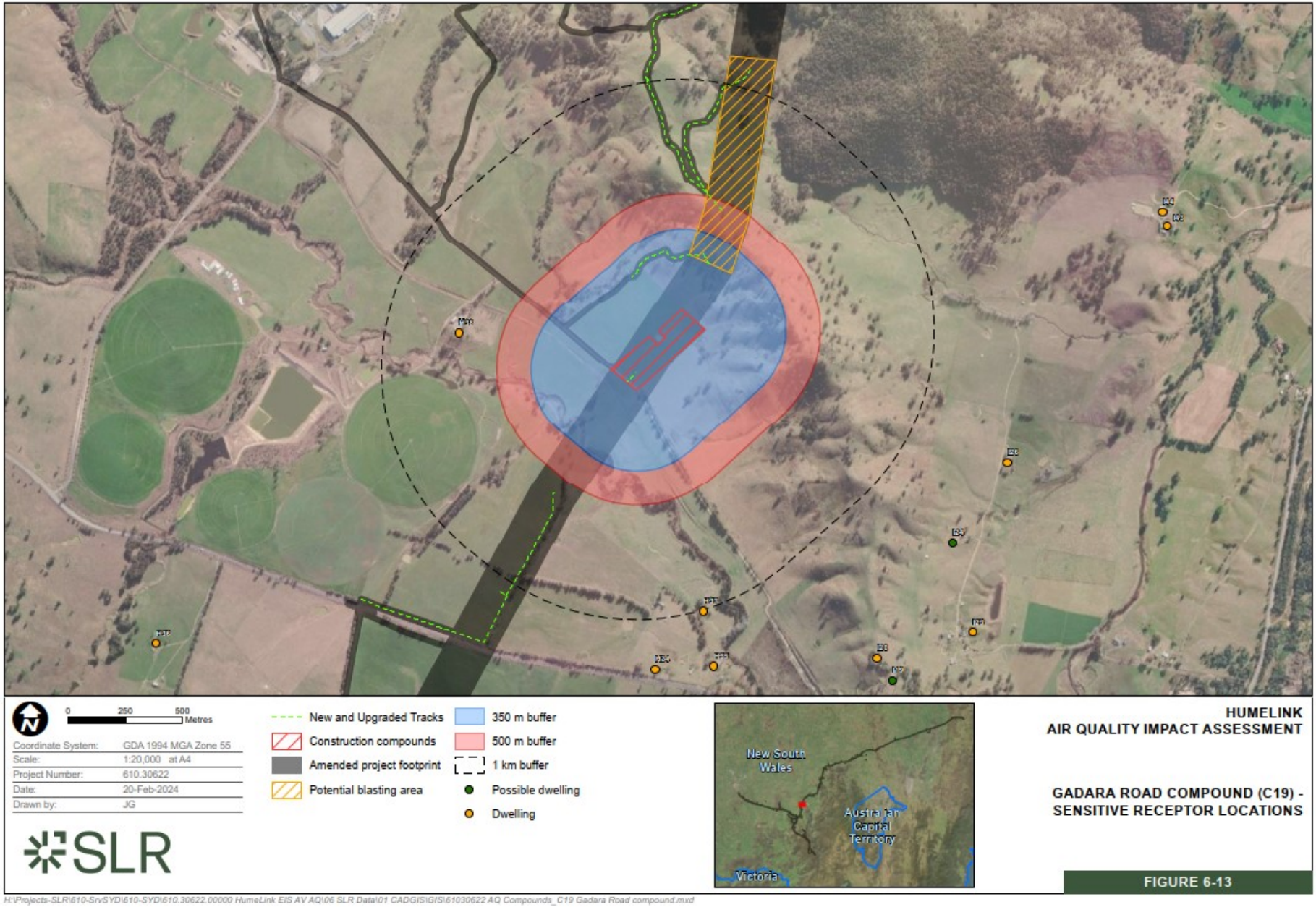

N2
0 250 500 1,000 Metres
Coordinate System: GDA 1994 MGA Zone 55
Scale: 1:30,000 at A4
Project Number: 610.30622
Date: 20-Feb-2024
Drawn by: JG
New and Upgraded Tracks
Construction compounds
Amended project footprint
350 m buffer
500 m buffer
1 km buffer
Dwelling
New South Wales
Australian Capital Territory
Victoria
HUMELINK
AIR QUALITY IMPACT ASSESSMENT
AMENDED HONEYSUCKLE ROAD COMPOUND (C07) - SENSITIVE RECEPTOR LOCATIONS
FIGURE 6-9
H:\Projects-SLR\610-SrvSYD\610-SYD\610.30622.00000 HumeLink EIS AV AQ\06 SLR Data\01 CADGIS\GIS\610306222 AQ Compounds_C07 Amended Honeysuckle Road compound.mxd



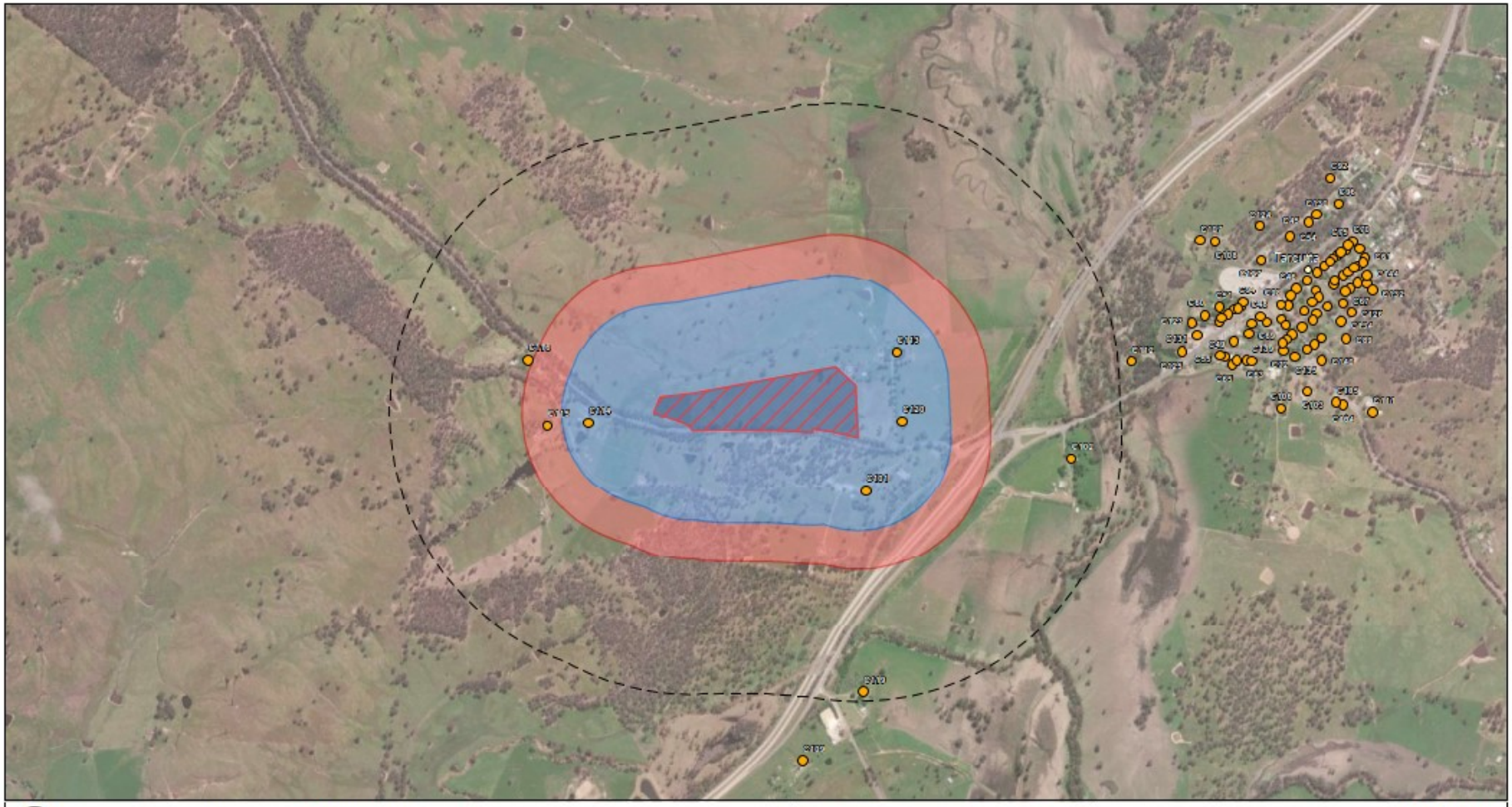
H:\Projects-SLR\610-SrvSYD\610-SYD\610.30622.00000 HumeLink EIS AV AQ\06 SLR Data\01 CADGIS\GIS\61030622 AQ Compounds_C12 Amended Bannaby 500 kV substation compound.mxd

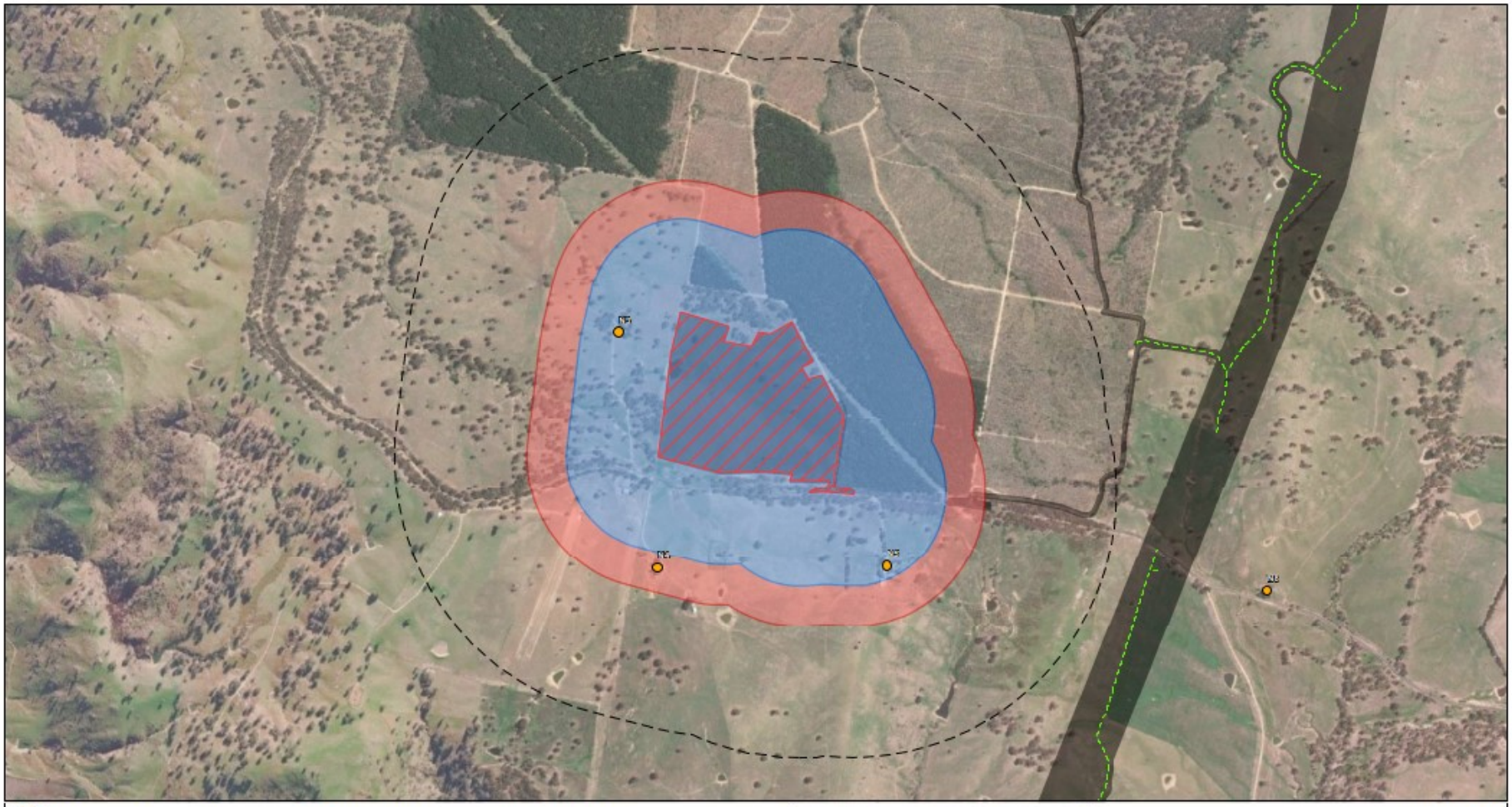

0 250 500 1,000 Metres
Coordinate System: GDA 1994 MGA Zone 55
Scale: 1:30,000 at A4
Project Number: 610.30622
Date: 20-Feb-2024
Drawn by: JG
New and Upgraded Tracks
Construction compounds
Amended project footprint
350 m buffer
500 m buffer
Potential blasting area
1 km buffer
Dwelling
New South Wales
Australian Capital Territory
Victoria
HUMELINK
AIR QUALITY IMPACT ASSESSMENT
ARDROSSAN HEADQUARTERS ROAD COMPOUND (C17) - SENSITIVE RECEPTOR LOCATIONS
FIGURE 6-11
H:\Projects-SLR\610-SrvSYD\610-SYD\610.30622.00000 HumeLink EIS AV AQI\06 SLR Data\01 CADGIS\GIS\61030622 AQ Compounds_C17 Ardrossan Headquarters Road compound.mxd

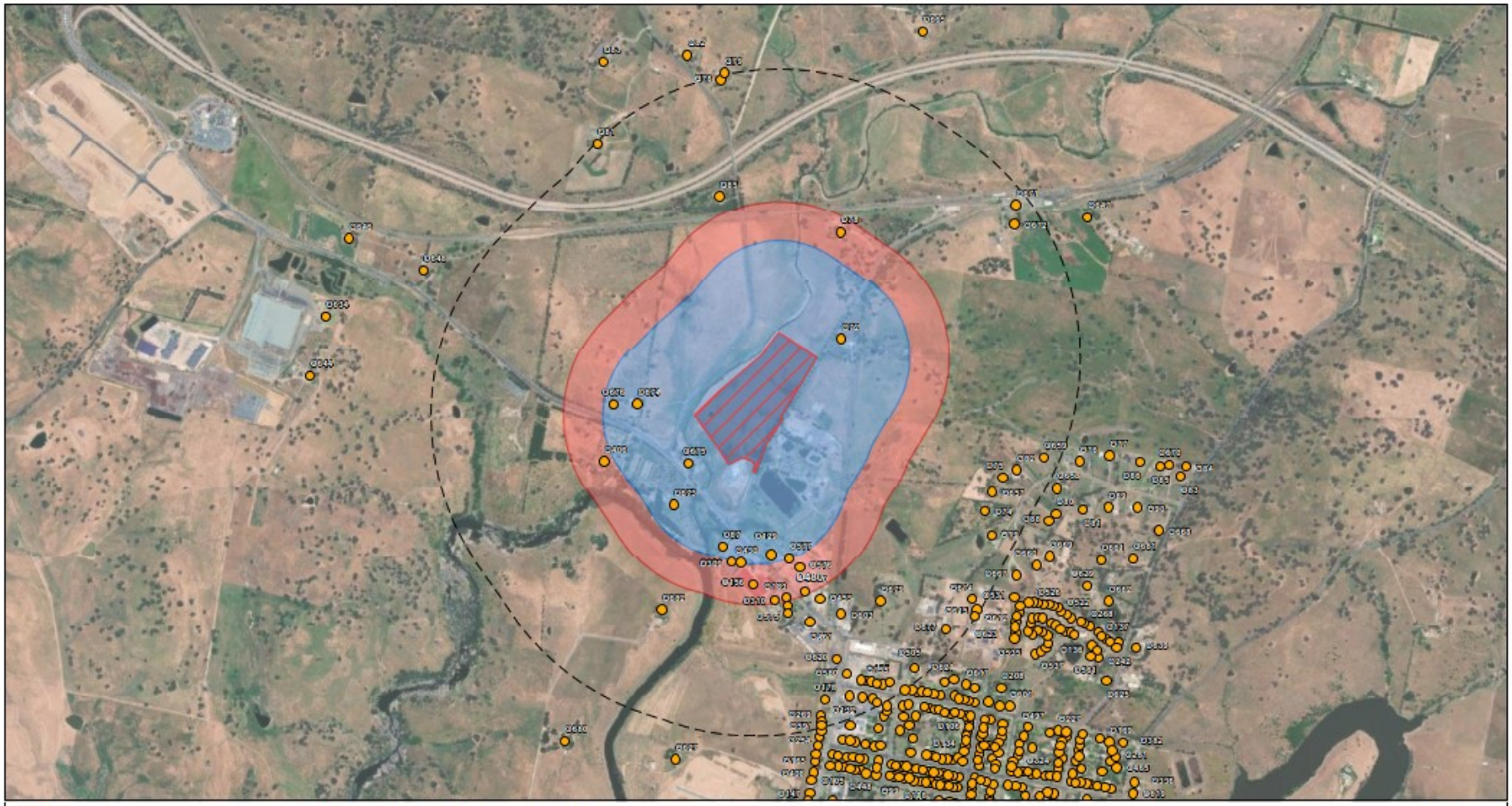

Laurel Hill
0 250 500 1,000 Metres
Coordinate System: GDA 1994 MGA Zone 55
Scale: 1:30,000 at A4
Project Number: 610.30622
Date: 20-Feb-2024
Drawn by: JG
New and Upgraded Tracks
Construction compounds
Amended project footprint
Potential blasting area
350 m buffer
500 m buffer
1 km buffer
Dwelling
New South Wales
Australian Capital Territory
Victoria
HUMELINK
AIR QUALITY IMPACT ASSESSMENT
SNUBBA ROAD COMPOUND 3 (C18) - SENSITIVE RECEPTOR LOCATIONS
FIGURE 6-12
H:\Projects-SLR\610-SrvSYD\610-SYD\610.30622.00000 HumeLink EIS AV AQ\06 SLR Data\01 CADGIS\GIS\610306222 AQ Compounds_C18 Snubba Road compound 3.mxd


0
250
500
Metres
Coordinate System: GDA 1994 MGA Zone 55
Scale: 1:20,000 at A4
Project Number: 610.30622
Date: 20-Feb-2024
Drawn by: JG
SLR
New and Upgraded Tracks
Construction compounds
Amended project footprint
Potential blasting area
350 m buffer
500 m buffer
1 km buffer
Possible dwelling
Dwelling
New South Wales
Australian Capital Territory
Victoria
HUMELINK
AIR QUALITY IMPACT ASSESSMENT
GADARA ROAD COMPOUND (C19) - SENSITIVE RECEPTOR LOCATIONS
FIGURE 6-13
H:\Projects-SLR\610-SrvSYD\610-SYD\610.30622.00000 HumeLink EIS AV AQ\06 SLR Data\01 CADGIS\GIS\610306222 AQ Compounds_C19 Gadara Road compound.mxd


0 250 500 1,000 Metres
Coordinate System: GDA 1994 MGA Zone 55
Scale: 1:30,000 at A4
Project Number: 610.30622
Date: 20-Feb-2024
Drawn by: JG
SLR
New and Upgraded Tracks
Construction compounds
Brake-winch area
Intersection
Amended project footprint
Potential blasting area
350 m buffer
500 m buffer
1 km buffer
Dilapidated dwelling
Dwelling
New South Wales
Australian Capital Territory
Victoria
HUMELINK
AIR QUALITY IMPACT ASSESSMENT
ELLERSLIE ROAD COMPOUND (C21) - SENSITIVE RECEPTOR LOCATIONS
FIGURE 6-14
H:\Projects-SLR\610-SrvSYD\610-SYD\610.30622.00000 HumeLink EIS AV AQ\06 SLR Data\01 CADGIS\GIS\610306222 AQ Compounds_C21 Ellerslie Road compound.mxd

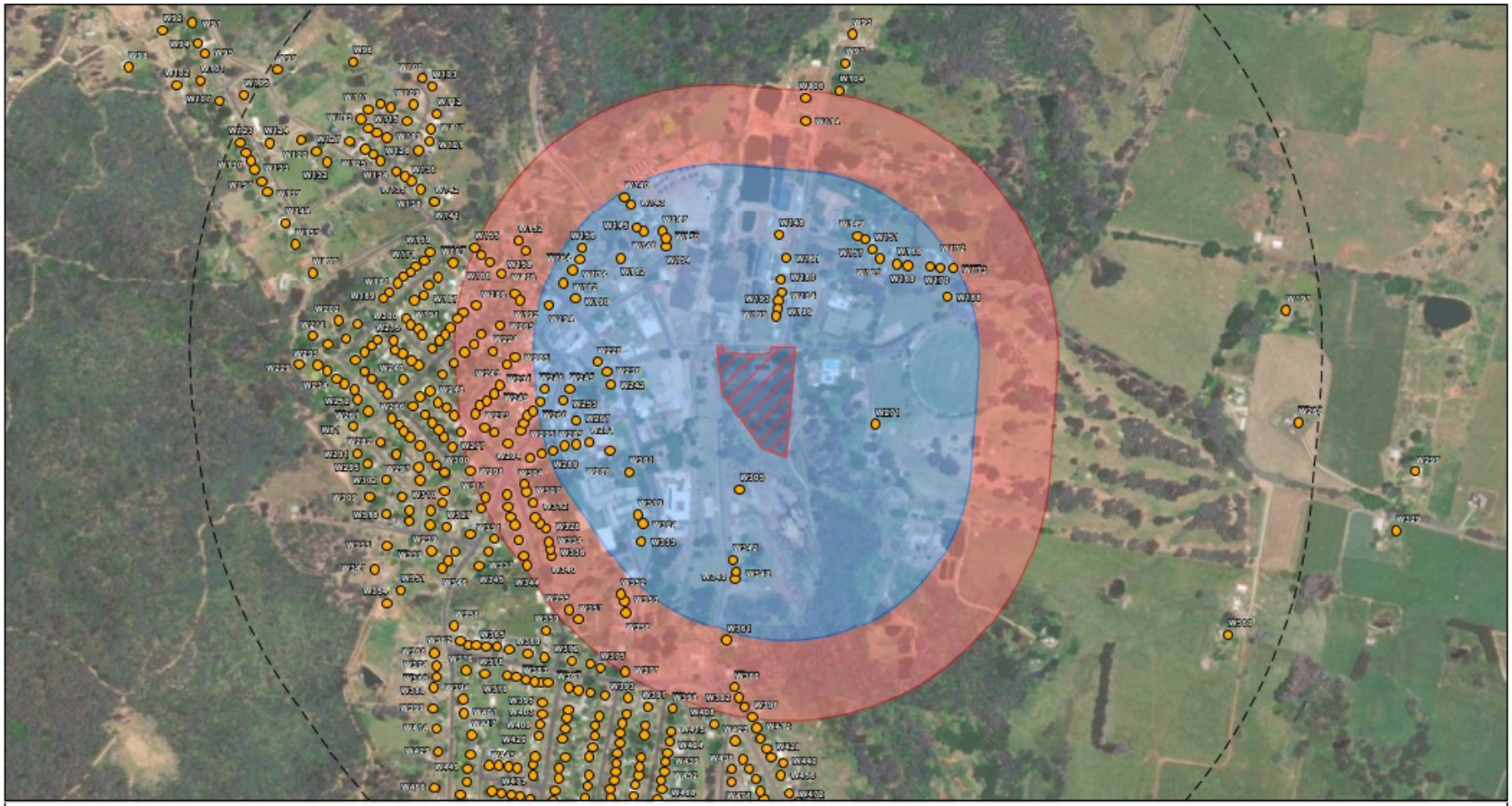

0
250
500
Metres
Coordinate System: GDA 1994 MGA Zone 55
Scale: 1:20,000 at A4
Project Number: 610.30622
Date: 20-Feb-2024
Drawn by: JG
SLR
Construction compounds
Amended project footprint
350 m buffer
500 m buffer
1 km buffer
Dwelling
New South Wales
Australian Capital Territory
Victoria
HUMELINK
AIR QUALITY IMPACT ASSESSMENT
TARCUTTA ACCOMMODATION FACILITY AND COMPOUND (AC03) - SENSITIVE RECEPTOR LOCATIONS
FIGURE 6-15
H:\Projects-SLR\610-SrvSYD\610-SYD\610.30622.00000 HumeLink EIS AV AQ\06 SLR Data\01 CADGIS\GIS\610306222 AQ Compounds_AC03 Tarcutta Accommodation Facility and Compound.mxd


0
250
500
Metres
New and Upgraded Tracks
Construction compounds
Amended project footprint
350 m buffer
500 m buffer
1 km buffer
Dwelling
Coordinate System: GDA 1994 MGA Zone 55
Scale: 1:20,000 at A4
Project Number: 610.30622
Date: 20-Feb-2024
Drawn by: JG
SLR
New South Wales
Australian Capital Territory
Victoria
HUMELINK
AIR QUALITY IMPACT ASSESSMENT
ADJUNGBILLY ACCOMMODATION FACILITY AND COMPOUND (AC04) - SENSITIVE RECEPTOR LOCATIONS
FIGURE 6-16
H:\Projects-SLR\610-SrvSYD\610-SYD\610.30622.00000 HumeLink EIS AV AQ\06 SLR Data\01 CADGIS\GIS\610302 2 AQ Compounds_AC04 Adjungbilly Road Accommodation Facility and Compound.mxd


0
250
500
Metres
Coordinate System: GDA 1994 MGA Zone 55
Scale: 1:20,000 at A4
Project Number: 610.30622
Date: 20-Feb-2024
Drawn by: JG
Construction compounds
Amended project footprint
350 m buffer
500 m buffer
1 km buffer
Dwelling
New South Wales
Australian Capital Territory
Victoria
HUMELINK
AIR QUALITY IMPACT ASSESSMENT
YASS ACCOMMODATION FACILITY AND COMPOUND (AC05) - SENSITIVE RECEPTOR LOCATIONS
FIGURE 6-17
H:\Projects-SLR\610-SrvSYD\610-SYD\610.30622.00000 HumeLink EIS AV AQ\06 SLR Data\01 CADGIS\GIS\610306222 AQ Compounds_AC05 Yass Accommodation Facility and Compound.mxd


0
500
1,000
Metres
New and Upgraded Tracks
Construction compounds
Amended project footprint
350 m buffer
500 m buffer
1 km buffer
Place of worship
Dwelling
Coordinate System: GDA 1994 MGA Zone 55
Scale: 1:40,000 at A4
Project Number: 610.30622
Date: 20-Feb-2024
Drawn by: JG
SLR
New South Wales
Australian Capital Territory
Victoria
HUMELINK
AIR QUALITY IMPACT ASSESSMENT
CROOKWELL ACCOMMODATION FACILITY AND COMPOUND (AC06) - SENSITIVE RECEPTOR LOCATIONS
FIGURE 6-18
H:\Projects-SLR\610-SrvSYD\610-SYD\610.30622.00000 HumeLink EIS AV AQ\06 SLR Data\01 CADGIS\GIS\610306222 AQ Compounds_AC06 Crookwell Accommodation Facility and Compound.mxd


0 250 500 1,000 Metres
Construction compounds
Amended project footprint
350 m buffer
500 m buffer
1 km buffer
Dwelling
Coordinate System: GDA 1994 MGA Zone 55
Scale: 1:30,000 at A4
Project Number: 610.30622
Date: 20-Feb-2024
Drawn by: JG
SLR
New South Wales
Australian Capital Territory
Victoria
HUMELINK
AIR QUALITY IMPACT ASSESSMENT
GREEN HILLS ACCESS ROAD ACCOMMODATION FACILITY AND COMPOUND (AC07) - SENSITIVE RECEPTOR LOCATIONS
FIGURE 6-19
H:\Projects-SLR\610-SrvSYD\610-SYD\610.30622.00000 HumeLink EIS AV AQ\06 SLR Data\01 CAD\GIS\GIS\610306222 AQ Compounds_AC07 Green Hills Access Road Accommodation Facility and Compound.mxd


0 100 200 Metres
Coordinate System: GDA 1994 MGA Zone 55
Scale: 1:10,000 at A4
Project Number: 610.30622
Date: 20-Feb-2024
Drawn by: JG
SLR
Construction compounds
Amended project footprint
350 m buffer
500 m buffer
1 km buffer
Dwelling
New South Wales
Australian Capital Territory
Victoria
HUMELINK
AIR QUALITY IMPACT ASSESSMENT
AMENDED MEMORIAL AVENUE COMPOUND (C14) – SENSITIVE RECEPTOR LOCATIONS
FIGURE 6-20
H:\Projects-SLR\610-Srv\SYD\610-SYD\610.30622.00000 HumeLink EIS AV AQ\06 SLR Data\01 CAD\GIS\GIS\610306222 AQ Compounds_C14 Memorial Avenue compound.mxd

6.1.2 IAQM Guidance Step 2 – assessment of the risk of dust impacts

IAQM Guidance Step 2a – assessment of scale and nature of the works

The IAQM screening assessment presented in **Section 6.1.1** concluded that the following locations require further assessment:

- construction along the transmission line corridor including access tracks
- proposed Gugaa 500 kV substation construction and Amended Gregadoo Road compound (C06)
- Amended Memorial Avenue compound (C14)
- Ardrossan Headquarters Road compound (C17)
- Gadara Road compound (C19)
- Ellerslie Road compound (C21)
- Tarcutta accommodation facility and compound (AC03)
- Adjungbilly accommodation facility and compound (AC04)
- Yass accommodation facility and compound (AC05)
- Green Hills accommodation facility and compound (AC07).

The IAQM screening assessment concluded that the following locations do not require further assessment:

- Existing Wagga 330 kV substation
- Amended Honeysuckle Road compound (C07)
- Amended Bannaby 500 kV substation compound (C12)
- Snubba Road compound (C19)
- Crookwell accommodation facility and compound (AC06).

Step 2a of the IAQM Guidance provides “dust emissions magnitudes” for each of the following four dust generating activities:

- demolition
- earthworks
- construction
- track-out (the movement of site material onto public roads by vehicles).

Based on the IAQM definitions presented in *Technical Report 17 - Air Quality Impact Assessment* (refer to Table 5-1 of *Technical Report 17 - Air Quality Impact Assessment*) the dust emission magnitudes for the construction works are presented in **Table 6-4** for the amended footprint and access tracks, **Table 6-5** for the amended substation works, and **Table 6-6** for the amended/new construction compounds and accommodation facilities.

Table 6-4 IAQM Step 2a: Categorisation of dust emission magnitudes – transmission line corridor and access tracks

Activity and IAQM Definition	Location	Dust emission magnitude	Notes
Demolition **Any activity involved with the removal of an existing structure [or structures]. This may also be referred to as de-construction, specifically when a building is to be removed a small part at a time**	Transmission line corridor and access tracks section 1	Small	The work associated with the transmission line corridor and access tracks section 1 include work and access to facilitate the demolition of existing transmission line structures for Line 51 between the existing Wagga 500 kV substation and the proposed Gugaa 500 kV substation.
	Transmission line corridor and access tracks section 2a	N/A	
	Transmission line corridor and access tracks section 2b	N/A	
	Transmission line corridor and access tracks section 3	N/A	
	Transmission line corridor and access tracks section 4	N/A	
	Transmission line corridor and access tracks section 5	N/A	
	Transmission line corridor and access tracks section 6	N/A	
Earthworks **Covers the processes of soil-stripping, ground-levelling, excavation and landscaping**	Transmission line corridor and access tracks section 1	Large	Construction of access tracks would require excavation of approximately 890,000 m^3 of material, and importation of approximately 940,000 m^3 of fill. It is noted that earthworks would only take place where structures and/or access tracks are required along the length of the transmission line.
	Transmission line corridor and access tracks section 2a	Large	
	Transmission line corridor and access tracks section 2b	Large	
	Transmission line corridor and access tracks section 3	Large	
	Transmission line corridor and access tracks section 4	Large	
	Transmission line corridor and access tracks section 5	Large	
	Transmission line corridor and access tracks section 6	Large	
Construction **Any activity involved with the provision of a new structure (or structures), its modification or refurbishment. A structure would include a residential Residence, office building, retail outlet, road, etc**	Transmission line corridor and access tracks section 1	Medium	Approximately 50,000 m^3 of concrete would be required for tower foundations.
	Transmission line corridor and access tracks section 2a	Medium	
	Transmission line corridor and access tracks section 2b	Medium	
	Transmission line corridor and access tracks section 3	Medium	
	Transmission line corridor and access tracks section 4	Medium	
	Transmission line corridor and access tracks section 5	Medium	
	Transmission line corridor and access tracks section 6	Medium	

Activity and IAQM Definition	Location	Dust emission magnitude	Notes
Track-out **The transport of dust and dirt from the construction / demolition site onto the public road network, where it may be deposited and then re-suspended by vehicles using the network**	Transmission line corridor and access tracks section 1	Large	The movement of spoil from the transmission line structure would be minimal, however as the contractor would be travelling to and from these locations along unpaved access tracks the potential to generate dust would be as a result of heavy- and light-vehicle movements. The areas of works would not be constant during construction with sites being exposed for approximately four months. The most intensive works occurring as a result of tower pad foundation works are likely to last for around four days per tower. The remaining structural works would take longer, but the track-out would be in the small category.
	Transmission line corridor and access tracks section 2a	Large	
	Transmission line corridor and access tracks section 2b	Large	
	Transmission line corridor and access tracks section 3	Large	
	Transmission line corridor and access tracks section 4	Large	
	Transmission line corridor and access tracks section 5	Large	
	Transmission line corridor and access tracks section 6	Large	

Table 6-5 IAQM Step 2a: Categorisation of dust emission magnitudes – substation

Activity and IAQM Definition	Location	Dust emission magnitude)	Notes
Demolition Any activity involved with the removal of an existing structure [or structures]. This may also be referred to as de-construction, specifically when a building is to be removed a small part at a time	Proposed Gugaa 500 kV substation	N/A	No demolition
Earthworks Covers the processes of soil-stripping, ground-levelling, excavation and landscaping	Proposed Gugaa 500 kV substation	Large	Bulk earthworks are required to form the substation benches, access roads, drainage, and oil containment structures
Construction Any activity involved with the provision of a new structure (or structures), its modification or refurbishment. A structure would include a residential residence, office building, retail outlet, road, etc	Proposed Gugaa 500 kV substation	Medium	• Installation of concrete foundations, bund walls, fire walls, noise walls and kerbs including excavation • Installation of reinforced concrete and piled foundations for the electrical equipment and associated steel support structures • Installation of electrical conduits, electrical trenches, site stormwater drainage, oil containment works and associated concrete pits, pipes and tanks including excavation • Installation of new ancillary and equipment control buildings • Erection of galvanised steel structures to support electrical equipment • Installation of electrical equipment on foundations and/or steel support structures • Installation of conductors, cabling, wiring, electrical panels and electrical equipment • Erection of the substation site boundary security fencing, including site access gates connection of the proposed transmission lines to the substation.
Track-out The transport of dust and dirt from the construction / demolition site onto the public road network, where it may be deposited and then re-suspended by vehicles using the network	Proposed Gugaa 500 kV substation	Large	Heavy vehicle movements would be a maximum of 340 per day on unsealed roads

Table 6-6 IAQM Step 2a: Categorisation of dust emission magnitudes – construction compounds and accommodation facilities

Activity and IAQM Definition	Location	Dust emission magnitude	Notes
Demolition Any activity involved with the removal of an existing structure [or structures]. This may also be referred to as de-construction, specifically when a building is to be removed a small part at a time	Amended Gregadoo Road compound (C06)	N/A	No demolition required
	Amended Memorial Avenue compound (C14)		
	Ardrossan Headquarters Road compound (C17)		
	Gadara Road compound (C19)		
	Ellerslie Road compound (C21)		
	Tarcutta accommodation facility and compound (AC03)		
	Adjungbilly accommodation facility and compound (AC04)		
	Yass accommodation facility and compound (AC05)		
	Green Hills accommodation facility and compound (AC07)		
Earthworks Covers the processes of soil-stripping, ground-levelling, excavation and landscaping	Amended Gregadoo Road compound (C06)	Medium	Scale as defined in Table 5-1 of *Technical Report 17 - Air Quality Impact Assessment*
	Amended Memorial Avenue compound (C14)	Small	
	Ardrossan Headquarters Road compound (C17)	Medium	
	Gadara Road compound (C19)	Small	
	Ellerslie Road compound (C21)	Medium	
	Tarcutta accommodation facility and compound (AC03)	Large	
	Adjungbilly accommodation facility and compound (AC04)	Medium	
	Yass accommodation facility and compound (AC05)	Large	
	Green Hills accommodation facility and compound (AC07)	Large	

Activity and IAQM Definition	Location	Dust emission magnitude	Notes
Construction Any activity involved with the provision of a new structure (or structures), its modification or refurbishment. A structure would include a residence, office building, retail outlet, road, etc	Amended Gregadoo Road compound (C06)	Small	Structures would be limited to prefabricated demountable site offices and fencing etc requiring minimal construction. All structures would be temporary for the duration of compound / accommodation facility use during construction.
	Amended Memorial Avenue compound (C14)	Small	
	Ardrossan Headquarters Road compound (C17)	Large	
	Gadara Road compound (C19)	Small	
	Ellerslie Road compound (C21)	Small	
	Tarcutta accommodation facility and compound (AC03)	Large	
	Adjungbilly accommodation facility and compound (AC04)	Small	
	Yass accommodation facility and compound (AC05)	Medium	
	Green Hills accommodation facility and compound (AC07)	Large	
Track-out The transport of dust and dirt from the construction / demolition site onto the public road network, where it may be deposited and then re-suspended by vehicles using the network	Amended Gregadoo Road compound (C06)	Medium	Peak activity anticipated to have a dust emission magnitude of medium for approximately six months. Average activity anticipated to have a dust emission magnitude of small.
	Amended Memorial Avenue compound (C14)	Small	Access is via sealed roads
	Ardrossan Headquarters Road compound (C17)	Large	Scale as defined in Table 5-1 of *Technical Report 17 - Air Quality Impact Assessment*
	Gadara Road compound (C19)	Small	
	Ellerslie Road compound (C21)	Small	
	Tarcutta accommodation facility and compound (AC03)	Large	
	Adjungbilly accommodation facility and compound (AC04)	Small	
	Yass accommodation facility and compound (AC05)	Small	
	Green Hills accommodation facility and compound (AC07)	Large	

IAQM Guidance Step 2b – sensitivity to dust deposition and health impacts

Step 2b of the IAQM Guidance requires the sensitivity of the area to dust deposition and health impacts to be defined as detailed in *Technical Report 17 - Air Quality Impact Assessment.*

Receptor sensitivity

As the receptors are residential locations where people may be reasonably expected to be present continuously as part of the normal pattern of land use, the sensitivity of the identified receptors in this study is concluded to be high for health impacts and high for dust deposition.

Sensitivity of an area to dust deposition effects

Based on the classifications shown in Table 5-2 of *Technical Report 17 - Air Quality Impact Assessment*, the sensitivity of each area to dust deposition effects is based on the receptor sensitivity (determined to be high) and the number of sensitive receptors within 20 metres, 50 metres, 100 metres and 350 metres of the amended project footprint.

With respect to the number of sensitive receptors, the IAQM Guidance states that exact counting of the number of people is not required with a residential property classed as one receptor. For receptors that are not residential properties, professional judgement should be used to estimate the number of sensitive receptors present, for example, a school would be treated as being in the ‘greater than 100 persons’ category.

Table 6-7 (transmission line) and **Table 6-8** (substation, construction compounds and workers accommodation facilities) show the number of sensitive receptors identified at Step 1, and the determined sensitivity to dust deposition.

In line with the IAQM Guidance, only the highest level of area sensitivity needs to be considered. For example, if there are seven high sensitivity receptors less than 20 metres from the source and 95 high sensitivity receptors between 20 and 50 metres, then the total of number of receptors greater than 50 metres is 102. The sensitivity of the area in this case would be high.

Table 6-7 IAQM Step 2b: Categorisation of sensitivity of area to dust deposition effects – amended footprint and access tracks

Location	Distance from project footprint (metres)	Number of sensitive receptors	Sensitivity of area to dust deposition effects based on high receptor sensitivity
Transmission line corridor and access tracks section 1	< 20	5	Medium
	< 50	11	
	< 100	13	
	< 350	34	
Transmission line corridor and access tracks section 2a	< 20	1	Medium
	< 50	3	
	< 100	7	
	< 350	70	
Transmission line corridor and access tracks section 2b	< 20	-	Low
	< 50	1	
	< 100	4	
	< 350	4	
Transmission line corridor and access tracks section 3	< 20	2	Medium
	< 50	3	
	< 100	6	
	< 350	33	
Transmission line corridor and access tracks section 4	< 20	5	Medium
	< 50	7	
	< 100	12	
	< 350	47	
Transmission line corridor and access tracks section 5	< 20	7	Medium
	< 50	13	
	< 100	23	
	56	56	
Transmission line corridor and access tracks section 6	< 20	5	Medium
	< 50	7	
	< 100	8	
	< 350	29	

Table 6-8 IAQM Step 2b: Categorisation of sensitivity of area to dust deposition effects – amended substation

Location	Distance from project footprint (metres)	Number of sensitive receptors	Sensitivity of area to dust deposition effects based on high receptor sensitivity
Proposed Gugaa 500 kV substation	< 20	1	Medium
	< 50	1	
	< 100	3	
	< 350	5	

Table 6-9 IAQM Step 2b: Categorisation of sensitivity of area to dust deposition effects –construction compounds and workers accommodation

Location	Distance from project footprint (m)	Number of sensitive receptors	Sensitivity of area to dust deposition effects based on high receptor sensitivity
Amended Gregadoo Road compound (C06)	< 20	0	Negligible
	< 50	0	
	< 100	0	
	< 350	0	
Amended Memorial Avenue compound (C14)	< 20	0	Low
	< 50	0	
	< 100	4	
	< 350	53	
Ardrossan Headquarters Road compound (C17)	< 20	0	Low
	< 50	1	
	< 100	1	
	< 350	1	
Gadara Road compound (C19)	< 20	0	Negligible
	< 50	0	
	< 100	0	
	< 350	0	
Ellerslie Road compound (C21)	< 20	1	Medium
	< 50	1	
	< 100	1	
	< 350	1	
Tarcutta accommodation facility and compound (AC03)	< 20	0	Low
	< 50	0	
	< 100	0	
	< 350	4	
Adjungbilly accommodation facility and compound (AC04)	< 20	0	Low
	< 50	0	
	< 100	0	
	< 350	2	
Yass accommodation facility and compound (AC05)	< 20	0	Low
	< 50	0	
	< 100	0	
	< 350	9	
Green Hills accommodation facility and compound (AC07)	< 20	1	Medium
	< 50	1	
	< 100	1	
	< 350	2	

Sensitivity of an area to health effects

Based on the IAQM classifications detailed in *Technical Report 17 - Air Quality Impact Assessment*, the sensitivity of each area to health effects have been classified based on the receptor sensitivity (determined to be high), the five year mean background PM_{10} concentration data collected at the closest AQMS (refer to **Table 5-1**), and the number of sensitive receptors within 20 metres, 50 metres, 100 metres, 200 metres and 350 metres of the amended project footprint.

Table 6-7 to **Table 6-9** show the estimated number of sensitive receptors at each distance, and the determined sensitivity to health effects.

Similar to the assessment of dust soiling effects, only the highest level of area sensitivity needs to be considered. For example, if there are seven high sensitivity receptors less than 20 metres from the source and 95 high sensitivity receptors between 20 and 50 metres, then the total of number of receptors greater than 50 metres is 102. The sensitivity of the area in this case would be high.

Table 6-10 IAQM Step 2b: Categorisation of sensitivity of area to health effects – transmission line

Location	Annual average background PM_{10} concentration ($\mu g/m^3$)	Distance from project footprint (metres)	Number of sensitive receptors	Sensitivity of area to health effects based on high receptor sensitivity
Transmission line corridor and access tracks section 1	22.7	< 20	5	High
		<50	11	
		<100	13	
		<200	21	
		< 350	34	
Transmission line corridor and access tracks section 2a	22.7	< 20	1	High
		<50	3	
		<100	7	
		<200	15	
		< 350	71	
Transmission line corridor and access tracks section 2b	22.7	< 20	-	Medium
		<50	1	
		<100	4	
		<200	4	
		< 350	4	
Transmission line corridor and access tracks section 3	22.7	< 20	2	High
		<50	3	
		<100	6	
		<200	17	
		< 350	33	
Transmission line corridor and access tracks section 4	22.7	< 20	5	High
		<50	7	
		<100	12	
		<200	21	
		< 350	47	
Transmission line corridor and access tracks section 5	10.0	< 20	7	Low
		<50	13	
		<100	23	
		<200	34	
		< 350	56	
Transmission line corridor and access tracks section 6	14.3	< 20	5	Low
		<50	7	
		<100	8	
		<200	18	
		< 350	29	

Table 6-11 IAQM Step 2b: Categorisation of sensitivity of area to health effects – substations

Location	Annual average background PM_{10} concentration ($\mu g/m^3$)	Distance from project footprint (metres)	Number of sensitive receptors	Sensitivity of area to health effects based on high receptor sensitivity
Proposed Gugaa 500 kV substation	22.7	< 20	1	High
		<50	1	
		<100	3	
		<200	4	
		< 350	5	

Table 6-12 IAQM Step 2b: Categorisation of sensitivity of area to health effects – construction compounds and workers accommodation

Location	Distance from project footprint (m)	Number of sensitive receptors	Sensitivity of area to dust deposition effects based on high receptor sensitivity
Amended Gregadoo Road compound (C06)	< 20	0	Negligible
	< 50	0	
	< 100	0	
	< 200	0	
	< 350	0	
Amended Memorial Avenue compound (C14)	< 20	0	Low
	< 50	0	
	< 100	4	
	< 200	8	
	< 350	53	
Ardrossan Headquarters Road compound (C17)	< 20	0	Medium
	< 50	1	
	< 100	1	
	< 200	1	
	< 350	1	
Gadara Road compound (C19)	< 20	0	Negligible
	< 50	0	
	< 100	0	
	< 200	0	
	< 350	0	
Ellerslie Road compound (C21)	< 20	1	High
	< 50	1	
	< 100	1	
	< 200	1	
	< 350	1	
Tarcutta accommodation facility and compound (AC03)	< 20	0	Low
	< 50	0	
	< 100	0	
	< 200	1	
	< 350	4	
Adjungbilly accommodation facility and compound (AC04)	< 20	0	Low
	< 50	0	
	< 100	0	
	< 200	0	
	< 350	2	

Location	Distance from project footprint (m)	Number of sensitive receptors	Sensitivity of area to dust deposition effects based on high receptor sensitivity
Yass accommodation facility and compound (AC05)	< 20	0	Low
	< 50	0	
	< 100	0	
	< 200	2	
	< 350	9	
Green Hills accommodation facility and compound (AC07)	< 20	1	High
	< 50	1	
	< 100	1	
	< 200	2	
	< 350	2	

The sensitive receiver within 20 metres of the Green Hills accommodation facility and compound (AC07) would be leased by the project and is expected to be vacant during construction

IAQM Guidance - risk assessment

Based on the dust emission magnitudes determined for the various construction activities (as per Step 2a in **Section 6.1.2**) and the sensitivity of the surrounding area for dust deposition and for health effects (as per Step 2b in **Section 6.1.2**), the resulting risk of air quality impacts with no mitigation applied are determined based on the risk categories provided in **Table 6-13** to **Table 6-15 .**

Application of the IAQM Guidance to the construction of the transmission line corridor and access tracks shown in **Table 6-13** indicates that for the majority of the project footprint there is a medium to high risk of adverse dust deposition and human health impacts. These impacts would potentially occur at sensitive receptor locations during construction if no mitigation measures were applied to control emissions during the earthworks, construction and track-out works.

The results for the amended Gugga substation works shown in **Table 6-14** indicate that there is a high risk of adverse dust deposition and human health impacts occurring at the sensitive receptor locations if no mitigation measures were applied to control emissions during the earthworks, construction and track out works.

The results for the construction compounds and workers accommodation shown in **Table 6-15** indicate that there is a negligible to high risk of adverse dust deposition and human health impacts occurring at the sensitive receptor locations if no mitigation measures were applied to control emissions during earthworks, construction and track out.

Site specific mitigation is discussed further at **Section 6.1.3** (Step 3 of the IAQM Guidance).

Table 6-13 Preliminary risk of air quality impacts from construction activities – transmission line

Air quality impact	Sensitivity of area[(a)]	Dust emission magnitude (per Table 6-4)				Preliminary risk with no mitigation				
		Demolition	Earthworks	Construction	Track-out	Demolition	Earthworks	Construction	Track-out	Maximum
Transmission line corridor and access tracks section 1										
Dust Deposition	Medium	Small	Large	Medium	Large	Medium	Medium	Medium	Medium	**High**
Human Health	High					High	High	High	High	
Transmission line corridor and access tracks section 2a										
Dust Deposition	Medium	None	Large	Medium	Large	N/A	Medium	Medium	Medium	**High**
Human Health	High					N/A	High	High	High	
Transmission line corridor and access tracks section 2b										
Dust Deposition	Low	None	Large	Medium	Large	N/A	Low	Low	Low	**Medium**
Human Health	Medium					N/A	Medium	Medium	Medium	
Transmission line corridor and access tracks section 3										
Dust Deposition	Medium	None	Large	Medium	Large	N/A	Medium	Medium	Medium	**High**
Human Health	High					N/A	High	High	High	
Transmission line corridor and access tracks section 4										
Dust Deposition	Medium	None	Large	Medium	Large	N/A	Medium	Medium	Medium	**High**
Human Health	High					N/A	High	High	High	
Transmission line corridor and access tracks section 5										
Dust Deposition	Medium	None	Large	Medium	Large	N/A	Medium	Medium	Medium	**Medium**
Human Health	Low					N/A	Low	Low	Low	
Transmission line corridor and access tracks section 6										
Dust Deposition	Medium	None	Large	Medium	Large	N/A	Medium	Medium	Medium	**Medium**
Human Health	Low					N/A	Low	Low	Low	

(a) Per **Table 6-7** (dust deposition) and **Table 6-10** (human health)

Table 6-14 Preliminary risk of air quality impacts from construction activities – substations

Air quality impact	Sensitivity of area[(a)]	Dust emission magnitude (per Table 6-5)				Preliminary risk with no mitigation				
		Demolition	Earthworks	Construction	Track-out	Earthworks	Construction	Track-out	Maximum
Proposed Gugaa 500 kV substation										
Dust Deposition	Medium	None	Large	Medium	Large	N/A	Medium	Medium	Medium	**High**
Human Health	High					N/A	High	Medium	High	

(a) Per **Table 6-8** (dust deposition) and **Table 6-11** (human health)

Table 6-15 Preliminary risk of air quality impacts from construction activities – construction compounds and workers accommodation

Air quality impact	Sensitivity of area[a]	Dust emission magnitude (per Table 6-6)				Preliminary risk with no mitigation				
		Demolition	Earthworks	Construction	Track-out	Demolition	Earthworks	Construction	Track-out	Maximum
Amended Gregadoo Road compound (C06)										
Dust Deposition	Negligible	None	Medium	Small	Medium	N/A	Negligible	Negligible	Negligible	**Negligible**
Human Health	Negligible					N/A	Negligible	Negligible	Negligible	
Amended Memorial Avenue compound (C14)										
Dust Deposition	Low	None	Small	Small	Small	N/A	Negligible	Negligible	Negligible	**Negligible**
Human Health	Low					N/A	Negligible	Negligible	Negligible	
Ardrossan Headquarters Road compound (C17)										
Dust Deposition	Low	None	Medium	Large	Large	N/A	Low	Low	Low	**Medium**
Human Health	Medium					N/A	Medium	Medium	Medium	
Gadara Road compound (C19)										
Dust Deposition	Negligible	None	Small	Small	Small	N/A	Negligible	Negligible	Negligible	**Negligible**
Human Health	Negligible					N/A	Negligible	Negligible	Negligible	
Ellerslie Road compound (C21)										
Dust Deposition	Medium	None	Medium	Small	Small	None	Medium	Low	Negligible	**Medium**
Human Health	High					None	Medium	Low	Low	
Tarcutta accommodation facility and compound (AC03)										
Dust Deposition	Low	None	Large	Large	Large	N/A	Low	Low	Low	**Low**
Human Health	Low					N/A	Low	Low	Low	
Adjungbilly accommodation facility and compound (AC04)										
Dust Deposition	Low	None	Medium	Small	Small	N/A	Low	Negligible	Negligible	**Low**
Human Health	Low					N/A	Low	Negligible	Negligible	

Air quality impact	Sensitivity of area[(a)]	Dust emission magnitude (per Table 6-6)				Preliminary risk with no mitigation				
		Demolition	Earthworks	Construction	Track-out	Demolition	Earthworks	Construction	Track-out	Maximum
Yass accommodation facility and compound (AC05)										
Dust Deposition	Low	None	Large	Medium	Small	N/A	Low	Low	Negligible	**Low**
Human Health	Low					N/A	Low	Low	Negligible	
Green Hills accommodation facility and compound (AC07)										
Dust Deposition	Medium	None	Large	Large	Large	N/A	Medium	Medium	Medium	**High**
Human Health	High					N/A	High	High	High	

(a) Per **Table 6-9** (dust deposition) and **Table 6-12** (human health)

6.1.3 IAQM Guidance Step 3 – site-specific mitigation measures

The IAQM Guidance describes risks (with no mitigation applied) in terms of them being negligible, low, medium or high. Where there are low, medium or high risks, then site-specific mitigation would be required.

The recommended mitigation measures provided in the IAQM Guidance have been reviewed and, in tandem with Transgrid's experience in managing similar projects, proposed mitigation measures are presented in **Chapter 9.0**.

6.1.3.1 Recommended separation distances

Table 6-16 identifies potential constraints with respect to the location of helipads, diesel-fuelled generators, concrete batching plants and crushing/screening activities and the recommended separation distances presented in **Table 3-1**.

Table 6-16 Constraints regarding recommended separation distances for helipads, diesel-fuelled generators, concrete batching plants and crushing/screening activities

Key:

Not applicable	No constraints	Some constraints	Multiple constraints

ID / name in Amendment Report	Helipad	Diesel-fuelled generators		Concrete plant	Crushing	Screening
	> 30 movements per week Residences within 1 km	*>= 10 MW*	*>= 100 kW but <10 MW*	*> 5,000 t/y*	*Rock, ores or minerals*	*>5,000 t/y but <50,000 t/y*
	Recommended separation distances (per Table 3-1)					
	1 km	**1 km**	**500 m**	**100 m**	**100 m**	**500 m**
Amended Gregadoo Road compound (C06) (**Figure 6-8**)	Land to east or west within the site boundary most suitable.	N/A	N/A	N/A	No constraints	No constraints
Amended Honeysuckle Road compound (C07) (**Figure 6-9**)	No constraints	No constraints	No constraints	No constraints	No constraints	No constraints
Amended Bannaby 500 kV substation compound (C12) (**Figure 6-10**)	No constraints	N/A	N/A	No constraints	No constraints	No constraints
Amended Memorial Avenue compound (C14) (**Figure 6-20**)	N/A	N/A	N/A	N/A	Land to east within the site boundary most suitable.	Land to east within the site boundary suitable.
Ardrossan Headquarters Road compound (C17) (**Figure 6-11**)	Land to north within the site boundary most suitable. Avoid residence at boundary and those to the east.	Land to north within the site boundary most suitable. Avoid residence at boundary and those to the east.	Land to north within the site boundary most suitable. Avoid residence at boundary.	Land to north within the site boundary most suitable. Avoid residence at boundary.	Land to north within the site boundary most suitable. Avoid residence at boundary.	Land to north within the site boundary most suitable. Avoid residence at boundary.
Snubba Road compound (C18) (**Figure 6-12**)	No constraints	No constraints	No constraints	No constraints	No constraints	No constraints
Gadara Road compound (C19) (**Figure 6-13**)	Land to north within the site boundary most suitable.	Land to north within the site boundary most suitable.	Land to north within the site boundary most suitable.	N/A	No constraints	No constraints
Ellerslie Road compound (C21) (Figure 6-14)	Land to west within the site boundary most suitable. Avoid residence inside boundary.	Land to west within the site boundary most suitable. Avoid residence inside boundary.	Avoid residence inside boundary.	N/A	Avoid residence inside boundary.	Avoid residence inside boundary.
Tarcutta accommodation facility and compound (AC03) (**Figure 6-15**)	Land to north within the site boundary most suitable.	Land to north within the site boundary most suitable.	Land to north within the site boundary most suitable.	No constraints	No constraints	No constraints

ID / name in Amendment Report	Helipad	Diesel-fuelled generators		Concrete plant	Crushing	Screening
	> 30 movements per week Residences within 1 km	***>= 10 MW***	***>= 100 kW but <10 MW***	***> 5,000 t/y***	***Rock, ores or minerals***	***>5,000 t/y but <50,000 t/y***
	Recommended separation distances (per Table 3-1)					
	1 km	**1 km**	**500 m**	**100 m**	**100 m**	**500 m**
Adjungbilly accommodation facility and compound (AC04) (**Figure 6-16**)	land between north and east most suitable.	Land between north and east most suitable.	No constraints	No constraints	No constraints	No constraints
Yass accommodation facility and compound (AC05) (**Figure 6-17**)	Multiple residences in most directions - highly constrained	Multiple residences in most directions - highly constrained	Land to north-west or south-east within the site boundary most suitable.	No constraints	No constraints	Land to north-west or south-east within the site boundary most suitable.
Crookwell accommodation facility and compound (AC06) (**Figure 6-18**)	No constraints	No constraints	No constraints	No constraints	No constraints	No constraints
Green Hills accommodation facility and compound (AC07) (**Figure 6-19**)	It is understood that the sensitive receptor within site boundary would be leased by Transgrid and remain uninhabited for the duration of use. Avoid sensitive receptor to the south-east. North/north-east within the site boundary most suitable.	It is understood that the sensitive receptor within site boundary would be leased by Transgrid and remain uninhabited for the duration of use. Avoid sensitive receptor to the south-east. North/north-east within the site boundary most suitable.	It is understood that the sensitive receptor within site boundary would be leased by Transgrid and remain uninhabited for the duration of use. Avoid sensitive receptor to the south-east. North/north-east within the site boundary most suitable.	It is understood that the sensitive receptor within site boundary would be leased by Transgrid and remain uninhabited for the duration of use. Avoid sensitive receptor to the south-east. North/north-east within the site boundary most suitable.	It is understood that the sensitive receptor within site boundary would be leased by Transgrid and remain uninhabited for the duration of use. Avoid sensitive receptor to the south-east. North/north-east within the site boundary most suitable.	It is understood that the sensitive receptor within site boundary would be leased by Transgrid and remain uninhabited for the duration of use. Avoid sensitive receptor to the south-east. North/north-east within the site boundary most suitable.

6.1.4 IAQM Guidance Step 4 – determination of significance of residual impacts

For almost all construction activities, the aim is to prevent major effects on sensitive receptors through the use of effective mitigation which, according to the IAQM Guidance, is typically possible.

Therefore, with the implementation of mitigation measures detailed in **Chapter 9.0**, the residual dust impacts are anticipated to be managed to acceptable levels, such that there is negligible risk of adverse air quality effects at the sensitive receptors.

Table 10-1 presents a summary of the identified risks pre- and post-implementation of the identified mitigation measures.

6.2 Products of combustion

Emissions due to products of combustion (including PM) during construction and operation of the project predominantly relate the use of trucks and other vehicles, including where relevant, helicopters accessing and idling within the project footprint. During construction, diesel-powered construction equipment such as cranes and excavators would also emit combustion products.

During operation, the emissions would be of a similar nature to existing emissions from traffic on roads in the vicinity. Whilst there would be traffic generated during operation, emissions would be substantially lower than during construction.

As detailed in **Section 4.4**, a risk-based assessment of potential air quality impacts due to products of combustion during construction was undertaken. As detailed in *Technical Report 17 - Air Quality Impact Assessment*, the assessment method considers three impact descriptors – nature of impact, receptor sensitivity and magnitude of impact.

With respect to the products of combustion anticipated during construction:

- nature of impact: does the impact result in an adverse, neutral or beneficial environment?
    - If released at sufficient magnitude, the nature of the emissions could cause an impact on the receiving environment and is therefore categorised as adverse.
- receptor sensitivity: how sensitive is the receiving environment to the anticipated impacts?
    - The identified sensitive receptors are predominantly residences, and as such, the sensitivity is categorised as high.
- magnitude: what is the anticipated scale of the impact?
    - Air pollutant emissions due to consumption of diesel and petrol were estimated based on the activity assumptions in **Table 4-2** for the amended project and the emission factors shown in **Table 4-2** and **Table 4-4**.
    - The resultant total emissions calculated are shown in **Table 6-17** together with the annual emissions for NSW as reported to the NPI for the 2020/21 reporting period.
    - As shown in **Table 6-17**, the total emissions due to combustion during construction represent less than one per cent of the annual NPI emissions for NSW.
    - Whilst some of the emissions would be localised (for example, use of generators at the construction compounds), the majority would occur intermittently over large areas. As such, the magnitude of the impact is anticipated to be negligible.

It is also recommended that the location of diesel generators considers the recommended separation distances given in **Table 3-1**, namely:

- greater than 10 megawatts (MW) in aggregate: 1,000 metres from sensitive receptor locations
- greater than or equal to 100 kW but less than 10 MW in aggregate: 500 metres from sensitive receptor locations.

As summarised in **Table 6-16**, depending on the size of generators proposed, the following sites may not be able to meet the recommended separation distances due to the location of sensitive receptors in relation to the site:

- Ardrossan Headquarters Road compound (C17)
- Gadara Road compound (C19)
- Ellerslie Road compound (C21)
- Tarcutta accommodation facility and compound (AC03)
- Adjungbilly accommodation facility and compound (AC04)
- Yass accommodation facility and compound (AC05)
- Green Hills accommodation facility and compound (AC07).

Should the recommended separation distances not be achievable, alternative controls will be investigated and implemented to minimise impacts. Where the recommended separation distances are not achievable and no alternative controls are available to minimise impacts, a more detailed assessment may need to be completed in accordance with the NSW EPA *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (NSW EPA, 2022).

Table 6-17 Estimated emissions due to products of combustion during construction

Activity	CO	Formaldehyde	NO_x	$PM_{2.5}$	PM_{10}	PAHs	SO_2	VOC
	Emissions from diesel usage (t)							
Transmission line land clearing and construction, including transport of construction materials	61	2.7	147	11	12	0.01	0.08	13
Bannaby 500 kV substation modification	77	3.4	186	14	15	0.01	0.10	17
Proposed Gugaa 500 kV substation construction	152	6.7	366	27	30	0.01	0.20	33
Wagga 330 kV substation modification	64	2.8	153	11	13	0.01	0.08	14
Construction compounds (per compound)	17	0.2	41	3	3	0.0015	0.022	4
Light vehicle use for survey works, supervision, engineering and management support	11	-	5	1	1	0.0001	0.0091	0.2
Accommodation facilities (power generation)	198	0.25	921	63	65	0.000003	0.21	67
Activity	**Emissions from unleaded petrol usage (t)**							
Bannaby 500 kV substation modification	33	-	1	0.0	0.0	0.000001	0.03	1
Proposed Gugaa 500 kV substation construction	57	-	1	0.1	0.1	0.000001	0.05	2
Wagga 330 kV substation modification	28	-	1	0.0	0.0	0.000000	0.02	1
Total	**698**	**16**	**1821**	**132**	**139**	**0**	**1**	**153**
NSW NPI 2020/21[6]	***740, 000***	***3, 300***	***710, 000***	***29, 000***	***1, 200, 000***	***18***	***970, 000***	***100, 000***
Project percentage of NSW NPI 2020/21	***0.1***	***0.5***	***0.3***	***0.5***	***<0.1%***	***0.2***	***<0.1%***	***0.2***

[6] https://www.npi.gov.au/npidata/action/load/advance-search (accessed 13 September 2022)

Based on the estimated combustion emissions in **Table 6-17**, the potential impacts on the local sensitive receptors due to products of combustion is concluded to be neutral for all receptors, as shown in **Table 6-18**.

Table 6-18 Impact significance of products of combustion

Receptor Sensitivity	Impact magnitude			
	Substantial	Moderate	Slight	Negligible
Very High	Major Significance	Major/ Intermediate Significance	Intermediate Significance	Neutral Significance
High	Major/ Intermediate Significance	Intermediate Significance	Intermediate/Minor Significance	Neutral Significance
Medium	Intermediate Significance	Intermediate/Minor Significance	Minor Significance	Neutral Significance
Low	Intermediate/Minor Significance	Minor Significance	Minor/Neutral Significance	Neutral Significance

7.0 Operational impacts

7.1 Dust emissions

As there are no major changes to the potential for operational dust emissions, there is no need to update the assessment presented in *Technical Report 17 - Air Quality Impact Assessment*.

7.2 Products of combustion

As there are no major changes to the operational activity data, there is no need to update the assessment compared with that presented in *Technical Report 17 - Air Quality Impact Assessment*.

8.0 Cumulative impacts

Figure 8-1 shows the location of relevant future projects with respect to HumeLink's amended project footprint. The list of projects considered in relation to the cumulative impacts of the amended project remains unchanged from the EIS project. The cumulative impacts assessed for the EIS project also remain unchanged for the amended project.

Since the public exhibition of the EIS, an updated cumulative impact search has been undertaken. This updated search has identified the following two proposed projects that had not been considered in Chapter 25 of the EIS:

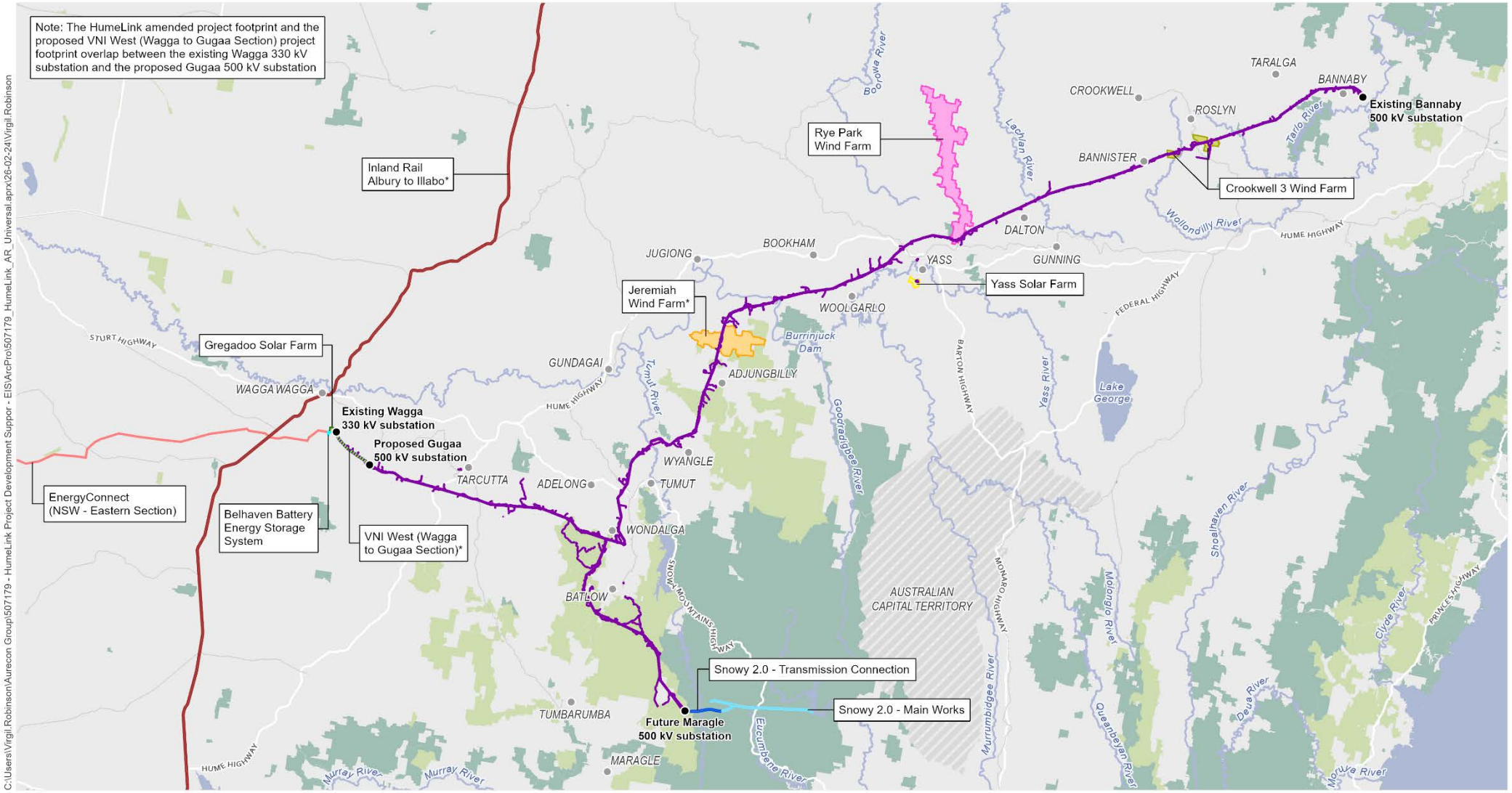
- Belhaven Battery Energy Storage System
- Yass Solar Farm.

Table 8-1 presents the cumulative impacts of the amended project for these two newly identified proposed project.

Table 8-1 Summary of cumulative impacts identified

Project	Details	Status	Distance and interface	Cumulative impacts
Belhaven Battery Energy Storage System	Construction and operation of a 400 MW / 800 MWh Battery Energy Storage System including transmission connection and associated infrastructure.	EIS being prepared SEARs issued on 18/05/2023	The main site is located about 1.5 km west of the existing Wagga 330 kV substation, but a connection from BESS to the substation (most likely underground) is proposed. Based on publicly available information there are likely to be overlapping construction programs.	As the construction programs of the Belhaven Battery Energy Storage System and HumeLink are likely to overlap, this has potential to increase the risk of cumulative dust impacts and cumulative impacts due to emissions from construction vehicles and plant. Any dust impacts will be managed in accordance with an AQMP. Minimal (if any) cumulative impacts anticipated during operation as neither project is a major source of emissions to air.

Project	Details	Status	Distance and interface	Cumulative impacts
Yass Solar Farm	The construction, operation and decommissioning of a 100 MW solar photovoltaic energy generating facility with an associated battery energy storage system.	EIS being prepared SEARs issued on 22/12/2023	The site surrounds the Yass substation, and based on publicly available information, there are likely to be overlapping construction programs. However, given the proximity and likely impacts, cumulative impacts are likely limited to the establishment and use of HumeLink's combines worker accommodation facility and construction compound proposed at Yass during construction only.	As the construction programs of Yass Solar Farm and HumeLink are likely to overlap, this has potential to increase the risk of cumulative dust impacts and cumulative impacts due to emissions from construction vehicles and plant. Any dust impacts will be managed in accordance with an AQMP. Minimal (if any) cumulative impacts anticipated during operation as neither project is a major source of emissions to air.



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Amended project footprint
National park and reserve
State forest
Waterbody
Waterway
Major road
Railway
Substation

Relevant future projects

Belhaven Battery Energy Storage System
Crookwell 3 Wind Farm
EnergyConnect (NSW - Eastern Section)
Gregadoo Solar Farm
Inland Rail Albury to Illabo*
Jeremiah Wind Farm*
Rye Park Wind Farm
Snowy 2.0 - Main Works
Snowy 2.0 - Transmission Connection
VNI West (Wagga to Gugga Section)*
Yass Solar Farm

*Note: Subject to approval

Source: *Aurecon, Transgrid, Spatial Services (DCS), ESRI Basemap*

1:925,000
0 20 40 km

Projection: GDA 1994 MGA Zone 55

FIGURE 8-1: Relevant future projects

9.0 Management of impacts

Table 9-1 provides a summary of the new or revised mitigation measures. Any mitigation measures that are no longer relevant are struck out and any mitigation measures (or edits to existing measures) are bold.

Table 9-1 Revised and New Mitigation Measures – Air Quality

Reference	Impact	Mitigation measure	Timing	Relevant locations
Air quality				
AQ4	Operation of concrete batching plant(s)	Measures will be implemented at concrete batching plants to minimise emissions to air as far as possible, and will be regularly inspected with additional controls implemented as required. **Concrete batching plants that will produce greater than 5,000 tonnes per year will be located 100 m (or more) from sensitive receptors.** Measures to minimise emissions to air may include **(where relevant)**: • all aggregate and sand will be stored appropriately in storage bins or bays to minimise dust generation, and material will not exceed the height of the bay • cement silos and hoppers will be fitted with dust filters • all inspection points and hatches will be fully sealed • all dry raw materials to be transferred into the bowl of an agitator via front end loaders by maintaining adequate moisture levels and/or an enclosed conveyor • the cement silo will be fitted with emergency pressure alert and automatic cut off overfill protection • transfer of cement from storage to batching will occur via sealed steel augers • **regular** ~~regularly inspect~~ monitoring of dust emissions and apply additional controls. **Where recommended separation distances cannot be achieved, alternative controls to minimise potential impacts will be investigated and implemented.**	Construction	Concrete batching plant(s)
AQ5	Crushing/screening activities	To minimise dust emissions during crushing/screening activities, the following measures (as a minimum) will be considered and implemented where practicable and appropriate: • **locate plant 500 m (or more) from sensitive receptors** • ~~fit~~ screen covers will be fitted to the crushing/screening equipment • control dust emissions from screening activities using water sprinklers, where required and appropriate • inspect the water sprinklers on a regular basis and maintain as required to ensure operational efficiency • where practicable, install wind breaks in appropriate locations adjacent to the dust generating equipment and processes	Construction	Crushing/ screening plant(s)

Reference	Impact	Mitigation measure	Timing	Relevant locations
		• prior to screening, dampen the rocks during dry weather conditions. The effectiveness of the implemented controls will be monitored, and additional controls implemented as required to address any performance issues identified. **Where recommended separation distances cannot be achieved, alternative controls to minimise potential impacts will be investigated and implemented.**		
AQ6	**Diesel generators**	**To minimise the impact of emissions from the use of diesel generators on sensitive receptors, the following measures (as a minimum) will be considered and implemented where practicable and appropriate:** • **Locate the equipment so it is away from the prevailing wind direction and maximise the distance to the nearest sensitive receiver** • **Connect to existing electricity network rather than using diesel generators where possible.** • **If connection to existing electricity network is not possible, where practical and appropriate implement the following recommended separation distances:** o **Greater than 10 MW in aggregate: 1,000 metres from sensitive receptor locations** o **Greater than or equal to 100 kW but less than 10 MW in aggregate: 500 metres from sensitive receptor locations** **Where recommended separation distances cannot be achieved, alternative controls to minimise potential impacts will be investigated and implemented.**	**Construction**	**Diesel generators at compounds and worker accommodation facilities**
AQ7	**Helipads**	**To minimise the impact of air emissions from the use of helipads on sensitive receptors, the following measures (as a minimum) will be considered and implemented where practicable and appropriate:** • **Locate helipad as far as practical from sensitive receptors.** • **Minimise dust generation at take-off and landing sites and sites being used for transmission line structure assembly (particularly those used frequently) by the implementation of dust control measures including:** o **provision of water carts to apply water or other dust suppressants as and when required on work areas close to potential sensitive receptors** o **visual monitoring of dust generation** o **community liaison and mechanisms for registering and resolving complaints.**	**Construction**	**Helipads at compounds and worker accommodation facilities**

10.0 Conclusions

Potential emissions to air from construction and operation of the amended project have been qualitatively assessed to determine the risk of adverse air quality effects and identify appropriate mitigation measures.

Dust emissions during construction were generally assessed by applying the IAQM Guidance using project-specific information.

The risk of adverse effects occurring at sensitive receptor locations if no mitigation measures were applied to control emissions were concluded to be as shown in **Table 10-1**. As shown in **Table 10-1**, the application of mitigation measures reduces the risk to negligible at all locations.

The risk assessment has considered the use of diesel generators, crushing/screening, concrete batching plants and helipads at each location (or not). The risk assessment identified recommended separation distances and/or the appropriate siting of plant and equipment within each combined accommodation facility and construction compound as shown in **Table 6-16**.

A range of mitigation measures have been recommended. Implementation of the recommended mitigation measures is required such that the residual dust impacts from the short-term and temporary construction activities can be appropriately managed to prevent adverse air quality effects at the sensitive receptor locations.

Air quality impacts from combustion emissions were assessed via a risk assessment that concluded the risks of adverse impacts during both construction and operation are negligible.

Table 10-1 Summary of dust risk without and with mitigation measures

Activity	Dust risk		Location and dust risk with no mitigation
	No mitigation	With mitigation	
Construction of the transmission line corridor and access tracks	Medium to High	Negligible	Referring to **Figure 4-1**, the following transmission line sections: • High: o Section 1: Wagga 330 kV substation to Wondalga o Section 2a: Wondalga to Snubba Road compound (C18) o Section 3: Wondalga to Adjungbilly o Section 4: Adjungbilly to Yass • Medium: o Section 2b: Snubba Road compound (C18) to future Maragle 500 kV substation o Section 5: Yass to Roslyn o Section 6: Roslyn to Bannaby
Substations	High	Negligible	Proposed Gugaa 500 kV substation
Construction compounds and accommodation facilities	Negligible to High	Negligible	• High o Green Hills accommodation facility and compound (AC07) • Medium o Ardrossan Headquarters Road compound (C17) o Ellerslie Road compound (C21) • Low o Tarcutta accommodation facility and compound (AC03) o Adjungbilly accommodation facility and compound (AC04) o Yass accommodation facility and compound (AC05) • Negligible o Amended Gregadoo Road compound (C06) o Amended Memorial Avenue compound (C14) o Snubba Road compound (C18)Gadara Road compound (C19) o Crookwell accommodation facility and compound (AC06) o Amended Honeysuckle Road compound (C07)

11.0 References

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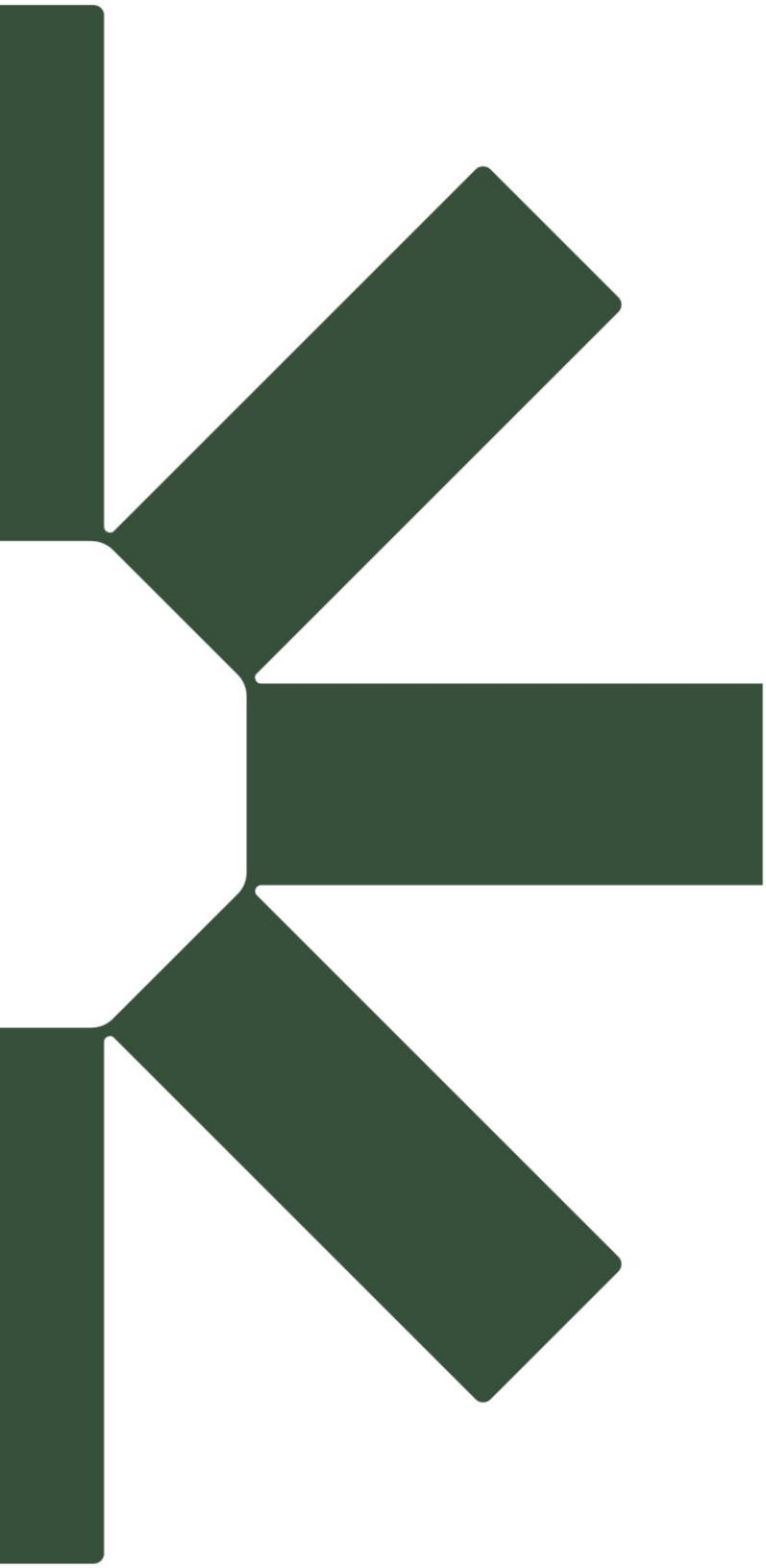

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