

**Norris and Schoeffel  
Ecological Services**

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**Ecological Features and Constraints**

**Lang Lang Sand Resources  
5575 South Gippsland Hwy, Lang Lang**

29 August 2022

Prepared by Ken Norris (for ACM Pty Ltd)

1295 Bullumwaal Rd, Mount Taylor VIC 3875  
m – 0421 626 051  
kennorris49@gmail.com

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Issue Date	Revision No	Author	Checked
10 August 2020	Draft	Ken Norris	
7 Jan 2022	Final	Ken Norris	
29 August 2022	Final+3	Ken Norris	

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## Summary

- The proposed Sand Quarry, Lang Lang Sand Resources, plans to use an existing dairy farm that is likely to have been cleared of original 'Native Vegetation' in the late 19<sup>th</sup> and early 20<sup>th</sup> century
- The proposed quarry does not contravene or invoke EPBC Act actions
- One Rare or Threatened species of Flora or Fauna was observed on the site—Musk Duck, regarded as 'near threatened' on the Victorian advisory list
- Definable Native Vegetation on site consists of one large tree on the eastern boundary that will be avoided in excavation plans
- Large trees along the north and south boundaries have 'Tree Protection Zones' within the Work Authority but all works, including bunds and drains, are situated to avoid them (Appendix 1).
- Large trees around the farm dwelling and dairy were originally planted for amenity value by the owner's family.

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# 1 Introduction

## 1.1 Project Background

Aurora Construction Materials Pty Ltd (ACM Pty Ltd) contracted Norris and Schoeffel to complete a Flora and Fauna review and Native Vegetation assessment of a proposed extraction area within a Work Authority named Lang Lang Sand Resources.

The assessment is to fulfil requirements:

- To explore the possibility that the proposed works might be a referable action under the Environment Protection and Biodiversity Conservation Act (EPBC).
- To explore and make allowance for any potential liability and resultant Offsets that would apply to the proposed works, consistent with *Guidelines for the removal, destruction or lopping of native vegetation* (DELWP 2017).

## 1.2 Site location

The study site is located about 6 kilometres SSE of Lang Lang, Victoria. The proposed works on the site comprise about 80 ha of 5575 South Gippsland Hwy, Lang Lang. The site is within the Cardinia Local Government area and is situated in the Gippsland Plains Bioregion.

Details:

**5575 South Gippsland Hwy, Lang Lang**

GWZ1 Green Wedge Zone – Schedule 1

**Crown Allotments:** 1 LP91815, 1 TP23467, 2 PS312674 and 1 PS312674.

Appendix 1 contains a plan of the site.

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## 1.3 Objectives

The purpose of this assessment is to:

- Interrogate and analyse a range of biological databases and relevant references to provide a list of flora and fauna or their habitat that is or are potentially present on the sites and vicinity including adjoining roadsides;
- Carry out an assessment of the native vegetation quality of the site (Habitat Hectare) if necessary and record and map the location of any significant species;
- Classify and map the native vegetation on the site in accordance with DELWP 2017 i.e. Scattered Tree or Patches of Native Vegetation;
- Prepare an overview of the potential Native Vegetation offsets required for the development of the entire site; and
- Prepare a report and map the findings of this assessment including any recommendations for additional targeted surveys and an assessment of the impact of the proposed development on biodiversity.

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## 2 Methods

### 2.1 Literature and Database Review

Databases and reports were interrogated and reviewed, these include:

- Flora and Fauna records within 5 km radius of the study area held in the Victorian Biodiversity Atlas — a state-wide database maintained by the Department of Environment, Land, Water and Planning (DELWP) (DELWP 2018):
- Federal Department of Environment Protected Matters Database (DoE) (DoE 2019), using a 5 km radius search area (Appendix 2):
- Ecological Vegetation Class (EVC) modelling of the study area (both extant and pre-1750) (DELWP 2018)

### 2.2 Field Survey

The study area was assessed on 30 July 2020 and 6 July 2022.

The field survey provides an assessment of the flora and fauna as observed at the time, including the distribution of extant Native Vegetation on the site.

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## 3 Results

### 3.1 Historic Land Use

The property was probably cleared of the original vegetation described as Lowland Forest and Swampy Riparian Woodland in the last half of the 19<sup>th</sup> century. Grazing by domestic stock probably continued from that time until the present, at different intensities, but probably no more intensely than its current use as a dedicated dairy farm.



*Illustration 1: Proposed extraction area*

Roadside vegetation along the South Gippsland Highway attest to the likely swamp character of the original vegetation.



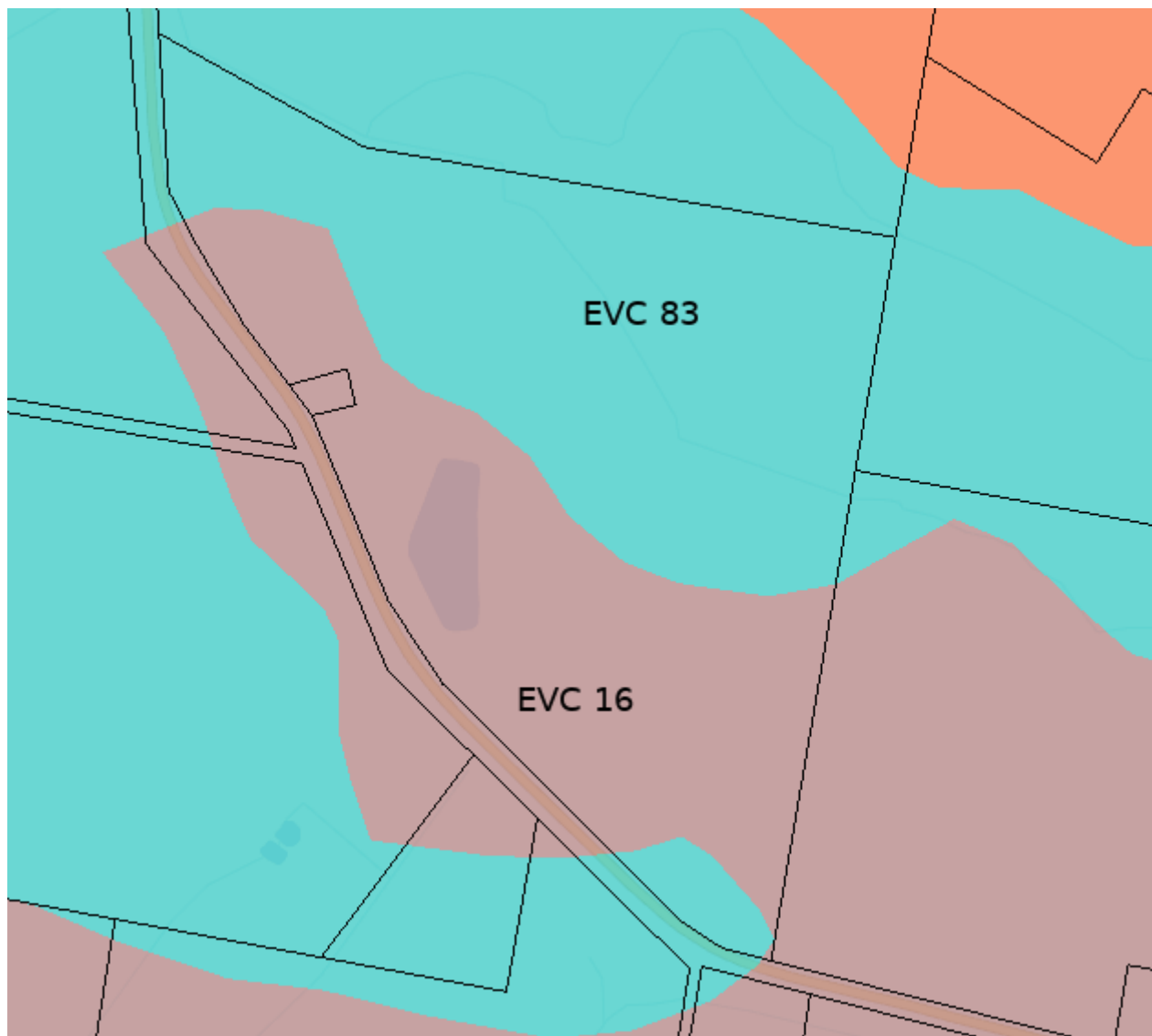
*Illustration 2: Roadside vegetation*



## 3.2 Flora

### 3.2.1 Database assessment

The modelled (DELWP 2018) 1750 pre-European Ecological Vegetation Class (EVC) of the proposed extraction site is a combination of EVC 16 Lowland Forest and EVC 83 Swampy Riparian Woodland. Relict vegetation along the South Gippsland Highway is consistent with that presumption.



*Illustration 3: Predicted original distribution of Native Vegetation onsite.*

### 3.2.2 Site Assessment

Because of the nature of land-use and change in fundamental soil characteristics, few species of native flora occur on the site and other than a single Swamp Gum *Eucalyptus ovata*, near the eastern boundary, none that are naturally occurring and >10 years of age. The Australian native species,

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including the local *Melaleuca ericifolia*, in an area along a fence-line in about the centre of the property were planted by the present owner's family. A single shrub of *Acacia verticillata* is present on a drain in the central north of the property. Neither of these occurrences are actionable under the terms of the Native Vegetation retention regulations. The proposed pit design will avoid the single Swamp Gum in the east by establishing a marked exclusion zone of 20m radius. Proposed works, including bunds, are situated outside the 'Tree Protection Zones' of trees outside the property boundary, but whose dependence and hence vulnerability extends within the property (Appendix 1). Large trees around the farm dwelling and dairy were originally planted for amenity value by the owner's family.

### 3.2.3 Flora Significance

Table 3-1 lists those Significant species of plants or their habitat recorded on the EPBC database or Victorian Biodiversity Atlas (DELWP 2017) within about 5km of the sites and identified by any, some or all of the EPBC Act, the FFG Act or the advisory list of threatened species in Victoria.

Table 3-1 Significant plant species recorded within 5km of the subject sites

Scientific Name	Common Name	Conservation Status	Count of Sightings	Last Record
<i>Acacia leprosa</i> var. <i>uninervia</i>	Large-leaf Cinnamon-wattle	r	1	12/05/05
<i>Allocasuarina media</i>	Prom Sheoak	k	1	22/03/01
<i>Amphibromus fluitans</i>	River Swamp Wallaby-grass	VU X	0	none
<i>Austrostipa rudis</i> subsp. <i>australis</i>	Veined Spear-grass	r	1	01/09/07
<i>Banksia spinulosa</i> var. <i>cunninghamii</i>	Hairpin Banksia	X	26	09/11/17
<i>Billardiera scandens</i> s.s.	Velvet Apple-berry	r	1	01/12/76
<i>Caladenia aurantiaca</i>	Orange-tip Finger-orchid	r	2	06/10/95
<i>Caladenia orientalis</i>	Eastern Spider Orchid	EN en L	0	none
<i>Caladenia tessellata</i>	Thick-lipped Spider-orchid	VU vu	0	none
<i>Campylopus acuminatus</i> var. <i>kirkii</i>	Swamp Swan-neck Moss	k	1	18/01/05
<i>Chiloglottis jeanesii</i>	Mountain Bird-orchid	r	1	09/11/17
<i>Chorizandra australis</i>	Southern Bristle-sedge	k	1	03/07/03
<i>Corybas aconitiflorus</i>	Spurred Helmet-orchid	r	5	20/09/07
<i>Desmodium varians</i>	Slender Tick-trefoil	k	1	08/05/01
<i>Dianella amoena</i>	Matted Flax-lily	EN en L	0	none
<i>Entolasia stricta</i>	Upright Panic	k	5	17/04/07
<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	VU vu L	1	22/03/01
<i>Glycine latrobeana</i>	Clover Glycine	VU vu L	0	none
<i>Hypocrepopsis amplexans</i>	Clasping Hypocrepopsis	vu L	9	04/07/04

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Scientific Name	Common Name	Conservation Status	Count of Sightings	Last Record
<i>Kunzea leptospermoides</i>	Yarra Burgan	k	2	09/11/17
<i>Monotoca glauca</i>	Currant-wood	r	2	20/05/05
<i>Prasophyllum frenchii</i>	Maroon Leek-orchid	EN en L	0	none
<i>Prasophyllum spicatum</i>	Dense Leek-orchid	VU en	0	none
<i>Pterostylis chlorogramma</i>	Green-striped Greenhood	VU vu L	4	08/07/09
<i>Pterostylis cucullata</i>	Leafy Greenhood	VU L	0	none
<i>Pterostylis grandiflora</i>	Cobra Greenhood	r	1	29/07/94
<i>Senecio diaschides</i>	Shingle Fireweed	r	1	09/11/17
<i>Senecio psilocarpus</i>	Swamp Fireweed	VU	0	none
<i>Thelymitra epipactoides</i>	Metallic Sun-orchid	EN en L	0	none
<i>Thelymitra malvina</i>	Mauve-tuft Sun-orchid	vu	1	10/11/95
<i>Xerochrysum palustre</i>	Swamp Everlasting	VU vu L	0	none

Abbreviations: EPBC Act CR—Critically endangered, EN—Endangered, VU—Vulnerable; FFG Act L—Listed, N—Nominated for Listing, X—Rejected for listing; Victorian Advisory List cr—critically endangered, en—endangered, vu—vulnerable, nt—near threatened, dd—data deficient.

None of these species was observed on site or are likely to occur.

### 3.2.4 EPBC Listed Communities

No EPBC listed threatened Ecological communities are recorded as potentially occurring in the area (Appendix 2).

## 3.3 Fauna

### 3.3.1 Database Assessment

The EPBC search (Appendix 2) and the Victorian Biodiversity Atlas (DELWP 2017) identified those species of animals that have been or might be recorded within the vicinity (~5km) of the site. Of these, the 'Significant fauna' are listed below i.e. those species identified by any, some or all of the EPBC Act, the FFG Act or the advisory list of threatened species in Victoria. Not included in the list below are species with a clear orientation to a marine environment.

Table 3-2 - Significant fauna species recorded within 5km of the subject site

Scientific Name	Common Name	Conservation Status	Count of Sightings	Last Record
<i>Antechinus minimus maritimus</i>	Swamp Antechinus	VU nt L	1	23/10/98
<i>Anthochaera phrygia</i>	Regent Honeyeater	CR	none	
<i>Ardea alba</i>	Great Egret	vu L	4	24/06/06
<i>Ardea alba modesta</i>	Eastern Great Egret	vu L	2	18/06/18
<i>Biziura lobata</i>	Musk Duck	vu	10	30/07/2020
<i>Calidris ferruginea</i>	Curlew Sandpiper	CR en L	9	09/02/08
<i>Dasyurus maculatus</i>	Spot-tailed Quoll	EN	0	none

Scientific Name	Common Name	Conservation Status	Count of Sightings	Last Record
<i>maculatus</i>				
<i>Falco hypoleucos</i>	Grey Falcon	VU	0	none
<i>Galaxiella pusilla</i>	Eastern Dwarf Galaxias	VU	0	none
<i>Gelochelidon macrotarsa</i>	Australian Gull-billed Tern	en L	1	27/11/04
<i>Grantiella picta</i>	Painted Honeyeater	VU	0	none
<i>Hirundapus caudacutus</i>	White-throated Needle-tail	VU vu L	2	01/01/81
<i>Hydroprogne caspia</i>	Caspian Tern	nt L	2	27/11/04
<i>Isodon obesulus obesulus</i>	Southern Brown Bandicoot	EN nt L	67	02/05/19
<i>Lathamus discolor</i>	Swift Parrot	CR en L	2	26/09/08
<i>Limosa lapponica</i>	Bar-tailed Godwit	VU	9	16/06/07
<i>Litoria raniformis</i>	Growling Grass Frog	VU en L	1	01/01/81
<i>Mastacomys fuscus mordicus</i>	Broad-toothed Rat	VU	0	none
<i>Megascolides australis</i>	Giant Gippsland Earthworm	VU	0	none
<i>Neophema chrysogaster</i>	Orange-bellied Parrot	CR cr L	1	01/02/07
<i>Ninox strenua</i>	Powerful Owl	vu L	4	03/05/05
<i>Numenius madagascariensis</i>	Eastern Curlew	CR vu L	10	09/02/18
<i>Oxyura australis</i>	Blue-billed Duck	en L	1	07/07/01
<i>Petauroides volans</i>	Greater Glider	VU	0	none
<i>Potorous tridactylus tridactylus</i>	Long-nosed Potoroo	VU	0	none
<i>Pluvialis fulva</i>	Pacific Golden Plover	vu	1	19/11/05
<i>Prototroctes maraena</i>	Australian Grayling	VU	0	none
<i>Pseudophryne semimarmorata</i>	Southern Toadlet	vu	8	03/05/05
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	VU	0	none
<i>Sminthopsis leucopus</i>	White-footed Dunnart	nt L	3	13/04/12
<i>Sternula albifrons</i>	Little Tern	vu L	1	27/11/04
<i>Synemon plana</i>	Golden Sun Moth	CR	0	none
<i>Tringa nebularia</i>	Common Greenshank	vu	5	09/02/08
<i>Varanus varius</i>	Lace Monitor	en	11	25/02/19

Abbreviations for 'Significant fauna': EPBC Act CR—Critically endangered, VU—Vulnerable; FFG Act L—Listed, N—Nominated for Listing, X—Rejected for listing; Victorian Advisory List cr—critically endangered, en—endangered, vu—vulnerable, nt—near threatened, dd—data deficient.

The subject site does not contain habitat suitable for fish except for the artificial dam on site.

The EPBC list of potential Listed fauna includes species that might visit or overfly the site but none for which the site offers an environment for enduring habitat.

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### 3.3.2 Field Assessment

No EPBC or FFG listed fauna species were observed during field investigations. A pair of Musk Duck *Biziura lobata*, considered vulnerable on the Victorian Advisory List, was present on the artificial dam.

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## 4 Legislative Requirements

### 4.1 Environment Protection and Biodiversity Conservation (EPBC) Act

Appendix 2 contains the EPBC Act search results in entirety. No communities of plant listed under EPBC Act occur on the site or nearby. Wetlands of International Importance (Westernport) occur near to the site but will not be affected by the development proposal.

No EPBC listed nationally significant Flora and Fauna species (or their habitat) as highlighted in the EPBC Report are likely to be present on the subject site. A referral of the development to Department of the Environment for determination of whether the development is a controlled action under the EPBC Act is not required. (Appendix 2—EPBC Report).

### 4.2 Flora & Fauna Guarantee Act 1988 (FFG)

An FFG permit from DELWP will not be required for the removal of native vegetation on the freehold land.

### 4.3 Planning and Environment Act 1987

A planning permit from the Alpine Shire Council is required to remove, destroy or lop any native vegetation as part of any proposed development works in accordance with the Cardinia Shire Planning Scheme. For development variations of usage within quarries, approvals under the Planning and Environment Act to do with Native Vegetation removal are handled by the Department of Economic Development, Jobs, Transport and Resources under the *Mineral Resources (Sustainable Development) Act 1990*.

### 4.4 NV Loss assessment following Guidelines

#### 4.4.1 Pathway

Following *The Guidelines* (DELWP 2017a), the assessment does not require the removal of any defined 'Native Vegetation'.

#### 4.4.2 Native vegetation present

- No 'Patches' of Native Vegetation occur within the proposed Work Authority.
- One 'Large Tree' remains of what was probably the original forest/woodland type, a specimen of Swamp Gum *Eucalyptus ovata*. The pit design avoids any affect on this remaining tree.
- The proposed pit is beyond the distance at which the remaining Native Vegetation along the roadsides will be affected.

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- No report from DELWP systems and tools is required.
- An aerial image of the proposed Work Authority that shows the position of the remaining Large Tree is in Appendix 1
- Large trees along the north and south boundaries have ‘Tree Protection Zones’ within the Work Authority but all works, including bunds and drains, are situated to avoid them (Appendix 1).

## 4.4.3 Wetlands

Following *The Guidelines*, a wetland mapped as such in the *Current wetlands map* is treated as a patch of native vegetation. The artificial turkey-nest dam constructed on-site to provide for the requirements of farming is shown as a wetland on the *Current wetlands map*. This derivative qualification would appear to be anomalous. No ‘Native Vegetation’ as such occurs on or in the dam (see Illustration 4). The classification of ‘wetland’ applying to Mapped Wetland 71976 under the terms of Native Vegetation retention was removed by application in a letter from DELWP dated 21-04-2021 (see documentation by BCA in support of the proposal).

*Illustration 4: Artificial 'Turkey-nest' dam.*



#### 4.4.4 Avoidance & minimisation statement

The primary objective of this project is the extraction of quality sand from the proposed area of the Work Authority. No Native Vegetation will be affected.



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*Illustration 5: One remaining large native tree on site.*

One large, indigenous tree occurs within the proposed Work Authority, near the eastern boundary. The pit design avoids the tree by 20 metres. Large trees along the north and south boundaries have ‘Tree Protection Zones’ within the Work Authority but all works, including bunds and drains, are situated to avoid them (Appendix 1).

#### 4.4.5 Property vegetation Plan

No Property Vegetation Plan exists for the site.

#### 4.4.6 Defendable space

The removal of Native Vegetation is not to create a defendable space.

#### 4.4.7 Clause 52.16

The application is not under Clause 52.16 of the Planning Scheme.



## 5 Conclusion

Except for the occurrence of a pair of Musk Duck on the artificial dam, described as 'near threatened' on the Victorian advisory list, no flora and fauna of conservation significance were recorded on the site and none is expected to utilise the site except as occasional visitors or vagrants. Few native flora species exist on site and the environment for fauna on the site is similar to that provided by farmland throughout this part of Victoria.

To proceed with the proposed development ACM Pty Ltd is not required to provide any 'Offsets' for the removal of Native Vegetation.

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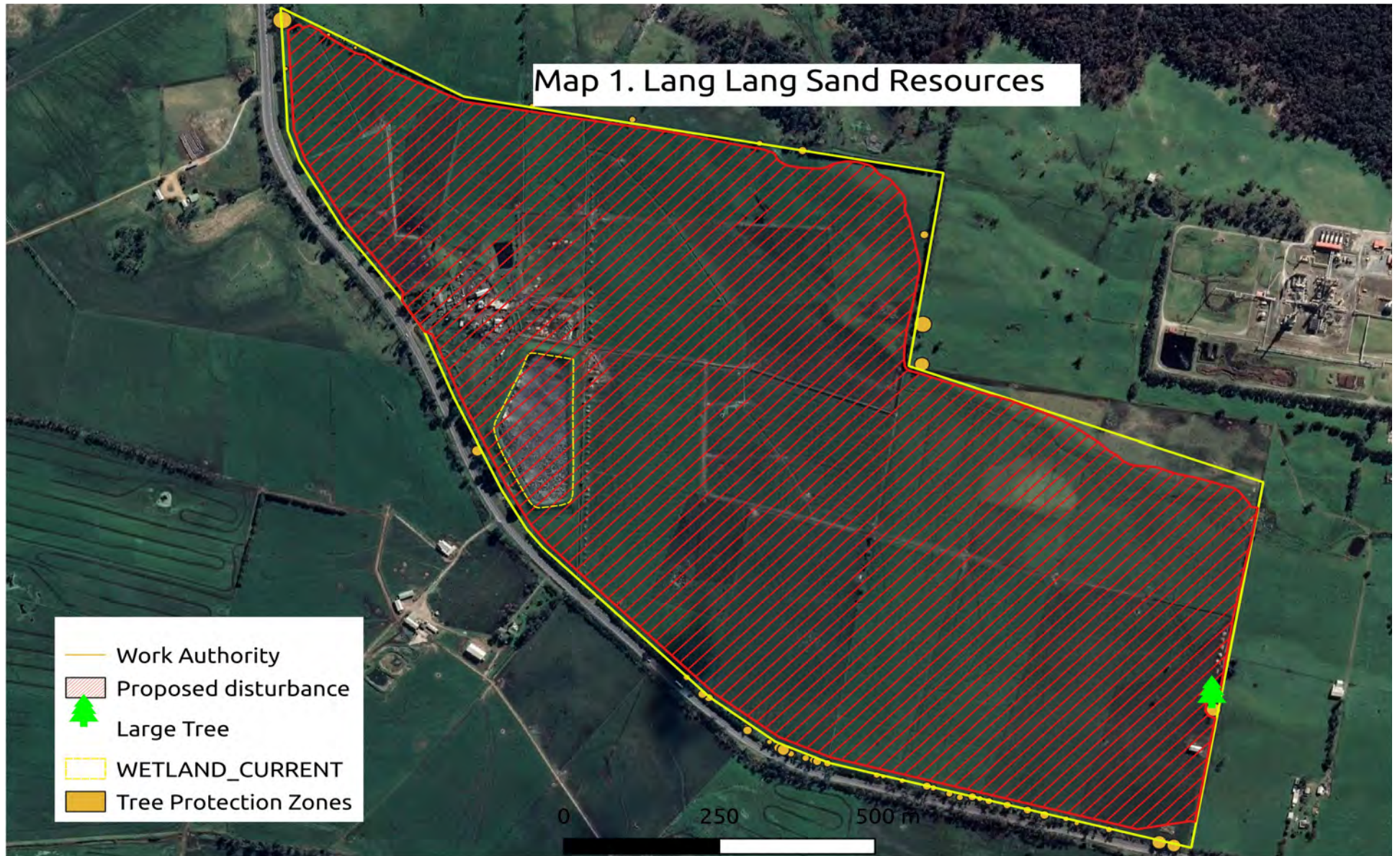
## 6 References

- DSE 2004 Victorian Riverina Bioregion Benchmarks. Published by the Victorian Government Department of Sustainability and Environment May 2004.
- DELWP 2017 Nature Kit <http://maps.biodiversity.vic.gov.au/viewer/?viewer=NatureKit>, Department of Environment, Land, Water & Environment – website
- DELWP 2017a Guidelines for the removal, destruction or lopping of native vegetation. Department of Environment, Land, Water & Planning, Melbourne
- DEPI 2014b Advisory list of rare or threatened plants in Victoria 2014. [http://www.depi.vic.gov.au/\\_\\_data/assets/pdf\\_file/0005/277565/Advisory-List-of-Rare-or-Threatened-Plants-in-Victoria-2014.pdf](http://www.depi.vic.gov.au/__data/assets/pdf_file/0005/277565/Advisory-List-of-Rare-or-Threatened-Plants-in-Victoria-2014.pdf) . Department of Environment & Primary Industries, Melbourne.
- DOE 2020 – Protected Matters Search Tool. <http://www.environment.gov.au/epbc/pmst/index.html>. Website - Department of Environment, Canberra.

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## Appendix 1. Site Map



# Appendix 2. EPBC Report



Australian Government  
Department of the Environment and Energy

## EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about [Environment Assessments](#) and the EPBC Act including significance guidelines, forms and application process details.

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[Summary](#)

[Details](#)

[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

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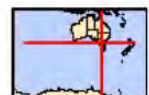
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[Coordinates](#)

Buffer: 5.0Km



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## Summary

### Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the [Administrative Guidelines on Significance](#).

<a href="#">World Heritage Properties:</a>	None
<a href="#">National Heritage Places:</a>	None
<a href="#">Wetlands of International Importance:</a>	1
<a href="#">Great Barrier Reef Marine Park:</a>	None
<a href="#">Commonwealth Marine Area:</a>	None
<a href="#">Listed Threatened Ecological Communities:</a>	1
<a href="#">Listed Threatened Species:</a>	66
<a href="#">Listed Migratory Species:</a>	59

### Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at <http://www.environment.gov.au/heritage>

A [permit](#) may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

<a href="#">Commonwealth Land:</a>	None
<a href="#">Commonwealth Heritage Places:</a>	None
<a href="#">Listed Marine Species:</a>	69
<a href="#">Whales and Other Cetaceans:</a>	7
<a href="#">Critical Habitats:</a>	None
<a href="#">Commonwealth Reserves Terrestrial:</a>	None
<a href="#">Australian Marine Parks:</a>	None

### Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

<a href="#">State and Territory Reserves:</a>	2
<a href="#">Regional Forest Agreements:</a>	None
<a href="#">Invasive Species:</a>	35
<a href="#">Nationally Important Wetlands:</a>	1
<a href="#">Key Ecological Features (Marine)</a>	None

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## Details

### Matters of National Environmental Significance

#### Wetlands of International Importance (Ramsar) [ Resource Information ]

Name	Proximity
<a href="#">Western port</a>	Within Ramsar site

#### Listed Threatened Ecological Communities [ Resource Information ]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Name	Status	Type of Presence
<a href="#">Natural Damp Grassland of the Victorian Coastal Plains</a>	Critically Endangered	Community may occur within area

#### Listed Threatened Species [ Resource Information ]

Name	Status	Type of Presence
<b>Birds</b>		
<a href="#">Anthochaera phrygia</a> Regent Honeyeater [82338]	Critically Endangered	Species or species habitat likely to occur within area
<a href="#">Botaurus poiciloptilus</a> Australasian Bittern [1001]	Endangered	Species or species habitat likely to occur within area
<a href="#">Calidris canutus</a> Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Calidris tenuirostris</a> Great Knot [862]	Critically Endangered	Roosting known to occur within area
<a href="#">Charadrius leschenaultii</a> Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Roosting known to occur within area
<a href="#">Charadrius mongolus</a> Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
<a href="#">Diomedea antipodensis</a> Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Diomedea antipodensis gibsoni</a> Gibson's Albatross [82270]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Diomedea epomophora</a> Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Diomedea exulans</a> Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely

# ADVERTISED PLAN

Name	Status	Type of Presence to occur within area
<a href="#">Diomedea sanfordi</a> Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Falco hypoleucos</a> Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Fregatta grallaria grallaria</a> White-bellied Storm-Petrel (Tasman Sea), White-bellied Storm-Petrel (Australasian) [64438]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Grantiella picta</a> Painted Honeyeater [470]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Hirundapus caudacutus</a> White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Lathamus discolor</a> Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Limosa lapponica baueri</a> Bar-tailed Godwit (baueri), Western Alaskan Bar-tailed Godwit [86380]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Limosa lapponica menzbieri</a> Northern Siberian Bar-tailed Godwit, Bar-tailed Godwit (menzbieri) [86432]	Critically Endangered	Species or species habitat may occur within area
<a href="#">Macronectes giganteus</a> Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
<a href="#">Macronectes halli</a> Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
<a href="#">Neophema chrysogaster</a> Orange-bellied Parrot [747]	Critically Endangered	Migration route likely to occur within area
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Pachyptila turtur subantarctica</a> Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Rostratula australis</a> Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
<a href="#">Sternula nereis nereis</a> Australian Fairy Tern [82950]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Thalassarche bulleri</a> Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area
<a href="#">Thalassarche bulleri platei</a> Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Species or species habitat may occur within area
<a href="#">Thalassarche cauta</a> Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area

# ADVERTISED PLAN

Name	Status	Type of Presence
<a href="#">Thalassarche chrysostoma</a> Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area
<a href="#">Thalassarche impavida</a> Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Thalassarche melanophris</a> Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
<a href="#">Thalassarche salvini</a> Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Thalassarche steadi</a> White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Thinornis cucullatus cucullatus</a> Hooded Plover (eastern), Eastern Hooded Plover [90381]	Vulnerable	Species or species habitat likely to occur within area
<b>Fish</b>		
<a href="#">Galaxiella pusilla</a> Eastern Dwarf Galaxias, Dwarf Galaxias [56790]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Prototroctes maraena</a> Australian Grayling [26179]	Vulnerable	Species or species habitat likely to occur within area
<b>Frogs</b>		
<a href="#">Litoria raniformis</a> Growling Grass Frog, Southern Bell Frog, Green and Golden Frog, Warty Swamp Frog, Golden Bell Frog [1828]	Vulnerable	Species or species habitat likely to occur within area
<b>Insects</b>		
<a href="#">Synemon plana</a> Golden Sun Moth [25234]	Critically Endangered	Species or species habitat may occur within area
<b>Mammals</b>		
<a href="#">Antechinus minimus maritimus</a> Swamp Antechinus (mainland) [83086]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Dasyurus maculatus maculatus (SE mainland population)</a> Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat may occur within area
<a href="#">Eubalaena australis</a> Southern Right Whale [40]	Endangered	Species or species habitat known to occur within area
<a href="#">Isoodon obesulus obesulus</a> Southern Brown Bandicoot (eastern), Southern Brown Bandicoot (south-eastern) [68050]	Endangered	Species or species habitat known to occur within area
<a href="#">Mastacomys fuscus mordicus</a> Broad-toothed Rat (mainland), Tooarrana [87617]	Vulnerable	Species or species habitat may occur within area
<a href="#">Megaptera novaeangliae</a> Humpback Whale [38]	Vulnerable	Species or species habitat may occur within area
<a href="#">Petauroides volans</a> Greater Glider [254]	Vulnerable	Species or species habitat



# ADVERTISED PLAN

Name	Status	Type of Presence
<a href="#">Potorous tridactylus tridactylus</a> Long-nosed Potoroo (SE Mainland) [66645]	Vulnerable	Species or species habitat may occur within area
<a href="#">Pteropus poliocephalus</a> Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
<b>Other</b>		
<a href="#">Megascolides australis</a> Giant Gippsland Earthworm [64420]	Vulnerable	Species or species habitat likely to occur within area
<b>Plants</b>		
<a href="#">Amphibromus fluitans</a> River Swamp Wallaby-grass, Floating Swamp Wallaby-grass [19215]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Caladenia orientalis</a> Eastern Spider Orchid [83410]	Endangered	Species or species habitat may occur within area
<a href="#">Caladenia tessellata</a> Thick-lipped Spider-orchid, Daddy Long-legs [2119]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Dianella amoena</a> Matted Flax-lily [64886]	Endangered	Species or species habitat may occur within area
<a href="#">Eucalyptus strzeleckii</a> Strzelecki Gum [55400]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Glycine latrobeana</a> Clover Glycine, Purple Clover [13910]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Prasophyllum frenchii</a> Maroon Leek-orchid, Slaty Leek-orchid, Stout Leek-orchid, French's Leek-orchid, Swamp Leek-orchid [9704]	Endangered	Species or species habitat likely to occur within area
<a href="#">Prasophyllum spicatum</a> Dense Leek-orchid [55146]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Pterostylis chlorogramma</a> Green-striped Greenhood [56510]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Pterostylis cucullata</a> Leafy Greenhood [15459]	Vulnerable	Species or species habitat may occur within area
<a href="#">Senecio psilocarpus</a> Swamp Fireweed, Smooth-fruited Groundsel [64976]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Thelymitra epipactoides</a> Metallic Sun-orchid [11896]	Endangered	Species or species habitat may occur within area
<a href="#">Xerochrysum palustre</a> Swamp Everlasting, Swamp Paper Daisy [76215]	Vulnerable	Species or species habitat likely to occur within area
<b>Reptiles</b>		
<a href="#">Caretta caretta</a> Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
<a href="#">Chelonia mydas</a> Green Turtle [1765]	Vulnerable	Breeding likely to occur within area

# ADVERTISED PLAN

Name	Status	Type of Presence
<a href="#">Dermochelys coriacea</a> Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
<b>Sharks</b>		
<a href="#">Carcharodon carcharias</a> White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
<b>Listed Migratory Species</b>		<b>[ Resource Information ]</b>
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
<b>Migratory Marine Birds</b>		
<a href="#">Apus pacificus</a> Fork-tailed Swift [678]		Species or species habitat likely to occur within area
<a href="#">Ardenna carneipes</a> Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area
<a href="#">Ardenna grisea</a> Sooty Shearwater [82651]		Species or species habitat may occur within area
<a href="#">Diomedea antipodensis</a> Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Diomedea epomophora</a> Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Diomedea exulans</a> Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Diomedea sanfordi</a> Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Macronectes giganteus</a> Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
<a href="#">Macronectes halli</a> Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
<a href="#">Sternula albifrons</a> Little Tern [82849]		Species or species habitat may occur within area
<a href="#">Thalassarche bulleri</a> Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area
<a href="#">Thalassarche cauta</a> Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Thalassarche chrysostoma</a> Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area
<a href="#">Thalassarche impavida</a> Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Thalassarche melanophris</a> Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area

# ADVERTISED PLAN

Name	Threatened	Type of Presence
<a href="#">Thalassarche salvini</a> Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Thalassarche steadi</a> White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<b>Migratory Marine Species</b>		
<a href="#">Balaena glacialis australis</a> Southern Right Whale [75529]	Endangered*	Species or species habitat known to occur within area
<a href="#">Caperea marginata</a> Pygmy Right Whale [39]		Species or species habitat may occur within area
<a href="#">Carcharodon carcharias</a> White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Caretta caretta</a> Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
<a href="#">Chelonia mydas</a> Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
<a href="#">Dermochelys coriacea</a> Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
<a href="#">Lagenorhynchus obscurus</a> Dusky Dolphin [43]		Species or species habitat may occur within area
<a href="#">Lamna nasus</a> Porbeagle, Mackerel Shark [83288]		Species or species habitat likely to occur within area
<a href="#">Megaptera novaeangliae</a> Humpback Whale [38]	Vulnerable	Species or species habitat may occur within area
<b>Migratory Terrestrial Species</b>		
<a href="#">Hirundapus caudacutus</a> White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Monarcha melanopsis</a> Black-faced Monarch [609]		Species or species habitat likely to occur within area
<a href="#">Motacilla flava</a> Yellow Wagtail [644]		Species or species habitat may occur within area
<a href="#">Myiagra cyanoleuca</a> Satin Flycatcher [612]		Species or species habitat known to occur within area
<a href="#">Rhipidura rufifrons</a> Rufous Fantail [592]		Species or species habitat known to occur within area
<b>Migratory Wetlands Species</b>		
<a href="#">Actitis hypoleucos</a> Common Sandpiper [59309]		Species or species habitat known to occur within area
<a href="#">Arenaria interpres</a> Ruddy Turnstone [872]		Roosting known to occur within area

# ADVERTISED PLAN

Name	Threatened	Type of Presence
<a href="#">Calidris acuminata</a> Sharp-tailed Sandpiper [874]		Roosting known to occur within area
<a href="#">Calidris canutus</a> Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Calidris melanotos</a> Pectoral Sandpiper [858]		Species or species habitat likely to occur within area
<a href="#">Calidris ruficollis</a> Red-necked Stint [860]		Roosting known to occur within area
<a href="#">Calidris tenuirostris</a> Great Knot [862]	Critically Endangered	Roosting known to occur within area
<a href="#">Charadrius bicinctus</a> Double-banded Plover [895]		Roosting known to occur within area
<a href="#">Charadrius leschenaultii</a> Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Roosting known to occur within area
<a href="#">Charadrius mongolus</a> Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
<a href="#">Gallinago hardwickii</a> Latham's Snipe, Japanese Snipe [863]		Roosting may occur within area
<a href="#">Gallinago megala</a> Swinhoe's Snipe [864]		Roosting likely to occur within area
<a href="#">Gallinago stenura</a> Pin-tailed Snipe [841]		Roosting likely to occur within area
<a href="#">Limicola falcinellus</a> Broad-billed Sandpiper [842]		Roosting known to occur within area
<a href="#">Limosa lapponica</a> Bar-tailed Godwit [844]		Species or species habitat known to occur within area
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Numenius minutus</a> Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area
<a href="#">Numenius phaeopus</a> Whimbrel [849]		Roosting known to occur within area
<a href="#">Pandion haliaetus</a> Osprey [952]		Species or species habitat may occur within area
<a href="#">Pluvialis fulva</a> Pacific Golden Plover [25545]		Roosting known to occur within area
<a href="#">Pluvialis squatarola</a> Grey Plover [865]		Roosting known to occur within area
<a href="#">Tringa brevipes</a> Grey-tailed Tattler [851]		Roosting known to occur within area
<a href="#">Tringa glareola</a> Wood Sandpiper [829]		Roosting known to occur within area

# ADVERTISED PLAN

Name	Threatened	Type of Presence
<a href="#">Tringa incana</a> Wandering Tattler [831]		Roosting known to occur within area
<a href="#">Tringa nebularia</a> Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area
<a href="#">Tringa stagnatilis</a> Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area
<a href="#">Xenus cinereus</a> Terek Sandpiper [59300]		Roosting known to occur within area

## Other Matters Protected by the EPBC Act

### Listed Marine Species [ Resource Information ]

\* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
<b>Birds</b>		
<a href="#">Actitis hypoleucos</a> Common Sandpiper [59309]		Species or species habitat known to occur within area
<a href="#">Apus pacificus</a> Fork-tailed Swift [678]		Species or species habitat likely to occur within area
<a href="#">Ardea alba</a> Great Egret, White Egret [59541]		Species or species habitat known to occur within area
<a href="#">Ardea ibis</a> Cattle Egret [59542]		Species or species habitat may occur within area
<a href="#">Arenaria interpres</a> Ruddy Turnstone [872]		Roosting known to occur within area
<a href="#">Calidris acuminata</a> Sharp-tailed Sandpiper [874]		Roosting known to occur within area
<a href="#">Calidris canutus</a> Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Calidris melanotos</a> Pectoral Sandpiper [858]		Species or species habitat likely to occur within area
<a href="#">Calidris ruficollis</a> Red-necked Stint [860]		Roosting known to occur within area
<a href="#">Calidris tenuirostris</a> Great Knot [862]	Critically Endangered	Roosting known to occur within area

# ADVERTISED PLAN

Name	Threatened	Type of Presence
<a href="#">Charadrius bicinctus</a> Double-banded Plover [895]		Roosting known to occur within area
<a href="#">Charadrius leschenaultii</a> Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Roosting known to occur within area
<a href="#">Charadrius mongolus</a> Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
<a href="#">Charadrius ruficapillus</a> Red-capped Plover [881]		Roosting known to occur within area
<a href="#">Diomedea antipodensis</a> Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Diomedea epomophora</a> Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Diomedea exulans</a> Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Diomedea gibsoni</a> Gibson's Albatross [64466]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Diomedea sanfordi</a> Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Gallinago hardwickii</a> Latham's Snipe, Japanese Snipe [863]		Roosting may occur within area
<a href="#">Gallinago megala</a> Swinhoe's Snipe [864]		Roosting likely to occur within area
<a href="#">Gallinago stenura</a> Pin-tailed Snipe [841]		Roosting likely to occur within area
<a href="#">Haliaeetus leucogaster</a> White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
<a href="#">Heteroscelus brevipes</a> Grey-tailed Tattler [59311]		Roosting known to occur within area
<a href="#">Heteroscelus incanus</a> Wandering Tattler [59547]		Roosting known to occur within area
<a href="#">Himantopus himantopus</a> Pied Stilt, Black-winged Stilt [870]		Roosting known to occur within area
<a href="#">Hirundapus caudacutus</a> White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Lathamus discolor</a> Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Limicola falcinellus</a> Broad-billed Sandpiper [842]		Roosting known to occur within area
<a href="#">Limosa lapponica</a> Bar-tailed Godwit [844]		Species or species habitat known to occur within area
<a href="#">Macronectes giganteus</a> Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area

# ADVERTISED PLAN

Name	Threatened	Type of Presence
<a href="#">Macronectes halli</a> Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
<a href="#">Merops ornatus</a> Rainbow Bee-eater [670]		Species or species habitat may occur within area
<a href="#">Monarcha melanopsis</a> Black-faced Monarch [609]		Species or species habitat likely to occur within area
<a href="#">Motacilla flava</a> Yellow Wagtail [644]		Species or species habitat may occur within area
<a href="#">Myiagra cyanoleuca</a> Satin Flycatcher [612]		Species or species habitat known to occur within area
<a href="#">Neophema chrysogaster</a> Orange-bellied Parrot [747]	Critically Endangered	Migration route likely to occur within area
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Numenius minutus</a> Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area
<a href="#">Numenius phaeopus</a> Whimbrel [849]		Roosting known to occur within area
<a href="#">Pachyptila turtur</a> Fairy Prion [1066]		Species or species habitat likely to occur within area
<a href="#">Pandion haliaetus</a> Osprey [952]		Species or species habitat may occur within area
<a href="#">Pluvialis fulva</a> Pacific Golden Plover [25545]		Roosting known to occur within area
<a href="#">Pluvialis squatarola</a> Grey Plover [865]		Roosting known to occur within area
<a href="#">Puffinus carneipes</a> Flesh-footed Shearwater, Fleshy-footed Shearwater [1043]		Foraging, feeding or related behaviour likely to occur within area
<a href="#">Puffinus griseus</a> Sooty Shearwater [1024]		Species or species habitat may occur within area
<a href="#">Recurvirostra novaehollandiae</a> Red-necked Avocet [871]		Roosting known to occur within area
<a href="#">Rhipidura rufifrons</a> Rufous Fantail [592]		Species or species habitat known to occur within area
<a href="#">Rostratula benghalensis (sensu lato)</a> Painted Snipe [889]	Endangered*	Species or species habitat likely to occur within area
<a href="#">Sterna albifrons</a> Little Tern [813]		Species or species habitat may occur within area
<a href="#">Thalassarche bulleri</a> Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within

# ADVERTISED PLAN

Name	Threatened	Type of Presence area
<a href="#">Thalassarche cauta</a> Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Thalassarche chrysostoma</a> Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area
<a href="#">Thalassarche impavida</a> Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Thalassarche melanophris</a> Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
<a href="#">Thalassarche salvini</a> Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Thalassarche sp. nov.</a> Pacific Albatross [66511]	Vulnerable*	Species or species habitat may occur within area
<a href="#">Thalassarche steadi</a> White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Thinornis rubricollis rubricollis</a> Hooded Plover (eastern) [66726]	Vulnerable*	Species or species habitat likely to occur within area
<a href="#">Tringa glareola</a> Wood Sandpiper [829]		Roosting known to occur within area
<a href="#">Tringa nebularia</a> Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area
<a href="#">Tringa stagnatilis</a> Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area
<a href="#">Xenus cinereus</a> Terek Sandpiper [59300]		Roosting known to occur within area
<b>Mammals</b>		
<a href="#">Arctocephalus forsteri</a> Long-nosed Fur-seal, New Zealand Fur-seal [20]		Species or species habitat may occur within area
<a href="#">Arctocephalus pusillus</a> Australian Fur-seal, Australo-African Fur-seal [21]		Species or species habitat may occur within area
<b>Reptiles</b>		
<a href="#">Caretta caretta</a> Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
<a href="#">Chelonia mydas</a> Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
<a href="#">Dermochelys coriacea</a> Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
<b>Whales and other Cetaceans</b>		<b>[ Resource Information ]</b>
<b>Name</b>	<b>Status</b>	<b>Type of Presence</b>
<b>Mammals</b>		
<a href="#">Caperea marginata</a> Pygmy Right Whale [39]		Species or species habitat may occur within



# ADVERTISED PLAN

Name	Status	Type of Presence area
<a href="#">Delphinus delphis</a> Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
<a href="#">Eubalaena australis</a> Southern Right Whale [40]	Endangered	Species or species habitat known to occur within area
<a href="#">Lagenorhynchus obscurus</a> Dusky Dolphin [43]		Species or species habitat may occur within area
<a href="#">Megaptera novaeangliae</a> Humpback Whale [38]	Vulnerable	Species or species habitat may occur within area
<a href="#">Tursiops aduncus</a> Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
<a href="#">Tursiops truncatus s. str.</a> Bottlenose Dolphin [68417]		Species or species habitat may occur within area

## Extra Information

State and Territory Reserves	[ Resource Information ]
Name	State
Adams Creek N.C.R.	VIC
Unnamed C1744	VIC

Invasive Species	[ Resource Information ]
Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resources Audit, 2001.	

Name	Status	Type of Presence
<b>Birds</b>		
<i>Acridotheres tristis</i> Common Myna, Indian Myna [387]		Species or species habitat likely to occur within area
<i>Alauda arvensis</i> Skylark [656]		Species or species habitat likely to occur within area
<i>Anas platyrhynchos</i> Mallard [974]		Species or species habitat likely to occur within area
<i>Carduelis carduelis</i> European Goldfinch [403]		Species or species habitat likely to occur within area
<i>Carduelis chloris</i> European Greenfinch [404]		Species or species habitat likely to occur within area
<i>Columba livia</i> Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
<i>Passer domesticus</i> House Sparrow [405]		Species or species habitat likely to occur within area

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Name	Status	Type of Presence
Passer montanus Eurasian Tree Sparrow [406]		Species or species habitat likely to occur within area
Streptopelia chinensis Spotted Turtle-Dove [780]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
Turdus merula Common Blackbird, Eurasian Blackbird [596]		Species or species habitat likely to occur within area
Turdus philomelos Song Thrush [597]		Species or species habitat likely to occur within area
<b>Mammals</b>		
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Feral deer Feral deer species in Australia [85733]		Species or species habitat likely to occur within area
Lepus capensis Brown Hare [127]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus norvegicus Brown Rat, Norway Rat [83]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Sus scrofa Pig [6]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
<b>Plants</b>		
Alternanthera philoxeroides Alligator Weed [11620]		Species or species habitat likely to occur within area
Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area
Carrichtera annua Ward's Weed [9511]		Species or species habitat may occur within

## Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

## Coordinates

-38.32232 145.58876

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Department of Environment,  
Land, Water and Planning

PO Box 500  
East Melbourne, Victoria 8002  
[delwp.vic.gov.au](http://delwp.vic.gov.au)

Mr Kelvin Sargent  
CEO  
ACM Pty Ltd  
Suite 2 Level 1, 20 English Street  
ESSENDON FIELDS VIC 3041

Dear Mr Sargent

**REQUEST TO EXCLUDE MAPPED WETLAND 71976 FROM CONSIDERATION**

Thank you for your request seeking the exclusion of Mapped Wetland 71976 from consideration under the Native Vegetation Removal Regulations. I understand this request relates to a proposed sand quarry in Lang Lang, which will require a Work Authority under the *Mineral Resources (Sustainable Development) Act 1990*.

As required under the *Guidelines for the removal, destruction or lopping of native vegetation* (the Guidelines), you have provided aerial imagery, photographs and an assessment report which demonstrate that the subject Mapped Wetland cannot support wetland-associated native vegetation.

The Department of Environment, Land, Water and Planning (DELWP) has reviewed the information you have provided and agrees to the exclusion of Mapped Wetland 71976, as shown in Attachment 1.

Unless otherwise exempt, any in situ native vegetation proposed for removal from these areas must be assessed in accordance with the Guidelines and planning approval must be obtained prior to its removal.

Please contact Native Vegetation Regulation by email at [nativevegetation.support@delwp.vic.gov.au](mailto:nativevegetation.support@delwp.vic.gov.au) if you have any further questions.

Yours sincerely

**James Todd**

Executive Director Biodiversity, for and on behalf of John Bradley, Secretary to the Department of Environment, Land, Water and Planning


21/04/2021

Encl. (1)

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**Legend**

 Mapped Wetland 71976

Map Scale 1:4,000



Metres  
0 25 50



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PTY LTD

**LANG LANG SAND  
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AIR QUALITY IMPACT  
ASSESSMENT

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AUGUST 2022

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## Lang Lang Sand Quarry Air Quality Impact Assessment

Lang Lang Sand Resources Pty Ltd


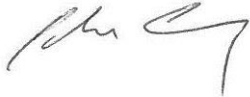
WSP

Level 15, 28 Freshwater Place  
Southbank VIC 3006

Tel: +61 3 9861 1111  
Fax: +61 3 9861 1144  
wsp.com

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REV	DATE	DETAILS
A	2 June 2021	Draft for Client Review
B	29 July 2021	Client comments
C	25 March 2022	Updated Site Layout Plan
D	25 August 2022	Report addressing Earth Resources comments
E	31 August 2022	Final

	NAME	DATE	SIGNATURE
Prepared by:	Mengjiao Wang	31 August 2022	
Reviewed by:	John Conway	31 August 2022	

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Approved by:	John Conway	31 August 2022	
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# ABBREVIATIONS

AAQMS	Ambient Air Quality Monitoring Station
Air NEPM	<i>National Environment Protection Council (Ambient Air Quality) Measure</i>
APAC	Air pollution assessment criterion
AQIA	Air Quality Impact Assessment
AWS	Automatic Weather Station
BoM	Bureau of Meteorology
DEM	Digital elevation model
EPA	Environment Protection Authority
ERS	Environment Reference Standard
GED	General environmental duty
GLCs	Ground Level Concentrations
LLSR	Lang Lang Sand Resources Pty Ltd
NATA	National Association of testing Authorities
NEPC	National Environment Protection Council
NEPM	National Environment Protection Measure
NPI	National Pollutant Inventory
PM <sub>2.5</sub>	Particles with an aerodynamic diameter of 2.5 micrometres or less
PM <sub>10</sub>	Particles with an aerodynamic diameter of 10 micrometres or less
RCS	Respirable crystalline silica
SPCC	State Pollution Control Commission
SRTM	Shuttle Radar Topography Mission
TSP	Total Suspended Particulates
TAPM	The Air Pollution Model
USEPA	United States Environmental Protection Agency
WSP	WSP Australia Proprietary Limited
Units	
°C	Degree Celsius
ha	Hectares
km	kilometre
km/h	kilometre per hour

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kg/VKT	kilogram per vehicle kilometres travelled
kg/t	kilogram per tonne
g/s	gram per second
g/m <sup>2</sup>	Grams per square metre
g/m <sup>2</sup> /month	Grams per square metre per month
m	Metre
mm	Millimetres
m <sup>2</sup>	Metres squared
m <sup>3</sup>	Cubic metre
m/s	metres per second
t/a	tonne per annum
tpa	tonnes per annum
µg/m <sup>3</sup>	Microgram per cubic meter
%	per cent

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# EXECUTIVE SUMMARY

Lang Lang Sand Resources Pty Ltd (LLSR) propose to develop a sand extraction and processing operation located at 5575 South Gippsland Highway, Victoria (the Project). WSP Australia Pty Ltd (WSP) was engaged by LLSR to prepare an air quality impact assessment (AQIA) report in support of a Workplan for the new sand quarry development for a production output of up to 300,000 tonnes per annum (tpa).

Climate data collected at Rhyll Automatic Weather Stations (AWS) were analysed and site-specific meteorological data (i.e., wind conditions, rainfall and mixing height) predicted by The Air Pollution Model (TAPM) for the period 2016 to 2020 were analysed and presented in this report.

Background PM<sub>10</sub> and PM<sub>2.5</sub> data collected at the Traralgon ambient air quality monitoring station (AAQMS) for 2016 to 2020 were analysed and adopted as background for this assessment. Respirable crystalline silica (as PM<sub>2.5</sub>) and dust deposition is not monitored at any AAQMS in Victoria. As such, incremental impacts only were assessed.

Five sensitive receptors were identified near the Project site and included in the modelling.

Site-specific meteorological files for the period 2016 to 2020 were generated using TAPM. AERMOD compatible meteorological files were generated using AERMET taken account of surface roughness, albedo, and Bowen Ratio values around the Project site.

Air dispersion modelling using AERMOD was conducted for the following two scenarios to assess potential air quality impacts from the Project:

- Scenario 1: sand extraction at stage 1 while the screening bund is under construction (in the first three years of site operation).
- Scenario 2: sand extraction at stage 3 following completion of the screening bund (more than five years following commencement of site operations).

Air emission sources considered for each scenario are as follows:

- Scenario 1:
  - machinery operation (i.e. excavators, scrapers and dozers)
  - materials handling (loading and unloading trucks)
  - wheel generated dust from unpaved roads
  - wind erosion from stockpiles and other exposed areas.
- Scenario 2:
  - machinery operation (i.e., excavators, scrapers and dozers)
  - materials handling (loading and unloading trucks)
  - wheel generated dust from unpaved roads
  - dry screening and associated activities
  - wind erosion from stockpiles and other exposed areas.

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Contemporaneous (i.e., the same time period) background data were added to the predicted contribution from the Project to determine cumulative impacts. The modelling results indicate that:

Scenario 1 (2016 to 2020):

- The cumulative 24-hour average PM<sub>10</sub> and PM<sub>2.5</sub> concentrations (maximum project contribution plus contemporaneous background) at five receptors are predicted to be below the relevant assessment criteria.

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- The cumulative annual average PM<sub>10</sub> concentrations (maximum project contribution plus contemporaneous background) are predicted to be below the assessment criteria at four receptors and exceeds the criterion at R3 due to high background concentrations (the background accounts for 96% of the criterion).
- The cumulative annual average PM<sub>2.5</sub> concentrations (maximum project contribution plus contemporaneous background) are predicted to exceed the assessment criterion at all five receptors due to existing background exceedances.
- A 24-hour PM<sub>10</sub> time series analysis at all five receptors indicated that the number of days the 24-hour PM<sub>10</sub> criterion is exceeded is increased by two days at receptors R1, R2 and R3 and by one day at receptors R4 and R5
- A 24-hour PM<sub>2.5</sub>-time series analysis at all five receptors indicated that the number of days the 24-hour PM<sub>10</sub> criterion is exceeded is increased by one day at receptor R1 only
- The maximum increase in dust deposition levels at all receptors are below the assessment criterion of 2 g/m<sup>2</sup>/month.
- The maximum annual RCS concentrations at all receptors are estimated to be below the air pollution assessment criterion (APAC).

## Scenario 2 (2016 to 2020):

- The cumulative 24-hour average PM<sub>10</sub> concentrations (maximum project contribution plus contemporaneous background) at five receptors are predicted to be below the assessment criterion.
- The cumulative 24-hour average PM<sub>2.5</sub> concentrations (maximum project contribution plus contemporaneous background) are predicted to exceed the assessment criterion at R2 and R4 with the background concentration accounting for 90% of the criterion.
- The cumulative annual average PM<sub>10</sub> concentrations (maximum project contribution plus contemporaneous background) are predicted to be below the assessment criteria at all five receptors,
- The cumulative annual average PM<sub>2.5</sub> concentrations (maximum project contribution plus contemporaneous background) are predicted to exceed the assessment criterion at all five receptors due to existing background exceedances.
- A 24-hour PM<sub>10</sub> time series analysis at all five receptors indicated that the number of days the 24-hour PM<sub>10</sub> criterion is exceeded is increased by three days at receptor R2 and by two days at receptors R3 and R4
- A 24-hour PM<sub>2.5</sub>-time series analysis at all five receptors indicated that the number of days the 24-hour PM<sub>10</sub> criterion is exceeded is increased by three days at receptor R2 and by 2 days at receptor R4
- The maximum increase in dust deposition levels at all receptors are below the assessment criterion of 2 g/m<sup>2</sup>/month.
- The maximum annual RCS concentrations at all receptors are estimated to be below the APAC.

The assessment was conducted based on conservative assumptions including, but not limited to:

- The emission sources were configured at locations close to the sensitive receptors.
- All emission sources were configured on or above ground level. In practice, some sources would be below ground level especially for sources at the extraction pits.
- Sand extraction for the top 6 metres (above groundwater level) was modelled for a whole year while in practice it is not likely to continue for a full year.
- The exposed areas at the extraction pits are likely to be smaller than the modelled area of 40,000 m<sup>2</sup>.



Given these assumptions, actual emissions from both scenarios are expected to be lower than predicted. In addition, the predicted cumulative exceedances are mainly due to high background concentrations or existing background exceedances.

Implementation of an air quality management plan that focusses on a risk-based approach to minimising dust so far as reasonably practical together with a monitoring program that would assist in evaluating the proposed control measures and confirm the level of impact that has been predicted for the two scenarios assessed.

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# 1 INTRODUCTION

---

## 1.1 BACKGROUND

Lang Lang Sand Resources Pty Ltd (LLSR) propose to develop a sand extraction and processing operation located at 5575 South Gippsland Highway, Victoria (the Project), approximately 5.5 kilometres (km) south of the township of Lang Lang, 7 km west of Nyora and 80 km southeast of Melbourne.

WSP Australia Pty Ltd (WSP) was engaged by LLSR to prepare an air quality impact assessment (AQIA) report in support of a Workplan for the new sand quarry development.

---

## 1.2 PROJECT DESCRIPTION

The subject property is currently used for dairy farming and grazing and LLSR holds a caveat over the land through a purchase agreement with the owner. The proposed Work Authority area is approximately 118 hectares (ha) consisting of four separate Crown allotments:

- Lot 1 LP91815
- Lot 1 PS312674
- Lot 2 PS312674
- Lot 1 TP23467

The proposed development involves the following:

- Production output of the sand quarry of up to 300,000 tonnes per annum (tpa)
- A sand processing plant and stockpile area covering approximately 4.6 ha
- A sealed access road from the site entrance to the processing plant and stockpile area. A wheel wash facility would be located near the stockpile area so that all truck wheels are washed before leaving the site.
- An internal haul road, approximately 30 metres (m) wide and 1.5 km long would be constructed with crushed rock.
- Screening bunds, approximately 5 m high and 25 m wide would be constructed along the western, southern and part of the eastern site boundary.
- Other site infrastructure includes a weighbridge, office, amenities, workshop, fuel storage, oil and grease storage and a laydown area.

The Project site would be developed in five stages and the site plant layout is presented in Figure 1-1.

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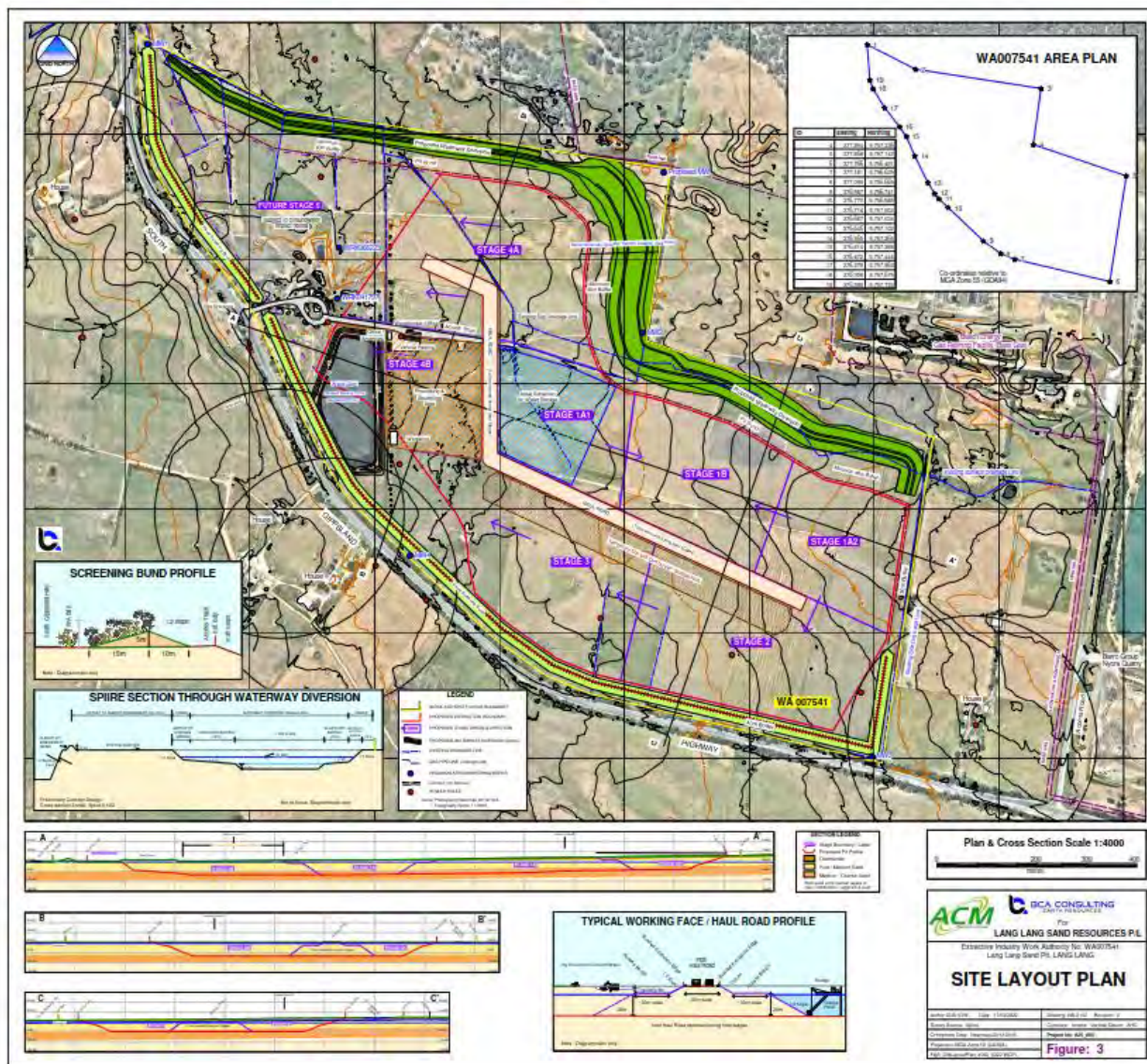


Figure 1-1 Site plant layout

## 1.3 SCOPE OF WORKS

The scope of works for preparation of the air quality impact assessment report includes:

- review relevant legislation, policy and standards and establish appropriate air pollution assessment criteria for the Project
- characterise the existing ambient air quality and meteorological conditions for the Project using publicly available information, and analyse appropriate ambient air quality data to be used as background for the assessment
- determine the operational scenarios to be modelled (up to two), identify the main sources of air emissions and generate an emission inventory for each model scenario
- generate site specific meteorological files for 5 years in accordance with the EPA Victoria Publication 1550 'Construction of Input Meteorological Data Files for EPA Victoria's Regulatory Air Pollution Model (AERMOD) [EPA Victoria 2103a)

- predict incremental and cumulative ground level concentrations (GLCs) for the key pollutants modelled using AERMOD in accordance with the EPA Victoria Publication 1551 ‘*Guidance Notes for Using the Regulatory Air Pollution Model AERMOD in Victoria*’ (EPA Victoria 2013b) for two scenarios and compare to the applicable assessment criteria
  - prepare contour plots (and other relevant visual graphs) illustrating the extent of pollutant dispersal
  - propose management measures to minimise air quality impacts
  - provide details of an air monitoring program for implementation during operations
  - prepare an AQIA report in support of the Work Plan.
- 

## 1.4 AIR QUALITY INDICATORS

The main air quality indicators associated with quarrying operations at the Lang Lang sand quarry include:

- particulate matters equal to or less than 10 micrometres in diameter ( $PM_{10}$ )
- particulate matters equal to or less than 2.5 micrometres in diameter ( $PM_{2.5}$ )
- deposited dust
- respirable crystalline silica (RCS)

These indicators were included in the modelling assessment.

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## 2 LEGISLATIVE CONTEXT

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### 2.1 MINERAL RESOURCES (SUSTAINABLE DEVELOPMENT) ACT 1990

The Mineral Resources (Sustainable Development) Act 1990 (MRSD Act 1990) aims to encourage and facilitate exploration for minerals that is compatible with the economic, social, and environmental objectives of the State. The MRSD Act 1990 establishes a legal framework to ensure risk to the environment, the public, land property or infrastructure by work conducted under a licence or extractive industry work authority are eliminated or minimised as far as reasonably practicable.

The MRSD Act 1990 prescribes the requirements for a work authority and a work plan.

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### 2.2 ENVIRONMENT PROTECTION ACT 2017

The *Environment Protection Act 2017* (EP Act 2017) is the current primary legislative instrument that governs protection of the environment in Victoria. The objective of the EPA Act 2017 is to protect human health and the environment by reducing the harmful effects of pollution and waste.

The EP Act 2017 introduces a duty focussed on prevention, known as the *general environmental duty* (GED). This duty requires a business (duty holders) to manage the risks of harm to the environment proactively together with addressing the impacts of pollution and waste after they have occurred.

Pursuant to the EP Act 2017, the following relevant subordinate legislation and guideline are:

- Environment Reference Standard, 2021
  - Guideline for assessing and minimising air pollution in Victoria, 2022.
- 

### 2.3 ENVIRONMENT REFERENCE STANDARD 2021

The Environment Reference Standard (ERS) is a legislative instrument made under the EP Act 2017 (ERS 2021). The ERS is an environmental benchmark which ‘*brings together a collection of environmental value, indicators and objectives that describe environmental and human health outcomes to be achieved or maintained in the whole or in parts of Victoria*’. They are used to assess and report on changing environmental conditions in Victoria by providing a reference point that supports the GED for decision makers to consider whether a proposal or activity is consistent with the environmental values of the ERS. The ERS also allows the evaluation of potential impacts on human health and the environment that may result from a proposal or activity. The ERS is intended as a reference standard and is not a compliance standard for duty holders (businesses).

The ambient air quality indicators in the ERS cover common pollutants in Victoria including PM<sub>10</sub> and PM<sub>2.5</sub> (criteria pollutants) which are likely to be emitted from activities at the Lang Lang sand quarry.

Objectives for key air quality indicators relevant to the Lang Lang sand quarry are presented in Table 2.1.

Table 2.1 ERS objectives

Air quality indicator	Averaging period	Objectives
Particles as PM <sub>10</sub>	24-hour	50 µg/m <sup>3</sup>
	Annual	20 µg/m <sup>3</sup>

Air quality indicator	Averaging period	Objectives
Particles as PM <sub>2.5</sub> <sup>1</sup>	24-hour	25 µg/m <sup>3</sup>
	Annual	8 µg/m <sup>3</sup>

## 2.4 GUIDELINE FOR ASSESSING AND MINIMISING AIR POLLUTION IN VICTORIA 2022

The Guideline for assessing and minimising air pollution in Victoria, 2022 (EPA Victoria 2022) provides a framework to assess and control risk associated with air pollution. The Guideline states: ‘*Emitters of pollution to air have a responsibility under the general environmental duty to apply controls to eliminate or minimise risks to human health or the environment, so far as reasonably practicable. This requires duty holders to understand their risks, implement controls and review performance of controls.*’

The guideline adopts a risk-based management approach that involves identifying hazards, assessing risk, implementing controls and checking controls.

The Guideline introduces air pollution assessment criteria (APAC) which are concentrations of air pollutants that provide a benchmark to understand potential risks. They are risk-based concentrations that help identify when or if an activity is likely to pose an unacceptable risk to human health and the environment.

The Guideline (EPA Victoria 2022), ‘*historically, threshold figures of 4g/m<sup>2</sup>/month (no more than 2 g/m<sup>2</sup>/month above background), as a monthly average, taken at the boundary of the industrial premises, have been used. These figures can be used as a rule of thumb level for requiring further investigation and addressing dust issues, but not as a level up to which industry is allowed to pollute up to*’. As the background dust deposition level is not known for the local area, an assessment criterion of 2 g/m<sup>2</sup>/month has been adopted as indicative of a nuisance value for deposited dust.

For criteria pollutants including PM<sub>10</sub> and PM<sub>2.5</sub>, the objectives specified in the ERS are required to be adopted as APACs. Table 2.2 presents the relevant APACs adopted for the Lang Lang sand quarry.

Table 2.2 APACs for relevant air quality indicators

Air quality indicator	Averaging period	APAC (µg/m <sup>3</sup> )	Reference
Particles as PM <sub>10</sub>	1 day	50	ERS
	1 year	20	
Particles as PM <sub>2.5</sub>	1 day	25	ERS
	1 year	8	
Deposited dust	Monthly	2 g/m <sup>2</sup> /month (incremental)	Guideline for assessing and minimising air pollution in Victoria
		4 g/m <sup>2</sup> /month (cumulative)	
Respirable crystalline silica	1 year	3	

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# 3 EXISTING ENVIRONMENT

## 3.1 CLIMATE AND METEOROLOGY

### 3.1.1 CLIMATE

The Bureau of Meteorology (BoM) collects climate statistics at Automatic Weather Stations (AWS) across Australia and can be used for determining climate statistics over standard periods, such as 30 years, known as a climate normal.

The Rhyll AWS (site number: 086373) is the closest AWS to the Project site, located approximately 29 km south-west of the site. Table 3.1 provides an overview of the climatic data recorded by BoM between 1991 to 2021 at Rhyll AWS. In summary, the local climate is characterised by:

- Annual average rainfall of 699.8 mm and average rainy days (rain  $\geq$  1 mm) of 106.1;
- Average maximum temperature of 24.4 °C in February;
- Average minimum temperature of 8.2°C in July;
- Average maximum 9 am relative humidity of 84 per cent (%) in June and July; and
- Average minimum 3 pm relative humidity of 60% in February and March.

Table 3.1 Summary of climate statistics at the Rhyll AWS

Parameter	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
<b>Rainfall (1994 to 2021)</b>													
Mean rainfall (mm)	39	40.2	39.8	60.2	75.6	64	68.9	80.3	68.5	59.3	58.9	45.4	699.8
Mean days of rain ( $\geq$ 1 mm)	5.3	4.6	6.3	8.3	10.9	9.9	12.3	13.1	11.6	9.4	7.9	6.5	106.1
<b>Daily temperature (1991 to 2021)</b>													
Max (°C)	24	24.4	22.6	19.6	16.3	14	13.4	14.3	16.1	18.1	20.2	22	18.7
Min (°C)	15.6	15.9	14.7	12.7	10.8	8.9	8.2	8.4	9.5	10.6	12.4	13.8	11.8
<b>Mean 9 am conditions (1991 to 2010)</b>													
Temperature (°C)	18.3	18.4	16.9	15.1	12.6	10.4	9.6	10.4	12.2	13.9	15.4	16.9	14.2
Relative humidity (%)	72	75	76	77	82	84	84	81	77	73	74	71	77
Wind speed (km/h)	17	16	15.1	15.6	16	17.8	18.3	18.8	19	17.2	16.7	17	17
<b>Mean 3 pm conditions (1991 to 2010)</b>													
Temperature (°C)	21.8	22.6	20.8	17.9	15.1	12.8	12.2	13.1	14.5	16	18.2	19.9	17.1
Relative humidity (%)	61	60	60	64	70	74	73	68	66	64	64	61	65
Wind speed (km/h)	20.8	20	18.8	17.4	16.3	18.2	18.5	19.5	19.9	19.4	20	21.1	19.2

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## 3.1.2 LOCAL METEOROLOGY

### 3.1.2.1 WIND CONDITIONS

Figure 3-1 provides seasonal and annual wind roses showing the frequency of strength and direction of winds for the past five years (2016 to 2020) at the Project site. The wind roses indicate that typically winds at the Project site are:

- During spring, the wind was most frequently from the west, moderately ranging from west north-west to south-east and southwest to west-southwest with an average wind speed of 3.3 m/s;
- During summer, the winds were most frequently originating from the southwest with an average wind speed of 3.1 m/s;
- During autumn, winds originated from most directions and less frequently from the south with an average wind speed of 2.9 m/s;
- During winter, the most dominant winds ranged from the west to northeast with an average wind speed of 3.2 m/s;
- Over the five years:
  - the annual winds were moderately from most of the directions and less frequently from the south;
  - high winds (greater than 8 m/s) were more likely originating from the westerly directions; and
  - average wind speed of 3.1 m/s and calm winds (wind speeds of less than 0.5 m/s) of 0.7% were predicted over the 5-year period.

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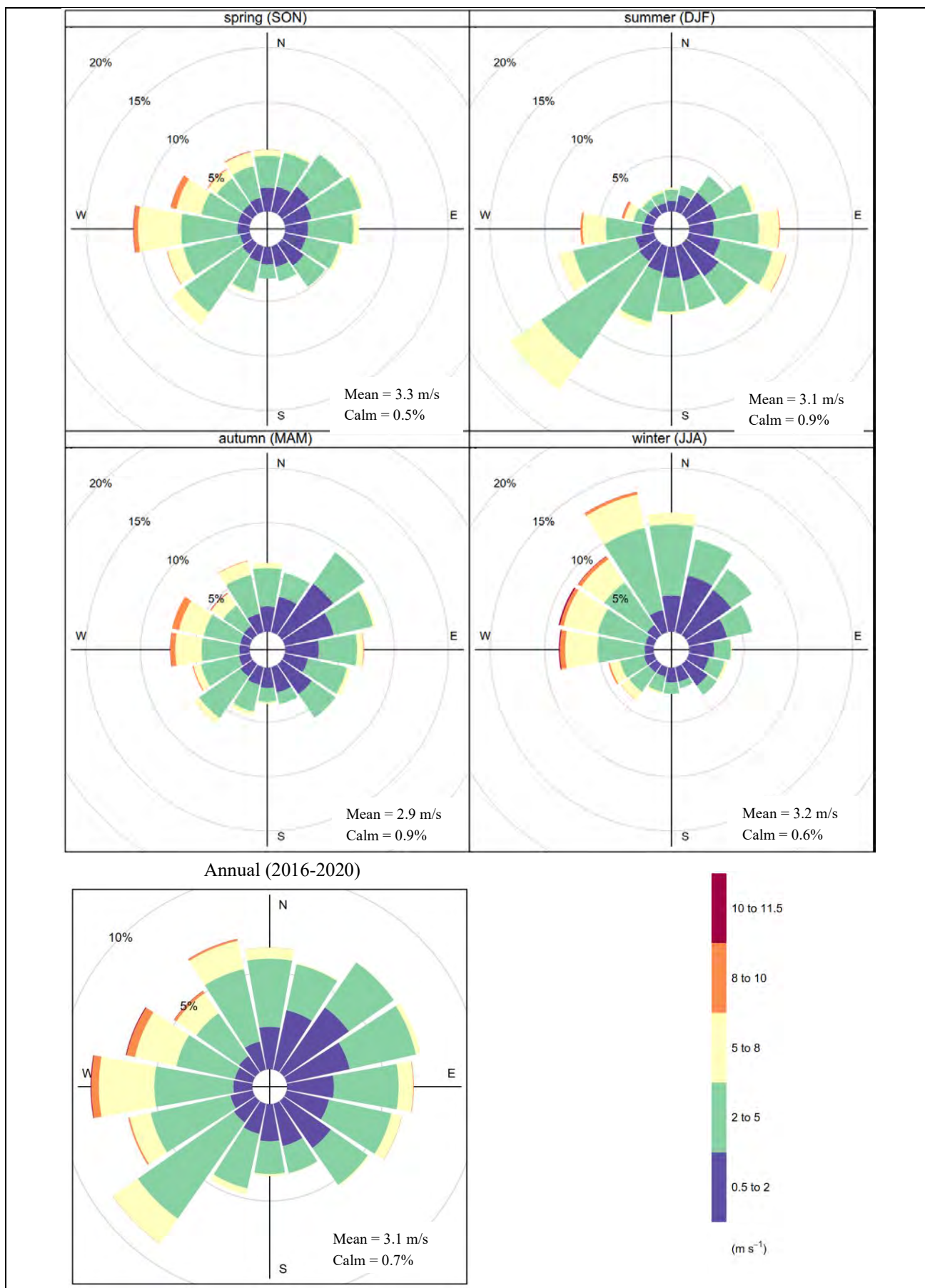


Figure 3-1 Site-specific annual and seasonal wind roses (2016 - 2020)

### 3.1.2.2 RAINFALL

Annual total rainfall predicted by TAPM at the Project site for the period 2016 to 2020 are presented in Table 3.2 and monthly rainfall over the five years are presented in Table 3.3.

The rainfall data indicates that:

- Rainfall data are relatively stable over five years ranging from 636 mm to 872 mm.
- More rainfall is predicted in winter than in summer.

Table 3.2 Annual total rainfall predicted by TAPM at the Project site for the period 2016 to 2020

Parameter	2016	2017	2018	2019	2020
Total rainfall (mm)	679	802	636	647	872

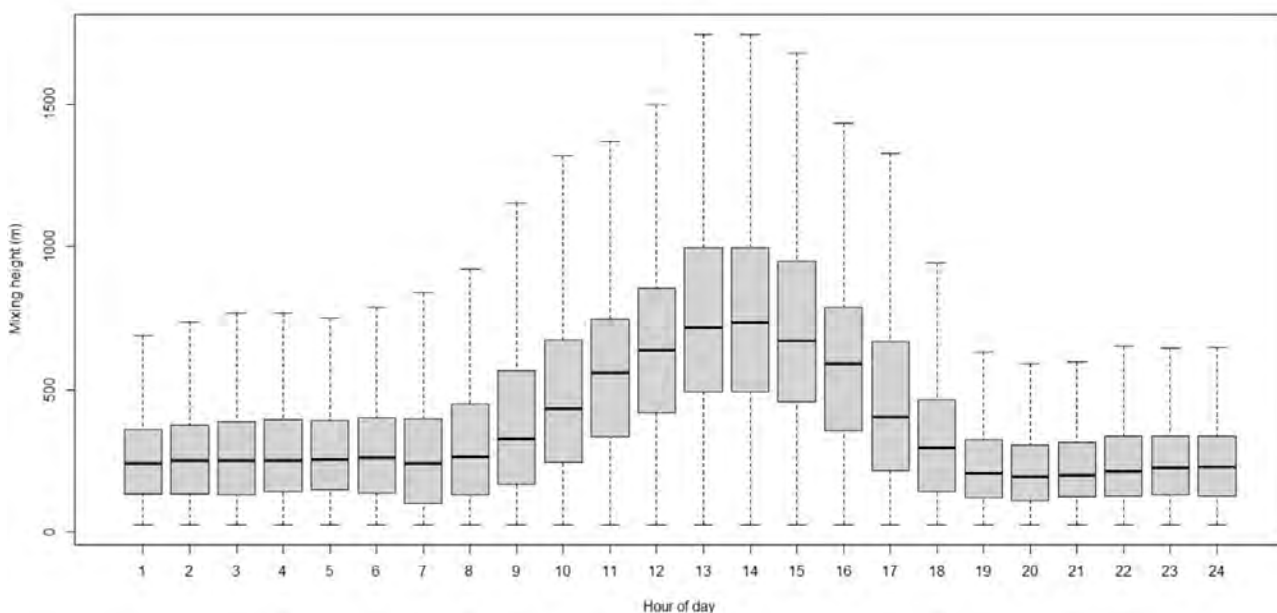
Table 3.3 Monthly average rainfall predicted by TAPM at the Project site for the period 2016 to 2020

Parameter	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean rainfall (mm)	40.8	36.5	42.4	62.3	88.9	66.0	69.1	90.9	74.5	58.5	47.2	50.2

### 3.1.2.3 MIXING HEIGHT

Diurnal variations in mixing heights predicted by TAPM at the Project site for the period 2016 to 2020 are illustrated in Figure 3-2. The results indicate that:

- Mixing heights start to increase in the morning and decrease in the evening.
- The maximum mixing heights occur in the early to mid-afternoon.



From bottom to top: minima, 25<sup>th</sup> percentile, 50<sup>th</sup> percentile, 75<sup>th</sup> percentile and maxima, outliers have been removed.

Figure 3-2 TAPM predicted diurnal variation in mixing height for the Project site during 2016 to 2020

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## 3.2 TOPOGRAPHY

One-second Shuttle Radar Topography Mission (SRTM) derived Digital Elevation Model (DEM) data from Geoscience Australia (source: <https://elevation.fsdf.org.au/>) was used in this assessment. Figure 3-3 displays a topographic map of the Project site and surrounding area.

The Project site is situated approximately 4 km east of Western Port Bay. The immediate surrounding topography is relatively flat with predominantly grassland, forest, industrial development (e.g., sand quarries) and residential land uses near the Project site.

Mount Worth State Park lies approximately 30 km to the east and Bunyip State Park approximately 33km to the north of the Project site.

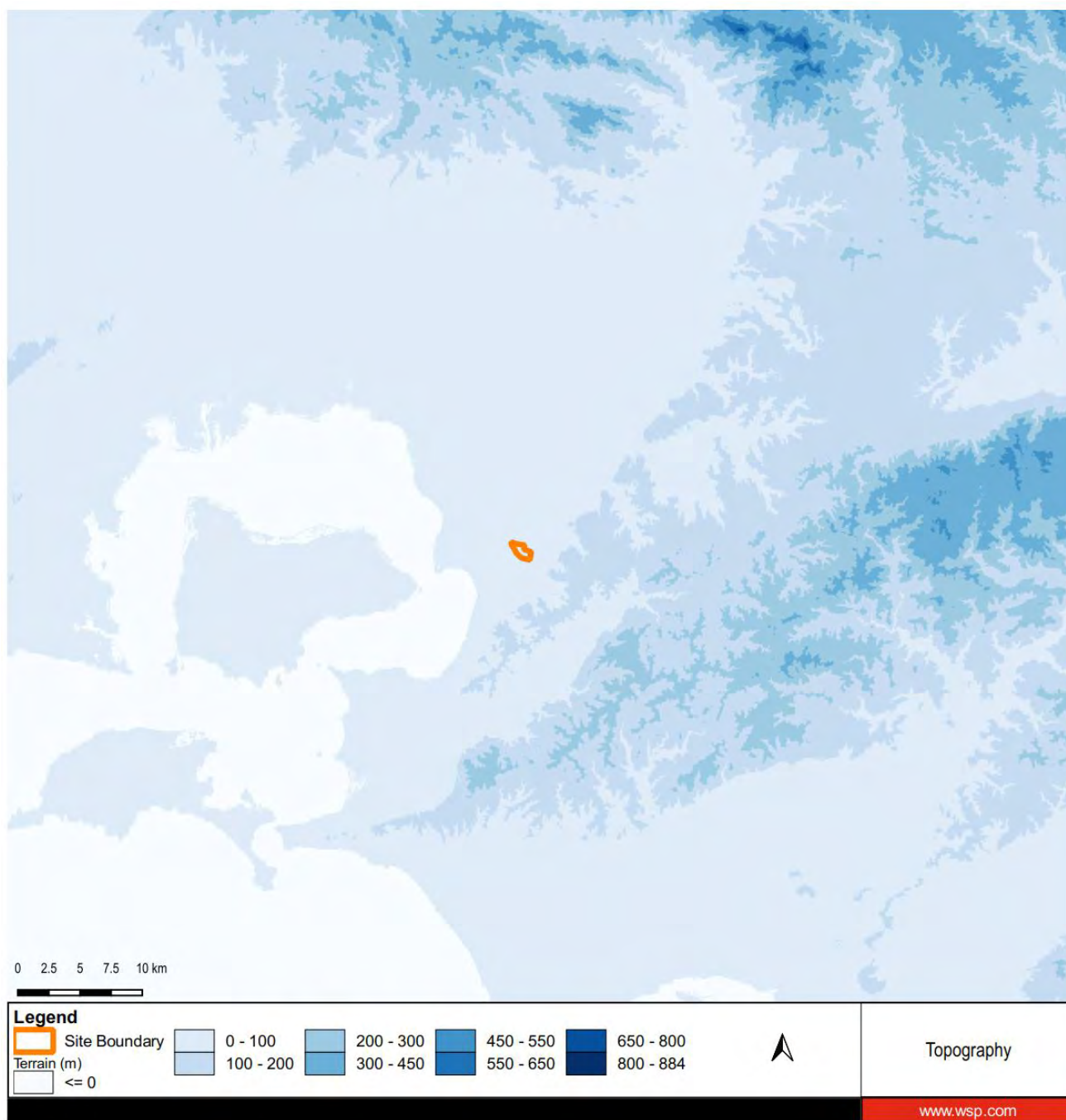


Figure 3-3 Topography of the Project site and surrounding area

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## 3.3 BACKGROUND AIR QUALITY

### 3.3.1 EXISTING EMISSIONS

The Project site is located in a rural area and existing air emission sources include:

- other surrounding sand quarries
- vehicles travelling on the local road network
- industrial facilities e.g., sand quarries and gas extraction facility
- domestic fuel burning (gas, liquid, solid)

A National Pollutant Inventory (NPI) database review was conducted to further identify existing emission sources near the Project. Five facilities located within a radius of 5 km of the Project reported their emissions to the NPI database for the 2019/2020 reporting period. A summary of these facilities is presented in Table 3.4. Emissions from these facilities will contribute to the local airshed.

In addition, a small sand quarry located approximately 320 m north of the Project site is not required to report its emissions to the NPI. This sand quarry current operates at a very low output and not likely to contribute to the local air shed at the Project site to any significant extent.

Table 3.4 Nearby facilities reporting to the NPI database for the 2019/2020 period

Company	Address	Distance and direction to the Project site	Main activity	Main reported substances
Metro Quarry Group	5875 South Gippsland Highway, Nyora	1,050 m, east	Gravel and sand quarrying	CO: 12 t/a NO <sub>x</sub> : 39 t/a PM <sub>10</sub> : 3.1 t/a PM <sub>2.5</sub> : 2.9 t/a
GM Holden	Holden Proving Ground, Bass Highway, Lang Lang	2,600 m, south-west	Motor vehicle manufacturing	VOCs: 510 kg/a
Beach Energy Limited	5755 South Gippsland Highway, Lang Lang	125 m, north-east	Natural gas extraction	CO: 220 t/a Formaldehyde: 16 t/a NO <sub>x</sub> : 310 t/a PM <sub>10</sub> : 9 t/a PM <sub>2.5</sub> : 6.6 t/a SO <sub>2</sub> : 25 t/a VOCs: 58 t/a
HOLCIM (AUSTRALIA)	870 McDonalds Track, Lang Lang	3,000 m, north-east	Gravel and sand quarrying	CO: 26 t/a NO <sub>x</sub> : 69 t/a PM <sub>10</sub> : 45 t/a PM <sub>2.5</sub> : 4.4 t/a SO <sub>2</sub> : 18t/a VOCs: 4.9 t/a
Hanson Construction Materials	760 McDonalds Track, Lang Lang	2,500 m, north, north-east	Gravel and sand quarrying	CO: 11 t/a NO <sub>x</sub> : 35 t/a PM <sub>10</sub> : 9.1 t/a PM <sub>2.5</sub> : 2.4 t/a VOCs: 3.6 t/a

### 3.3.2 AMBIENT AIR QUALITY DATA

Ambient air quality is monitored by the EPA Victoria at ambient air quality monitoring stations (AAQMS) across Victoria to assess air quality against objectives set in the ERS (ERS 2021).

The nearest AAQMS to the Project site is the Dandenong AAQMS, located approximately 51 km northwest of the Project. However, the Dandenong AAQMS is located in an urban area and not representative of the Project’s rural location. EPA Victoria recommended to use the monitoring data collected at the Traralgon AAQMS given the Project’s similar rural setting. The Traralgon AAQMS is located approximately 83 km east-northeast of the Project.

It is noted that given the presence of coal mining and coal power plants surrounding the Traralgon AAQMS, the measured data at this station are expected to be higher than that likely to be experienced at the Project site. As such, the adopted background data at the Traralgon AAQMS is considered to be an over-estimate of background concentrations.

No ambient air quality data have been collected for RCS and deposited dust at any EPA AAQMS in Victoria. Background data was therefore not discussed in this section.

#### 3.3.2.1 PARTICLES AS PM<sub>10</sub>

24-hour and annual average PM<sub>10</sub> concentrations measured at the Traralgon AAQMS over the period of 2016 to 2020 are presented in Table 3.5 and Figure 3-4. Exceedances analyses are summarised in Table 3.6. The monitoring results indicate that:

- The maximum 24-hour average PM<sub>10</sub> concentrations exceeded the ERS objective of 50 µg/m<sup>3</sup> in 2019 and 2020 and were compliant with the ERS objective in other years. The exceedances were caused by windblown dust or bushfires.
- Annual average PM<sub>10</sub> concentrations are below the ERS objective of 20 µg/m<sup>3</sup> in all five years.

Table 3.5 PM<sub>10</sub> concentrations at Traralgon AAQMS

Year	Availability (% day)	Annual average (µg/m <sup>3</sup> )	24-hour average (µg/m <sup>3</sup> )							
			Max	99%ile	98%ile	95%ile	90%ile	75%ile	70%ile	50%ile
2016	97.5%	13.8	49.2	35.7	30.2	25.0	20.2	16.5	15.7	12.6
2017	92.1%	14.3	42.8	30.0	27.8	22.5	20.3	16.7	15.8	12.9
2018	95.6%	14.5	47.4	30.8	27.2	24.0	21.3	16.8	15.7	13.5
2019	95.3%	17.6	<b>78.0</b>	52.0	42.6	35.8	28.5	21.1	19.2	14.9
2020	94.3%	19.2	<b>236.3</b>	134.2	56.6	31.7	24.1	19.8	18.7	15.0
<b>Objective</b>		<b>20</b>	<b>50</b>							

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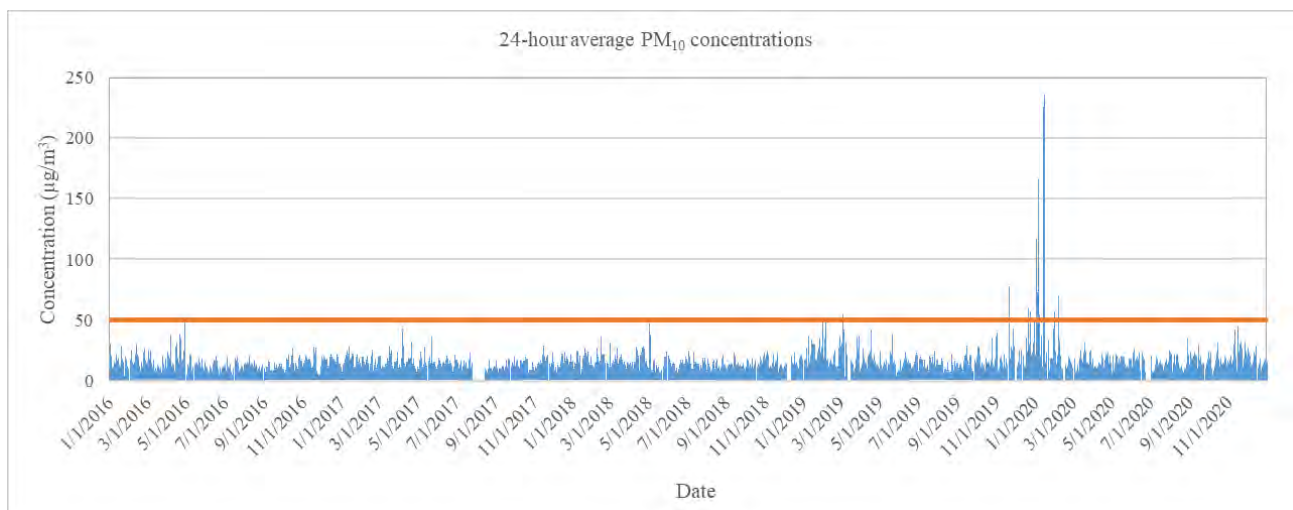


Figure 3-4 24-hour average PM<sub>10</sub> measured concentrations

Table 3.6 24-hour average PM<sub>10</sub> exceedances summary

Year	Number of exceedances	Date of exceedances	Reason
2019	5	30 January, 21 November,	Windblown dust
		3 March 20 and 23 December,	Smoke from bushfires
2020	9	3, 4, 6, 7, 13-15 and 31 January, 6 February	

### 3.3.2.2 PARTICLES AS PM<sub>2.5</sub>

24-hour and annual average PM<sub>2.5</sub> concentrations measured at the Traralgon AAQMS over the period of 2016 to 2020 are presented in Table 3.7 and Figure 3-5. Exceedances analyses are summarised in Table 3.8. The monitoring results indicate that:

- The maximum 24-hour average PM<sub>2.5</sub> concentrations exceeded the ERS objective of 25 µg/m<sup>3</sup> in all five years. The exceedances were caused by planned burns, bushfires, or domestic wood heaters.
- Annual average PM<sub>2.5</sub> concentrations exceeded the ERS objective of 8 µg/m<sup>3</sup> for the years 2017 to 2020 and were below the ERS objective in 2016.

Table 3.7 PM<sub>2.5</sub> concentrations at Traralgon AAQMS

Year	Availability (% day)	Annual average (µg/m <sup>3</sup> )	24-hour average (µg/m <sup>3</sup> )							
			Max	99%ile	98%ile	95%ile	90%ile	75%ile	70%ile	50%ile
2016	95.1%	7.8	25.7	23.2	20.3	14.8	12.4	9.1	8.6	6.8
2017	87.7%	8.4	32.3	26.3	21.0	16.8	14.1	9.2	8.7	6.9
2018	87.1%	8.1	30.1	23.1	21.6	17.5	13.0	9.0	8.4	6.1
2019	95.3%	8.9	37.4	30.8	23.5	19.2	14.8	10.4	9.8	7.3
2020	93.2%	8.8	236.0	28.3	22.1	17.9	13.8	9.2	8.2	6.3
<b>Objective</b>		<b>8</b>	<b>25</b>							

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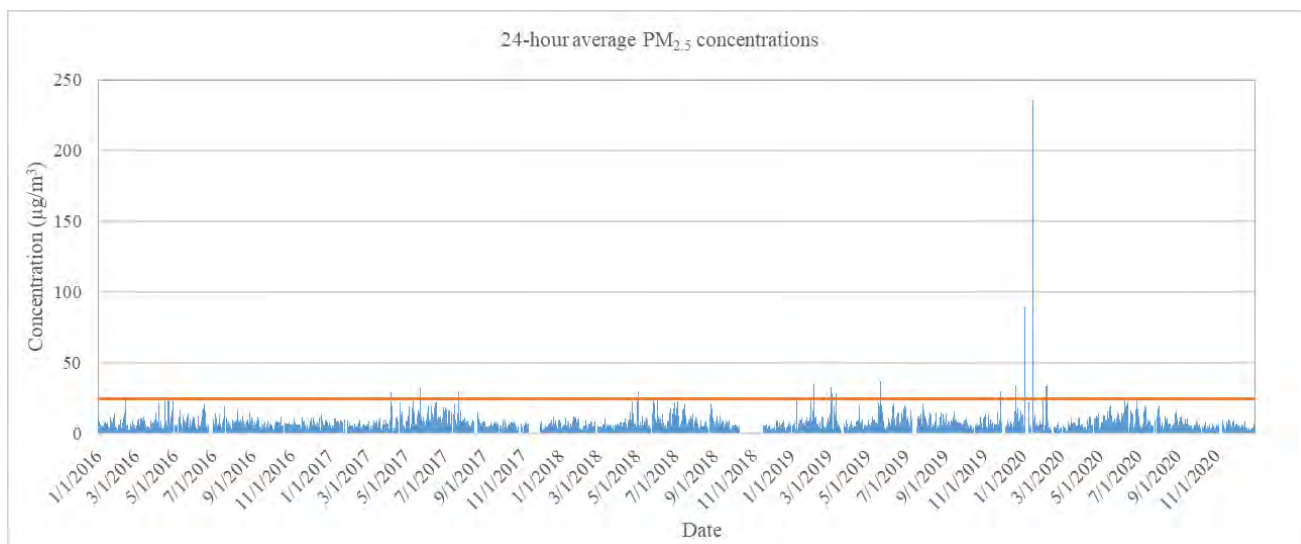


Figure 3-5 24-hour average PM<sub>2.5</sub> measured concentrations

Table 3.8 24-hour average PM<sub>2.5</sub> exceedances summary

Year	Number of exceedances	Date of exceedances	Reasons
2016	1	20 April	Planned burns
2017	5	6-7 April, 12 and 23 May	Planned burns
		22 July	Domestic wood heaters
2018	2	2 May	Planned burns
		2 June	Domestic wood heaters
2019	7	4 February	Smoke from bushfires
		20 May	Planned burns
		3, 4 and 10 March, 26 November, 20 December	Smoke from bushfires
2020	5	3, 15 and 31 January, 6 and 7 February	

### 3.3.2.3 ADOPTED BACKGROUND DATA

The Air Pollution guideline (EPA Victoria 2022) requires cumulative concentrations (contribution from the Project plus background) to be assessed against corresponding criteria for each pollutant. Time-varying 24-hour average data for PM<sub>10</sub> and PM<sub>2.5</sub> were used as background. Where data are missing, the 70<sup>th</sup> percentile concentrations for that year were used to fill that data gap for development of a continuous background dataset.

The background data adopted for the assessment are summarised in Table 3.9.

Table 3.9 Adopted background data

Pollutant	Averaging period	Background (µg/m <sup>3</sup> )
PM <sub>10</sub>	24-hour	Time-varying
	Annual	Time-varying
PM <sub>2.5</sub>	24-hour	Time-varying

	Annual	Time-varying
Deposited dust	Annual average	None
RCS	Annual average	None

### 3.4 SENSITIVE RECEPTORS

The Guideline for assessing and minimising air pollution in Victoria (EPA 2021) describes a sensitive land use as:

*‘A land use where it is plausible for humans to be exposed over durations greater than 24 hours, such as residential premises, education and childcare facilities, nursing homes, retirement villages, hospitals’.*

Table 3.10 presents the nearest sensitive receptors identified in this assessment and Figure 3-6 shows the receptor locations. These sensitive receptors are intended to be representative of the residences in proximity to the Project site. The modelled grid provides assessment for all other receptors not specifically included in the dispersion model.

Table 3.10 Modelled sensitive receptors

Sensitive receptor ID	Location		Approximate Distance from site boundary (M)	Direction from site	Type
	Easting (m)	Northing (m)			
R1	377923	5756572	142	East	Residential
R2	376675	5756864	127	Southwest	Residential
R3	376574	5757001	114	Southwest	Residential
R4	376539	5756864	223	Southwest	Residential
R5	376151	5757617	169	West	Residential

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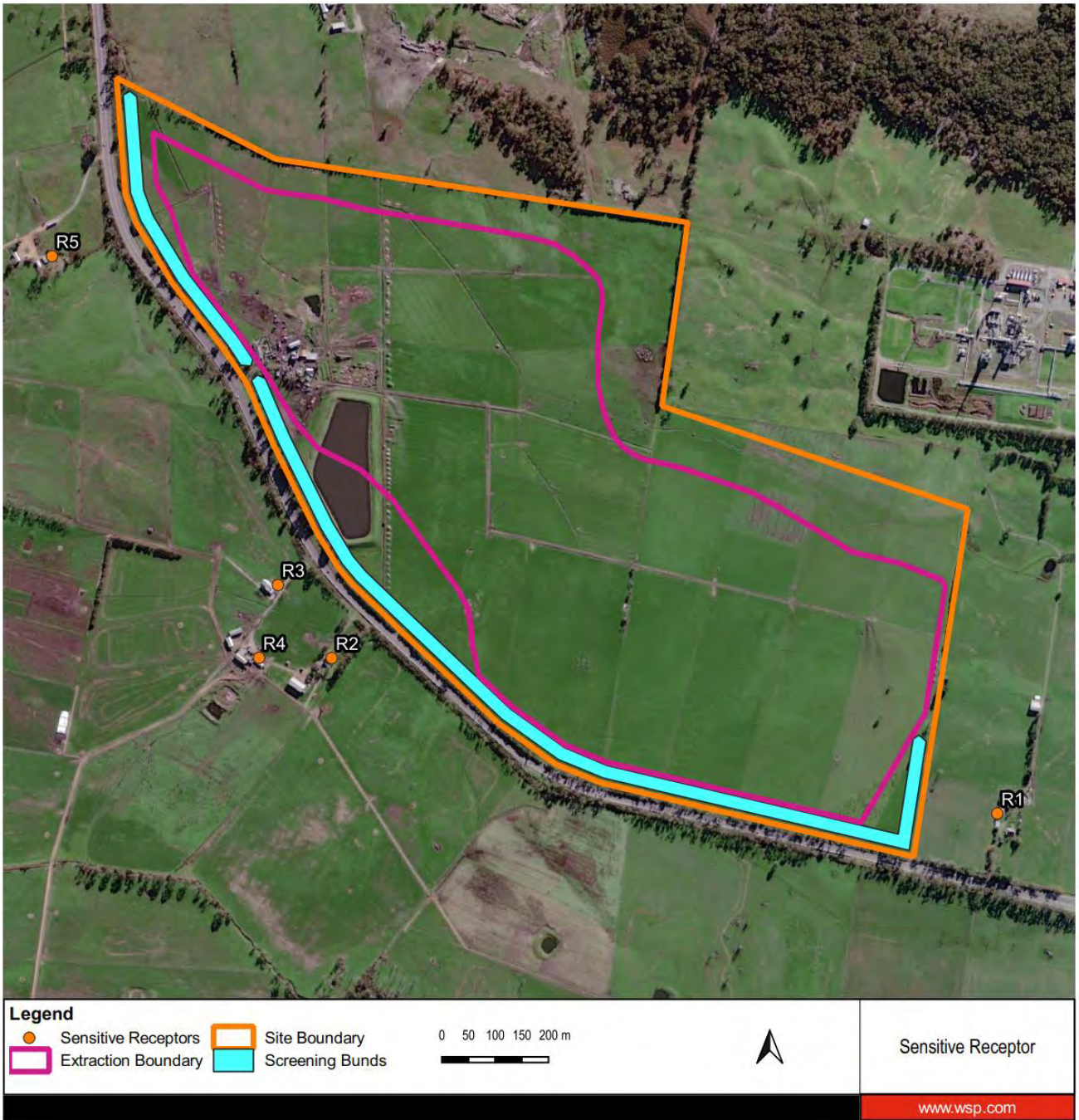


Figure 3-6 Sensitive receptors

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## 4 Air Quality Impact Assessment

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### 4.1 ASSESSMENT APPROACH

The assessment methodology was conducted with consideration to the EPA Victoria draft *Guidance Notes for Using the Regulatory Air Pollution Model AERMOD in Victoria*, Publication 1551, October 2013 (EPA Victoria 2013). EPA Victoria has adopted the USEPA regulatory air dispersion model, AERMOD, as the approved regulatory air dispersion model for impact assessments in Victoria. As such, the following modelling approach was conducted for the assessment of potential dust impacts associated with the Project operation:

- Using TAPM and AERMET to develop meteorological input files for AERMOD.
  - Using AERMOD to predict GLCs for dust emissions generated from the Project operation.
  - Compare cumulative concentrations against assessment criteria for compliance assessment.
- 

### 4.2 MODEL CONFIGURATION

#### 4.2.1 METEOROLOGICAL MODELLING

Meteorological data files were developed in accordance with draft EPA Publication 1550 ‘*Guidelines for Input Meteorological Data AERMOD*’, October 2013, Publication No. 1550 (EPA Victoria 2013).

The simulation of air quality impacts from the Project site requires the use of representative hourly meteorological data spanning five calendar years for surface and upper air observations. The closest BoM station where surface observations are available is located at the Rhyll AWS approximately 29 km southwest of the site. There is no BoM station within 5 km of the Project site. As such, site-specific surface and upper meteorological data was developed using the Commonwealth Scientific and Industrial Research Organisation (CSIRO) meteorological and prognostic air pollution model, TAPM.

##### 4.2.1.1 TAPM

The meteorological component of TAPM is an incompressible, optionally non-hydrostatic, primitive equation model with a terrain-following vertical co-ordinate for three dimensional simulations. The model is connected to ‘*databases of terrain, vegetation and soil type, leaf area index, sea-surface temperature and synoptic –scale meteorological analysis for various regions around the world*’. Updated terrain and land use data together with other default dataset were used to generate synthetic meteorological files for the period 1 January 2016 to 31 December 2020.

TAPM was run adopting the setup prescribed by EPA publication 1550 and used the following parameters:

- Outer grid resolution of 30 km with nesting grids 10 km, 3 km, 1 km and 0.3 km.
- Grid centre of 38°19.5’ S, 145°35.5’ E (MGA Zone 55H 376893 m E, 5757320 m S).
- 41 by 41 horizontal grid points.
- 25 vertical levels (10 m, 25 m, 50 m, 100 m, 150 m, 200 m, 250 m, 300 m, 400m, 500 m, 600 m, 750 m, 1000 m, 1250 m, 1500 m, 1750 m, 2000 m, 2500 m, 3000 m, 3500 m, 4000 m, 5000 m, 6000 m, 7000 m and 8000 m).
- 9-Second terrain height database.
- National Dynamic Land Cover Dataset 2.1.
- Synoptic analysis data for the period 1 January 2016 to 31 December 2020.
- TAPM default databases for soil type and leaf area index.

TAPM's output was exported as a surface and upper air station file at MGA Zone 55H 376893 m E, 5757320 m S for incorporation into AERMET.

#### 4.2.1.2 AERMET

To construct site-specific surface file for AERMET, the following TAPM-generated parameters extracted at the site location (MGA Zone 55H 376893 m E, 5757320 m S) were used in accordance with the requirements of the EPA publication 1550:

- wind speed at 10 m
- wind direction at 10 m
- screen level temperature (i.e., 2 m)
- screen level relative humidity (i.e., 2 m)
- net radiation
- mixing height.

In the absence of a TAPM output for some surface meteorological parameters, measured data were adopted at the nearest AWS station. Station pressure and precipitation data from the nearest AWS station at Rhyll, and cloud cover at the Moorabbin Airport station, the nearest AWS station that collects cloud data, were used.

Table 4.1 presents surface roughness, albedo and Bowen Ratio values used in AERMET for generating AERMOD compatible surface meteorological files.

Upper air data extracted from TAPM was reconfigured to provide a profile file in AERMOD compatible format.

Table 4.1 Surface roughness, albedo and Bowen Ratio values used in AERMET

Parameter	Season	Sector			
		0°-55°	55°-95°	95°-145°	145°-360°
Surface roughness	Summer	0.4	0.12	0.3	0.16
	Autumn	0.4	0.12	0.3	0.16
	Winter	0.275	0.039	0.3	0.097
	Spring	0.335	0.075	0.3	0.125
Albedo	Summer	0.169			
	Autumn	0.169			
	Winter	0.179			
	Spring	0.169			
Bowen Ratio	Summer	0.42			
	Autumn	0.5225			
	Winter	0.5225			
	Spring	0.405			

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## 4.2.2 DISPERSION MODELLING

### 4.2.2.1 AIR DISPERSION MODEL

Atmospheric dispersion modelling mathematically simulates the transport and fate of pollutants emitted from a source into the atmosphere. Sophisticated software with algorithms that incorporate source quantification, surface contours and topography, as well as meteorology can reliably predict the downwind concentrations of these pollutants.

AERMOD is a new generation air dispersion model designed for short-range dispersion of airborne pollutants in steady state plumes that uses hourly sequential meteorological files with pre-processors to generate flow and stability regimes for each hour. The model produces output maps of GLCs, as a function of plume spread, which facilitated visual interpretation of key pollutant concentration isopleths. The model enables, through its statistical output, direct comparisons with national ambient air quality standards for compliance testing.

Air dispersion modelling was undertaken using the latest version of EPA regulatory model AERMOD (Version 19191) in Victoria, in accordance with the requirements of the EPA Publication 1551 (EPA Victoria, 2013).

### 4.2.2.2 MODELLED RECEPTORS

The AERMOD receptor grid was centred at the centre of the Project site of 377197 m E and 5757046 m S. To provide a representative receptor grid and a reasonable model run time, a multi-tier grid was used in this assessment. The grid setup listed in Table 4.2 is illustrated in Figure 4-1.

The sensitive receptors identified in Table 3.10 were also included in the model.

Table 4.2 Multi-tier grid setup in AERMOD

Tier	Distance from centre (m)	Tier spacing (m)
1	1500	50
2	3000	100

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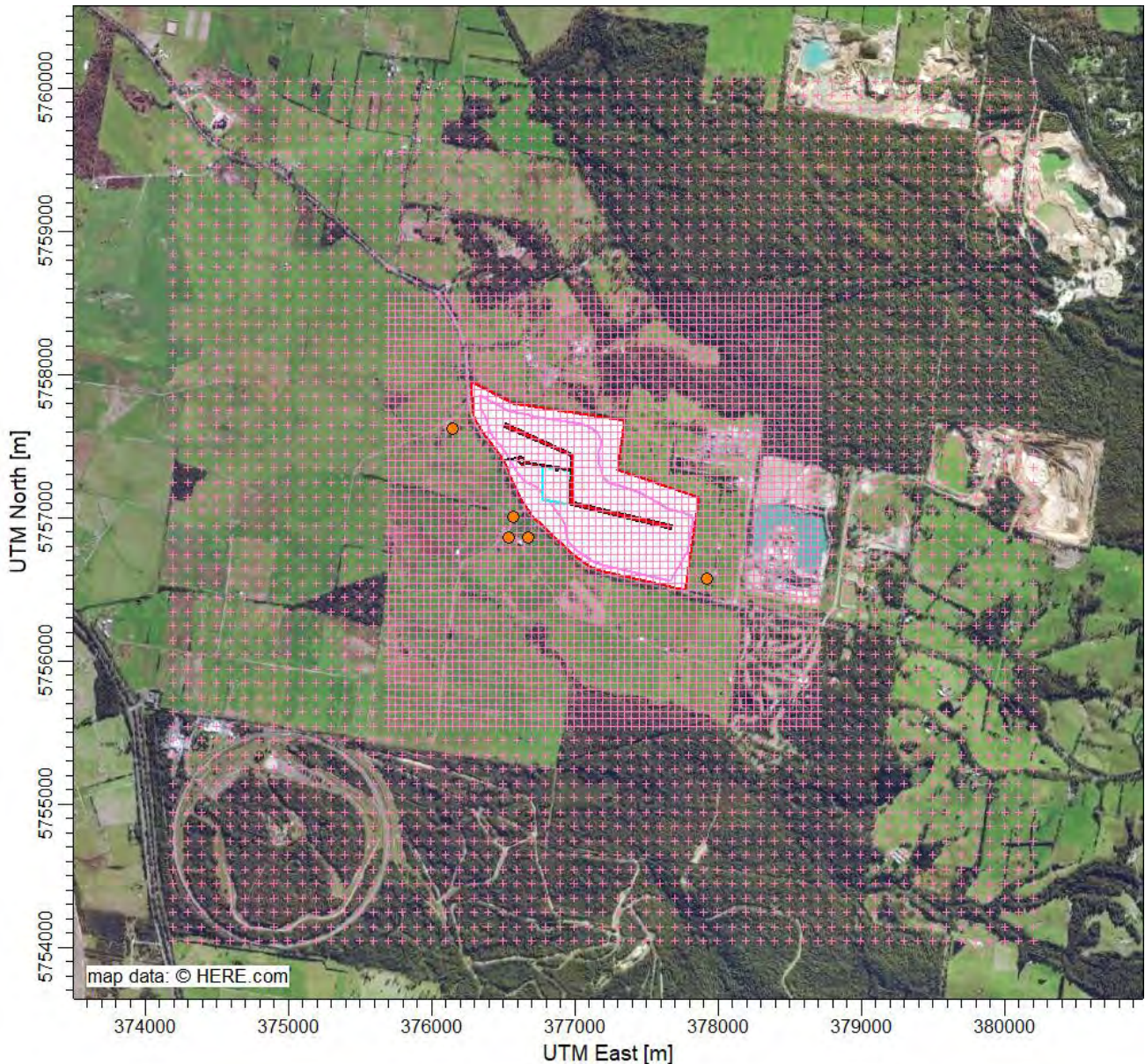


Figure 4-1 Modelled grid receptors in AERMOD

## 4.3 EMISSION ESTIMATION

### 4.3.1 METHODOLOGY

Emission rates for activities at the Project site were determined using National Pollutant Inventory (NPI) emission factors or formula and the United States Environmental Protection Agency (USEPA) AP-42. An emission factor is a value representing the relationship between an activity and the rate of emissions of a specified pollutant. Emission factors are developed based on test data, material mass balance studies and engineering estimates.

Emission estimates for the Project were based on the following NPI and USEPA AP-42 references:

- NPI Emission Estimation Technique Manual for Mining Version 3.1 (NPI Mining)
- AP-42 Section 11.19.2: Crushed Stone Processing and Pulverized Mineral Processing
- AP-42 Section 13.2.2: Unpaved Roads

- AP-42 Section 13.2.4 Aggregate Handling and Storage piles.

The emission calculations and resultant emission rates are discussed in the following sections using the equation presented below and information provided by LLSR.

Emission factors are expressed as a function of the weight, volume, distance, or duration of the activity emitting the pollutant. The general equation used for the estimation of emissions is:

$$E = A \times EF \times \left(1 - \frac{ER}{100}\right)$$

Where:

E = emission rate

A = activity rate

EF = emission factor

ER = overall emission reduction efficiency (%)

### 4.3.2 MODELLING SCENARIOS

The screening bund along the site boundary would be built up in the first two to three years of site operations using on-site topsoil and overburden materials. After the screening bund is completed, excessive topsoil and overburden would be placed at temporary dumps for backfill. Dry screening would also be used intermittently to process some topsoil for sale and for screening and blending mortar sands at this stage.

To capture the worst impacts from site operations at different stages, two scenarios were considered in this assessment:

- Scenario 1: sand extraction at stage 1 while the screening bund is under construction (in the first three years of site operations)
- Scenario 2: sand extraction at stage 3 following completion of the screening bund (more than five years following commencement of site operations)

The emission sources for each scenario have been conservatively placed at locations close to sensitive receptors.

It is noted that the total depth of extraction is expected to be approximately 30 m below the current surface level, and the preliminary groundwater assessment indicates the depth of groundwater is approximately 6 m below the natural surface level. As dust generated during underwater sand extraction is expected to be negligible, sand extraction activities above the groundwater level only have been considered in this assessment.

### 4.3.3 EMISSION SOURCES

Fugitive emissions at the Project site have the potential to arise from the following sources:

#### SCENARIO 1:

- machinery operation (i.e., excavators, scrapers and dozers)
- materials handling (loading and unloading trucks)
- wheel generated dust from unpaved roads
- wind erosion from stockpiles and other exposed areas.

#### SCENARIO 2:

- machinery operation (i.e., excavators, scrapers and dozers)
- materials handling (loading and unloading trucks)
- wheel generated dust from unpaved roads
- dry screening and associated activities

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- wind erosion from stockpiles and other exposed areas.

#### 4.3.4 EMISSION INVENTORY

Most of the dust emissions are expected to be generated during working hours except for wind erosion which would occur at any time dependent on meteorological conditions. Standard working hours for site operations are as follows:

- Sand extraction and related activities:
  - Monday to Friday: 7:00 am to 5:00 pm. 48 weeks per year.
- The sale of sand product:
  - Monday to Friday: 6:00 am to 6:00 pm.
  - Saturday: 6:00 am to 1:00 pm.

AERMOD was configured based on the above working hours. For 24-hour average modelling, it is assumed air emissions would be emitted every working day to capture the worst impacts.

As emissions associated with topsoil and overburden removal would only occur for a short period of time each year, emission rates presented in the following sections were adjusted using a factor determined by the actual emission period across the one-year modelling period to achieve a representative level of the annual average PM<sub>10</sub> and PM<sub>2.5</sub> concentrations.

Under scenario 2, the screening bund, which would be 5 m high, 25 m wide and fully vegetated along the Project boundary would act as a windbreak. Therefore, a 30% emission reduction rate was adopted for all sources for scenario 2.

Silt content and moisture content used in the assessment are presented in Table 4.3.

Table 4.3 Parameters used for emission estimation

Material	Silt content (%)	Moisture Content (%)
Raw material	8 <sup>1</sup>	4 <sup>1</sup>
Topsoil	8 <sup>1</sup>	4 <sup>1</sup>
Overburden	15 <sup>2</sup>	10 <sup>1</sup>
Haul roads	4.8 <sup>3</sup>	N/A

Note: 1. Conservative assumption based on data provided by BCA consulting.  
 2. Conservative assumption based on Metro Sand Quarry, Nyora Air Quality Impact Assessment Report (SLR, 2017).  
 3. Average silt content for roads in sand and gravel processing plant listed in AP-42 Section 13.2.2.

##### 4.3.4.1 MACHINERY OPERATION

During operation, one scraper would be used for topsoil removal, one excavator would be used for sand extraction and overburden removal, and one dozer would be working on the screening bund or temporary dump.

Emission factors and equations used for machinery operation are presented in Table 4.4. The emission inventory developed for this modelling assessment is presented in Table 4.5 and Table 4.6.

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Table 4.4 Emission factor equations

Machinery	Emission factor equation	Units	Source	Variables
SCRAPERS (REMOVING TOPSOIL)	$EF_{TSP} = 0.029$ $EF_{PM_{10}} = 0.0073$ $EF_{PM_{2.5}} = 0.047 \times EF_{TSP}$	KG/T	NPI MINING SPCC (1986) DATA	--
Excavators	$EF_{TSP} = k \times 0.0016 \times \frac{\left(\frac{U}{2.2}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}}$	kg/t	AP-42 Section 13.2.4	k=0.74 (TSP) k=0.35 (PM <sub>10</sub> ) k=0.053 (PM <sub>2.5</sub> ) U: average wind speed (m/s), 3.1m/s M: moisture content (%)
Dozers	$EF_{TSP} = 2.6 \times \left(\frac{(s)^{1.2}}{(M)^{1.3}}\right)$ $EF_{PM_{10}} = 0.34 \times \left(\frac{(s)^{1.5}}{(M)^{1.4}}\right)$ $EF_{PM_{2.5}} = 0.047 \times EF_{TSP}$	kg/h/vehicle	NPI Mining SPCC (1986) data	s: silt content (%) M: moisture content (%)

Table 4.5 Emission inventory for excavators and scrapers

Machinery	Location	Operation period	Emission factors (kg/t)			Throughput (t/h)	Control measures and reduction rate	Modelled emission rates (g/s)		
			TSP	PM <sub>10</sub>	PM <sub>2.5</sub>			TSP	PM <sub>10</sub>	PM <sub>2.5</sub>
<b>Scenario 1</b>										
Scraper	Topsoil	4 days/yr	0.029	0.0073	0.0014	90	Water spray (wet surface) (50%)	0.363	0.091	0.017
Excavator	Overburden	28 days/yr	1.94E-04	9.19E-05	1.39E-05	600	No control	0.032	0.015	0.0023
Excavator	Extraction	48 weeks/yr	7.01E-04	3.31E-04	5.02E-05	125	No control	0.024	0.012	0.0017
<b>Scenario 2</b>										
Scraper	Topsoil	4 days/yr	0.029	0.0073	0.0014	90	Water spray + windbreaks (65%)	0.254	0.064	0.0119
Excavator	Overburden	28 days/yr	1.94E-04	9.19E-05	1.39E-05	600	Windbreaks (30%)	0.023	0.011	0.0016
Excavator	Extraction	48 weeks/yr	7.01E-04	3.31E-04	5.02E-05	125	Windbreaks (30%)	0.017	0.008	0.0012

Table 4.6 Emission inventory for the dozer

Machinery	Modelled location	Operation period	Emission factors (kg/h/vehicle)			Control measures and reduction rate	Modelled emission rates (g/s)		
			TSP	PM <sub>10</sub>	PM <sub>2.5</sub>		TSP	PM <sub>10</sub>	PM <sub>2.5</sub>
<b>Scenario 1</b>									
Dozer	Screening bund	32 days/yr	3.36	0.79	0.1579	No control	0.933	0.218	0.044



Machinery	Modelled location	Operation period	Emission factors (kg/h/vehicle)			Control measures and reduction rate	Modelled emission rates (g/s)		
			TSP	PM <sub>10</sub>	PM <sub>2.5</sub>		TSP	PM <sub>10</sub>	PM <sub>2.5</sub>
<b>Scenario 2</b>									
Dozer	Temporary dump	32 days/yr	3.36	0.79	0.1579	Windbreaks (30%)	0.653	0.1529	0.0307

#### 4.3.4.2 MATERIAL HANDLING

Material handling operations at the Project site include the transfer of material by means of loading and unloading trucks, loading and dumping at stockpiles. Emission equations used for material handling is presented Table 4.7 and the emission inventory is presented in Table 4.8.

Table 4.7 Emission factor equations

Activity	Emission factor equation	Units	Source	Variables
Materials handling	$EF = k \times 0.0016 \times \left(\frac{U}{2.2}\right)^{1.3} / \left(\frac{M}{2}\right)^{1.4}$	kg/t	AP-42 Section 13.2.4	k=0.74 (TSP) k=0.35 (PM <sub>10</sub> ) k=0.053 (PM <sub>2.5</sub> ) U: average wind speed (m/s), 3.1m/s M: moisture content (%)

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Table 4.8 Emission inventory for material handling

Scenario	Activities	Operation period	Emission factors (kg/t)			Throughput (t/h)	Control measures and reduction rate	Modelled emission rates (g/s)		
			TSP	PM <sub>10</sub>	PM <sub>2.5</sub>			TSP	PM <sub>10</sub>	PM <sub>2.5</sub>
Scenario 1	Loading trucks at stage 1	48 weeks/yr	7.01E-04	3.31E-04	5.02E-05	125	No control	0.0243	0.0115	0.00174
	Loading trucks at overburden	28 days/yr	1.94E-04	9.19E-05	1.39E-05	600	No control	0.0324	0.0153	0.00232
	Loading sand product to trucks for sale	48 weeks/yr	5.13E-04	2.42E-04	3.67E-05	105	No control	0.0150	0.0071	0.00107
	Loading at raw stockpile	48 weeks/yr	7.01E-04	3.31E-04	5.02E-05	105	No control	0.0204	0.0097	0.00146
	Dumping to raw stockpile	48 weeks/yr	7.01E-04	3.31E-04	5.02E-05	125	No control	0.0243	0.0115	0.00174
	Dumping sand to wet processing plant	48 weeks/yr	7.01E-04	3.31E-04	5.02E-05	105	No control	0.0204	0.0097	0.00146
	Dumping topsoil to bund	4 days/yr	7.01E-04	3.31E-04	5.02E-05	90	No control	0.0175	0.0083	0.00125
	Dumping overburden to bund	28 days/yr	1.94E-04	9.19E-05	1.39E-05	600	No control	0.0324	0.0153	0.00232
Scenario 2	Loading trucks at stage 3	48 weeks/yr	7.01E-04	3.31E-04	5.02E-05	125	Windbreaks (30%)	0.0170	0.0081	0.00122
	Loading trucks at overburden	28 days/yr	1.94E-04	9.19E-05	1.39E-05	600	Windbreaks (30%)	0.0227	0.0107	0.00162
	Loading sand product to trucks for sale	48 weeks/yr	5.13E-04	2.42E-04	3.67E-05	105	Windbreaks (30%)	0.0105	0.0050	0.00075
	Loading screening product to trucks for sale	24 days/yr	7.01E-04	3.31E-04	5.02E-05	100	Windbreaks (30%)	0.0136	0.0064	0.00098
	Loading at raw stockpile	48 weeks/yr	7.01E-04	3.31E-04	5.02E-05	105	Windbreaks (30%)	0.0143	0.0068	0.00102
	Dumping to raw stockpile	48 weeks/yr	7.01E-04	3.31E-04	5.02E-05	125	Windbreaks (30%)	0.0170	0.0081	0.00122
	Dumping to dry screening stockpile	24 days/yr	7.01E-04	3.31E-04	5.02E-05	100	Windbreaks (30%)	0.0136	0.0064	0.00098
	Dumping sand to wet processing plant	48 weeks/yr	7.01E-04	3.31E-04	5.02E-05	105	Windbreaks (30%)	0.0143	0.0068	0.00102
	Dumping topsoil to temporary dump	4 days/yr	7.01E-04	3.31E-04	5.02E-05	90	Windbreaks (30%)	0.0123	0.0058	0.00088
	Dumping overburden to temporary dump	28 days/yr	1.94E-04	9.19E-05	1.39E-05	600	Windbreaks (30%)	0.0227	0.0107	0.00162

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## 4.3.4.3 WHEEL GENERATED DUST FROM UNPAVED ROADS

Vehicles moving on unpaved haulage roads would generate dust by the force of the wheels on the road surface. A scraper would be used for topsoil transportation and trucks would be used for sand and overburden transportation.

Emission equations used in this assessment are presented in Table 4.9 and the emission inventory for wheel generated dust from unpaved roads is presented in Table 4.10.

Table 4.9 Emission factor equations

Activity	Emission factor equation	Units	Source	Variables
Trucks travelling on unpaved roads	$EF_{TSP} = \frac{0.4536}{1.6093} \times 4.9 \times \left(\frac{s}{12}\right)^{0.7} \times \left(\frac{W \times 1.1023}{3}\right)^{0.45}$ $EF_{PM_{10}} = \frac{0.4536}{1.6093} \times 1.5 \times \left(\frac{s}{12}\right)^{0.9} \times \left(\frac{W \times 1.1023}{3}\right)^{0.45}$ $EF_{PM_{2.5}} = 0.1 \times EF_{PM_{10}}$	kg/VKT	NPI Mining AP-42 Section 13.2.2	s: silt content (%) W: vehicle gross mass (t)
Scrapers (travel mode)	$EF_{TSP} = 9.6 \times 10^{-6} \times s^{1.3} \times W^{2.4}$ $EF_{PM_{10}} = 1.32 \times 10^{-6} \times s^{1.3} \times W^{2.4}$ $EF_{PM_{2.5}} = 0.1 \times EF_{PM_{10}}$	kg/VKT	NPI Mining AP-42 Section 13.2.2	s: silt content (%) W: vehicle gross mass (t)

Table 4.10 Emission inventory for wheel generated dust from unpaved roads

Roads	Operation period	Average weight(t)	Emission factors (kg/VKT)			Single Trips/hour	Road length (m)	Control measures and reduction rate	Modelled emission rates (g/s)		
			TSP	PM <sub>10</sub>	PM <sub>2.5</sub>				TSP	PM <sub>10</sub>	PM <sub>2.5</sub>
<b>Scenario 1</b>											
Stage 1 to haul road	48 weeks/yr	52	3.92	1.11	0.11	6.3	176	Level 2 watering (75%)	0.300	0.085	0.0085
Haul road	48 weeks/yr	52	2.74	0.70	0.07	6.3	843		1.004	0.256	0.0256
Haul road to processing plant	48 weeks/yr	52	2.74	0.70	0.07	6.3	100		0.119	0.030	0.0030
Topsoil to bund (scraper)	4 days/yr	74	4.39	0.60	0.06	6	377		0.690	0.095	0.0095
Overburden to bund	28 days/yr	52	6.09	1.95	0.19	30	207		2.626	0.841	0.0841
<b>Scenario 2</b>											
Stage 3 to haul road	48 weeks/yr	52	3.92	1.11	0.11	6.3	144	Level 2 watering + windbreaks (82.5%)	0.172	0.048	0.0048
Haul road	48 weeks/yr	52	2.74	0.70	0.07	6.3	253		0.211	0.054	0.0054
Haul road to processing plant	48 weeks/yr	52	2.74	0.70	0.07	6.3	100		0.083	0.021	0.0021
Topsoil to dump (scraper)	4 days/yr	74	4.39	0.60	0.06	6	104		0.133	0.018	0.0018
Overburden to dump	28 days/yr	52	6.09	1.95	0.19	30	123		1.096	0.351	0.0351

## 4.3.4.4 WIND EROSION

Dust emissions are expected to occur due to the wind erosion of stockpiles and exposed areas. The following sources potentially subject to wind erosion were identified:

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- Extraction pit (scenario 1 and 2)
- Product stockpile (scenario 1 and 2)
- Raw material stockpile (scenario 1 and 2)
- Screening bund (scenario 1)
- Temporary dump (scenario 2)
- Dry screening stockpile (scenario 2)

Sand extraction would be conducted in stages, and an area of approximately 30,000 m<sup>2</sup> would be initially developed and an extraction area of 10,000 m<sup>2</sup> would be extended each year to maintain production. A total area of 40,000 m<sup>2</sup> was conservatively modelled in this assessment.

The screening bunds would be formed in segments in the first two to three years' operation. Each segment, approximately 100 m long, would be covered with soil and grassed as soon as practicable once completed. For assessment purpose, one segment of the screening bund was conservatively placed at the location closest to the sensitive receptor R1 for the whole year.

Default emission factors for wind erosion from the NPI Emission Estimation Technique Manual for Mining 2012 (NPI Mining 2012) was adopted in this assessment and the emission inventory is presented in Table 4.11.

Table 4.11 Emission inventory for wind erosion

Sources	Emission factors (g/m <sup>2</sup> /s)			Area (m <sup>2</sup> )	Control measures and reduction rate	Modelled emission rates (g/s)		
	TSP	PM <sub>10</sub>	PM <sub>2.5</sub>			TSP	PM <sub>10</sub>	PM <sub>2.5</sub>
<b>Scenario 1</b>								
Extraction pit-stage 1	1.11E-05	5.56E-06	5.22E-07	40000	Water spray/wet surface (50%)	0.222	0.111	0.0104
Screening bund	1.11E-05	5.56E-06	5.22E-07	2500	Water spray+ revegetation (50%)	0.014	0.007	0.0007
Product Stockpile	1.11E-05	5.56E-06	5.22E-07	3600	Water spray/wet (50%)	0.020	0.010	0.0009
Raw material stockpile	1.11E-05	5.56E-06	5.22E-07	11905	Water spray/wet (50%)	0.066	0.033	0.0031
<b>Scenario 2</b>								
Extraction pit-stage 3	1.11E-05	5.56E-06	5.22E-07	40000	Water spray/wet + windbreaks (65%)	0.156	0.078	7.31E-03
Temporary dump	1.11E-05	5.56E-06	5.22E-07	1500	Water spray + windbreaks (65%)	0.006	0.003	2.74E-04
Product Stockpile	1.11E-05	5.56E-06	5.22E-07	3600	Water spray/wet + windbreaks (65%)	0.014	0.007	6.58E-04
Dry screening stockpile	1.11E-05	5.56E-06	5.22E-07	200	Water spray/wet + windbreaks (65%)	0.001	0.0004	3.66E-05
Raw material stockpile	1.11E-05	5.56E-06	5.22E-07	11905	Water spray/wet + windbreaks (65%)	0.046	0.023	2.18E-03

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## 4.3.4.5 SCREENING

Sand processing would mainly be wet processing. Dry screening would be used for some topsoil processing after the screening bund is fully formed. This activity would only occur in scenario 2. The operational frequency would be less than one day per fortnight.

Other activities associated with screening include:

- Loading to the screen
- Conveyor transfer point
- Conveyor dropping point
- Unloading from stockpiles

Emission factors for screening and conveyor transfer point were obtained from AP-42 Section 11.19.2. Emission equations (refer to Table 4.7) for other associated activities were adopted from AP-42 Section 13.2.4.

Given the small footprint of the screening plant and multiple emission sources contained within the plant, all sources associated with dry screening were combined and modelled as one volume source.

The emission inventory for dry screening and associated activities is presented in Table 4.12.

Table 4.12 Emission inventory for dry screening and associated activities

Sources	Emission factors (kg/t)			Throughput (t/h)	Control measures and reduction rate	Modelled emission rates (g/s)		
	TSP	PM <sub>10</sub>	PM <sub>2.5</sub>			TSP	PM <sub>10</sub>	PM <sub>2.5</sub>
Loading to screen	7.01E-04	3.31E-04	5.02E-05	100	Windbreaks (30%)	0.014	0.006	0.001
Screening (Controlled)	0.0011	0.00037	0.000025	100		2.14E-02	0.007	0.000
Conveyor transfer point (controlled)	0.00007	2.30E-05	6.50E-06	100		1.36E-03	0.000	0.000
Conveyor dropping point	7.01E-04	3.31E-04	5.02E-05	100		0.014	0.006	0.001
Unloading from stockpiles	7.01E-04	3.31E-04	5.02E-05	100		0.014	0.006	0.001
<b>Total</b>						<b>0.064</b>	<b>0.027</b>	<b>0.0035</b>

## 4.3.4.6 ASSUMPTIONS

The assessment was conducted based on the following assumptions:

- Time-varying 24-hour average data for PM<sub>10</sub> and PM<sub>2.5</sub> were used as background, and where data are missing, the 70<sup>th</sup> percentile concentrations for that year were used to fill that gap to develop a continuous background dataset.
- Dry screening operations would be used intermittently, approximately one day per fortnight.
- Construction of the screening bunds would be complete within the first two to three years of site operations.
- Emission sources were conservatively placed at locations close to sensitive receptors.
- The sand extraction depth would be up to 30 m below the current surface level and only the top 6 m would be above groundwater level. This assessment conservatively configured all emission sources on and above ground level.

- For 24-hour average modelling, it is assumed air emissions would be emitted every working day to capture the worst-case impacts.
- For monthly and annual average modelling, adjusting factors determined by the actual emission period and across a one-year modelling period were applied to emission rates to achieve representative monthly and annual average concentrations.
- The screening bunds, which would be 5 m high, 25 m wide and fully vegetated along the Project boundary are considered to act as a windbreak and a 30% emission reduction rate was adopted for all sources of scenario 2.
- A total area of 40,000 m<sup>2</sup> was conservatively modelled in this assessment for sand pit extraction. In practice, the exposed area above groundwater level is expected to be lower than that.
- The screening bunds would be formed in segments in the first two to three years of operation. In this assessment, one segment of the screening bund was conservatively placed at the location closest to the sensitive receptor R1 for the whole year.
- The access road from site entrance to the processing plant would be sealed and a wheel washing facility would be located near the plant to ensure all truck wheels are washed before leaving the site. As such, no air emissions were considered from the sealed access road.
- At the time of preparing this report there was no information available on the proportion of RCS in the PM<sub>2.5</sub> fraction. It was conservatively assumed 100% of the PM<sub>2.5</sub> fraction is present as RCS.

#### 4.3.4.7 SOURCE LOCATIONS

Indicative locations of emission sources modelled for each scenario are presented in Figure 4-2 and Figure 4-3.

It is noted that haul road sources were configured as line volume sources and wind erosion area sources were configured as separate volume sources in AERMOD.

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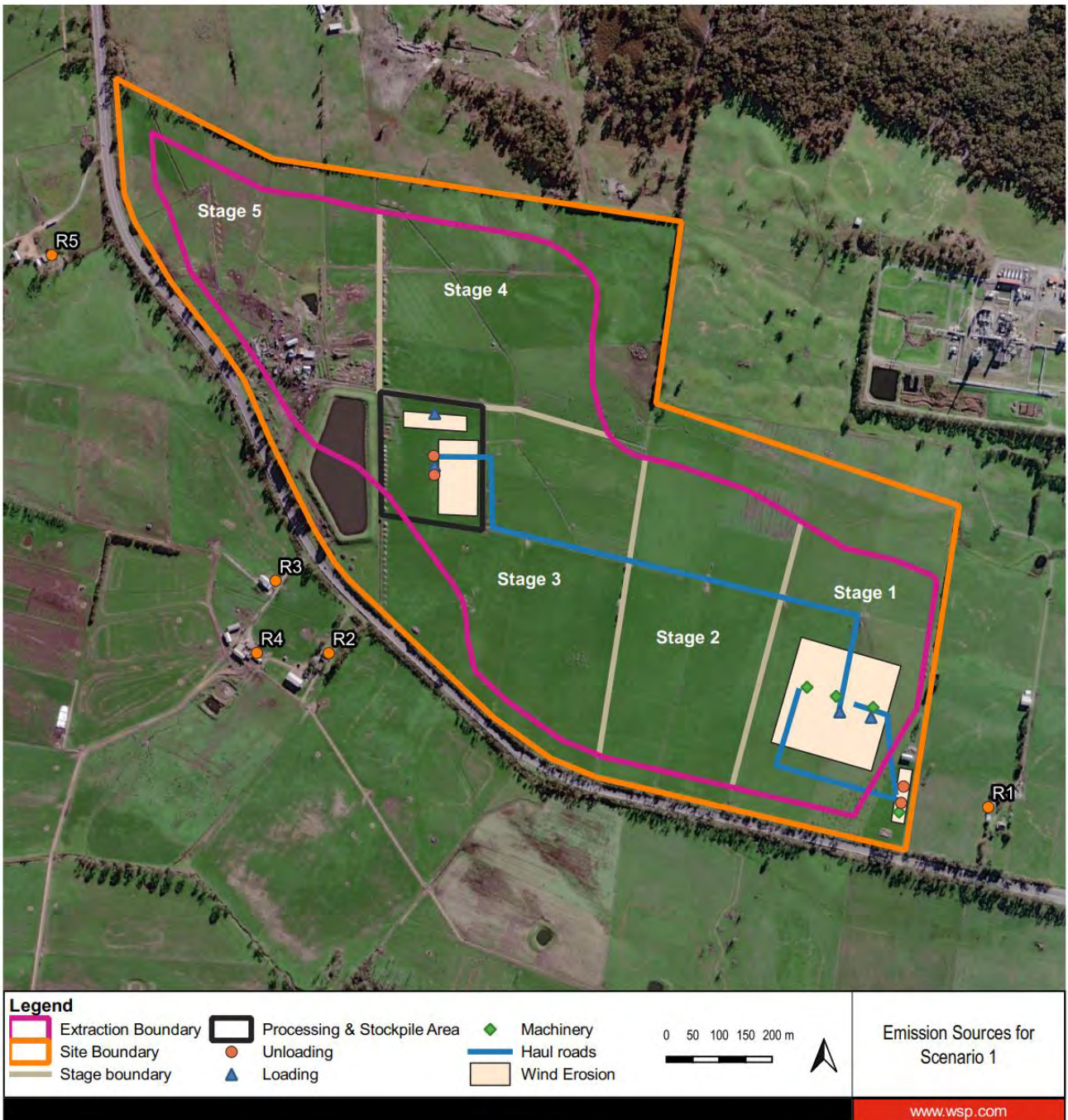


Figure 4-2 Location of modelled emission sources for scenario 1

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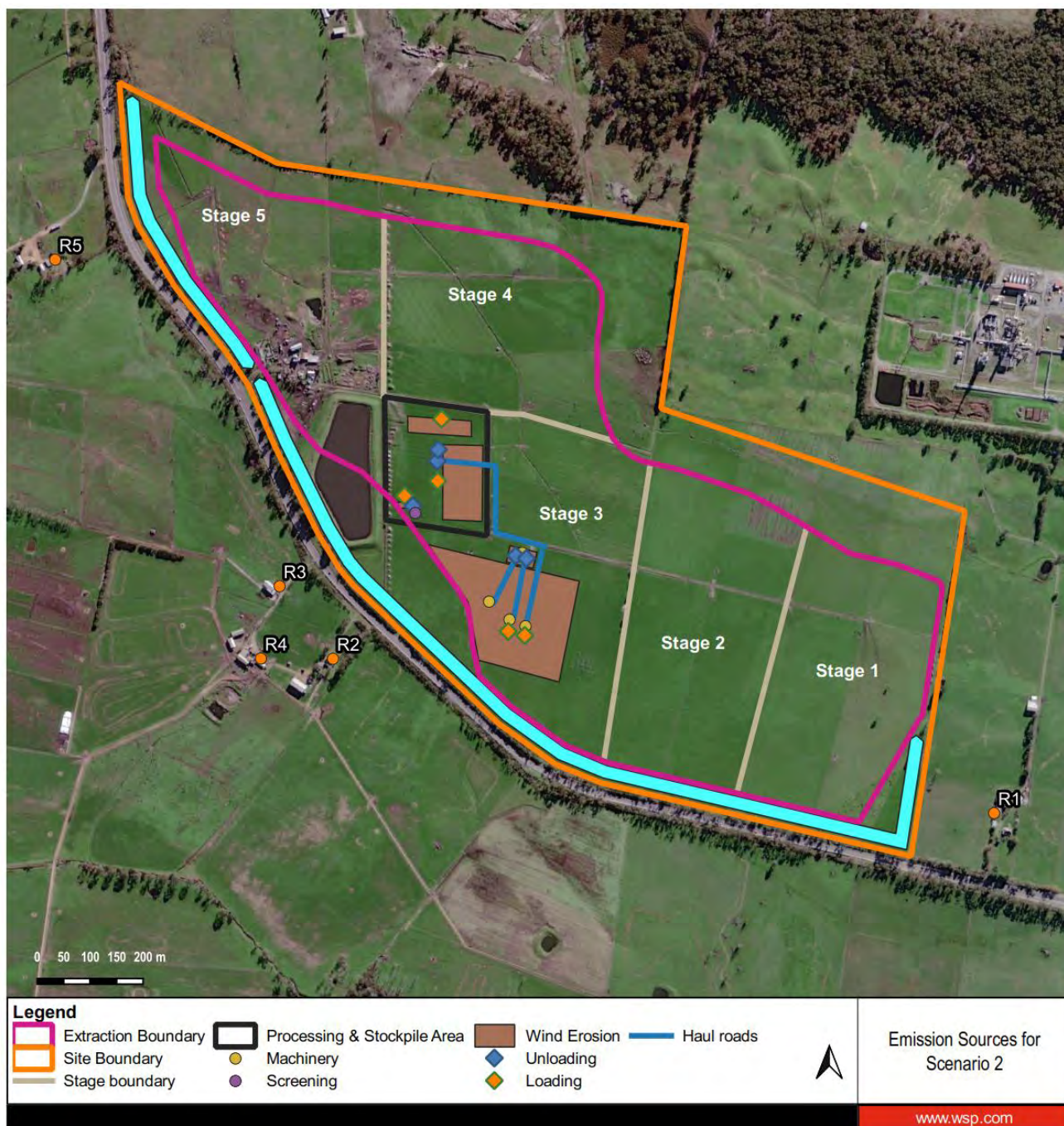


Figure 4-3 Location of modelled emission sources for scenario 2

## 4.4 PARTICLE SIZE DISTRIBUTION

PM<sub>10</sub> and PM<sub>2.5</sub> were modelled as a gas, and TSP was modelled as particles to determine dust deposition levels. As site-specific particle size distribution was not available at the time of modelling, the distribution of particles has been derived from measurements in the State Pollution Control Commission (SPCC 1986) study and the data adopted in AERMOD are presented in Table 4.13.

Table 4.13 Particle size distribution

Particle diameter (µm)	Mass fraction	Particle density (g/cm <sup>3</sup> )
2.5	0.0468	1.5



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10	0.344	1.5
30	0.609	1.5

## 4.5 DISPERSION MODELLING RESULTS

The maximum predicted incremental concentrations for PM<sub>10</sub> and PM<sub>2.5</sub> for averaging periods consistent with the assessment criteria were extracted at modelled sensitive receptors. Background data were added to incremental concentrations to compare cumulative concentrations with relevant APACs.

### 4.5.1 SCENARIO 1

#### 4.5.1.1 PM<sub>10</sub>

24-hour average PM<sub>10</sub> concentrations were extracted from the model outputs at sensitive receptors and added to contemporaneous background concentrations to assess compliance of the 24-hour average criterion. Predicted maximum incremental results over the five modelled years (2016 to 2020) are presented in Table 4.14. Contour plots for the 24-hour average and annual average PM<sub>10</sub> incremental concentrations are presented in Appendix A.

The predicted maximum project contribution and corresponding cumulative concentrations indicate that the:

- The maximum incremental 24-hour average PM<sub>10</sub> concentrations at all receptors is 26.5 µg/m<sup>3</sup> (R1) over the five modelled years, and cumulative concentrations (maximum project contribution plus contemporaneous background) are below the assessment criterion of 50 µg/m<sup>3</sup> at all five sensitive receptors.
- Maximum incremental annual average PM<sub>10</sub> concentrations at all receptors is 1.73 µg/m<sup>3</sup> over the five modelled years, accounting for 8.7% of the assessment criterion. Cumulative concentrations (maximum project contribution plus contemporaneous background) are below the criterion at R1, R2, R4 and R5, and exceeds the criterion at R3 due to the high background concentration. At receptor R3, the background concentration is 19.2 µg/m<sup>3</sup>, accounting for 96% of the criterion. The contribution from the Project is 0.95 µg/m<sup>3</sup>, accounting for 4.8% of the criterion.

Table 4.14 Predicted 24-hour and annual average PM<sub>10</sub> concentrations – scenario 1

Receptors	24-hour average (µg/m <sup>3</sup> )			Annual average (µg/m <sup>3</sup> )		
	Maximum incremental	Background	Cumulative	Maximum incremental	Background	Cumulative
R1	26.5	13.2	39.7	1.73	17.6	19.3
R2	7.6	14.2	21.9	0.76	14.3	15.1
R3	12.1	19.6	31.7	0.95	19.2	<b>20.2</b>
R4	6.6	14.2	20.9	0.64	14.3	14.9
R5	3.4	9.7	13.1	0.18	14.5	14.7
<b>APAC</b>			<b>50</b>			<b>20</b>

Note: Exceedances are highlighted in bold

A 24-hour PM<sub>10</sub> time series analysis over the five modelled years (2016 to 2020) was undertaken at each of the nearest five sensitive receptors. The results are presented in Table 4.15 and show the increased number of days the 24-hour PM<sub>10</sub> criterion is exceeded due to Project operations.

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The results indicate that the:

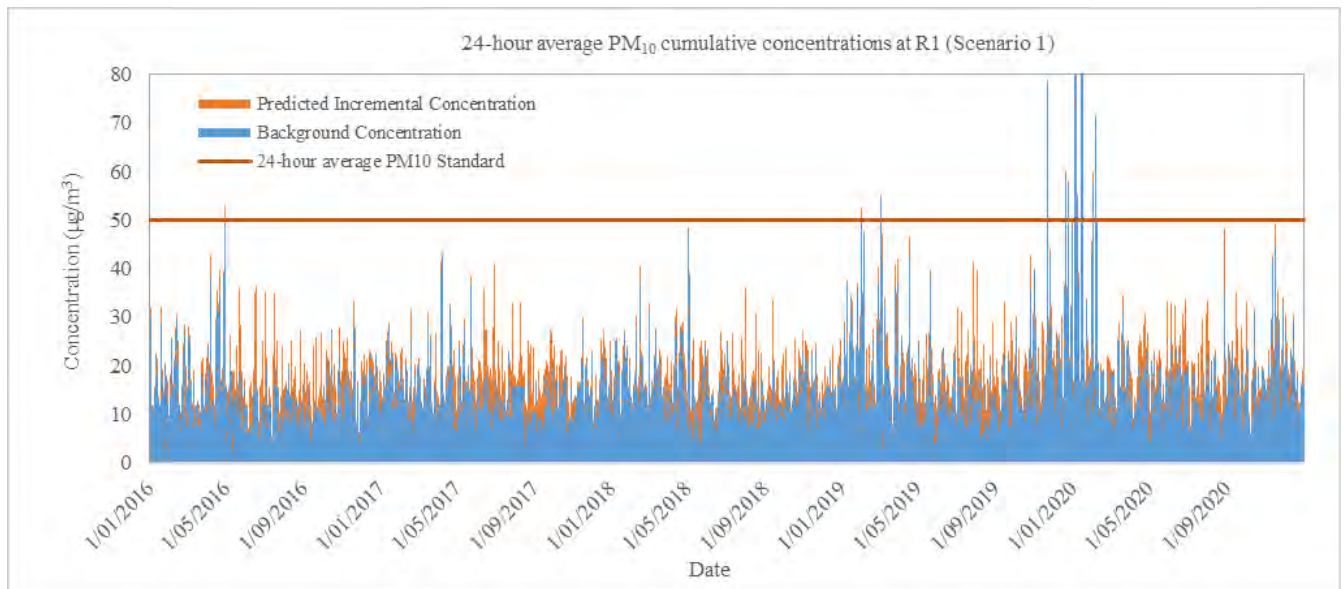
- number of exceedances predicted to occur over five years due to Project operations are increased by two days at receptors R1, R2 and R3. The background concentrations account for 98.4% and 99.5% of the criterion respectively.
- number of exceedances predicted to occur over five years due to Project operations are increased by one day at receptors R4 and R5. The background concentration accounts for 99.5% of the criterion.

Table 4.15 Summary of the number of increased exceedances of the 24-hour average PM<sub>10</sub> criterion due to Project operations – scenario 1

Date	Background (µg/m <sup>3</sup> )	Receptors	Incremental (µg/m <sup>3</sup> )	Cumulative (µg/m <sup>3</sup> )
28/04/2016	49.2	R1	3.9	<b>53.1</b>
		R2	0.9	<b>50.1</b>
		R3	0.9	<b>50.1</b>
7/02/2020	49.8	R1	0.68	<b>50.4</b>
		R2	0.56	<b>50.3</b>
		R3	0.63	<b>50.4</b>
		R4	0.42	<b>50.2</b>
		R5	0.29	<b>50.1</b>
<b>APAC</b>				<b>50</b>

Note: Exceedances are highlighted in bold

A 24-hour PM<sub>10</sub> time series plot for the most affected receptor (R1) showing the contribution from the Project and contemporaneous background data is presented in Figure 4-4.



Note: Background concentrations above 80 µg/m<sup>3</sup> have been removed from the figure to aid visual representation. The complete background dataset is presented in section 3.3.2.1

Figure 4-4 24-hour average PM<sub>10</sub> time-series concentrations at R1 (scenario 1)

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## 4.5.1.2 PM<sub>2.5</sub>

24-hour average PM<sub>2.5</sub> concentrations were extracted from modelling outputs at sensitive receptors and added to contemporaneous background to assess compliance of the 24-hour average criterion. Predicted maximum incremental results over the five modelled years (2016 to 2020) are presented in Table 4.16. Contour plots for 24-hour average and annual average PM<sub>2.5</sub> incremental concentrations are presented in Appendix A.

The predicted maximum project contribution and corresponding cumulative concentrations indicate that the:

- Maximum incremental 24-hour average PM<sub>2.5</sub> concentration at all receptors is 4.4 µg/m<sup>3</sup> (R1) over five modelled years, and cumulative concentrations (maximum project contribution plus contemporaneous background) are below the assessment criterion of 25 µg/m<sup>3</sup> at all five receptors.
- Maximum incremental annual average PM<sub>2.5</sub> concentration at all receptors is 0.19 µg/m<sup>3</sup> over the five modelled years, accounting for 2.4% of the assessment criterion. Cumulative concentrations (project contribution plus contemporaneous background) exceed the criterion at all five receptors for all modelled years due to existing exceedances of the background concentrations.

Table 4.16 Predicted 24-hour and annual average PM<sub>2.5</sub> concentrations – scenario 1

Receptors	24-hour average (µg/m <sup>3</sup> )			Annual average (µg/m <sup>3</sup> )		
	Maximum incremental	Background	Cumulative	Maximum incremental	Background	Cumulative
R1	4.4	6.8	11.2	0.19	<b>8.9</b>	<b>9.1</b>
R2	0.8	14.6	15.4	0.07	<b>8.4</b>	<b>8.5</b>
R3	1.2	13.8	15.0	0.09	<b>8.8</b>	<b>8.9</b>
R4	0.7	14.6	15.3	0.06	<b>8.4</b>	<b>8.5</b>
R5	0.4	4.7	5.1	0.02	<b>8.1</b>	<b>8.1</b>
<b>APAC</b>	<b>25</b>			<b>8</b>		

Note: Exceedances are highlighted in bold

A 24-hour PM<sub>2.5</sub> time series analysis over the five modelled years (2016 to 2020) was undertaken at each of the nearest five sensitive receptors. The results are presented in Table 4.17 and show the increased number of days the 24-hour PM<sub>10</sub> criterion is exceeded due to Project operations.

The results indicate that:

- The number of exceedances predicted to occur over five years due to Project operations are increased by one day at receptor R1. The background concentration accounts for 98% of the criterion.

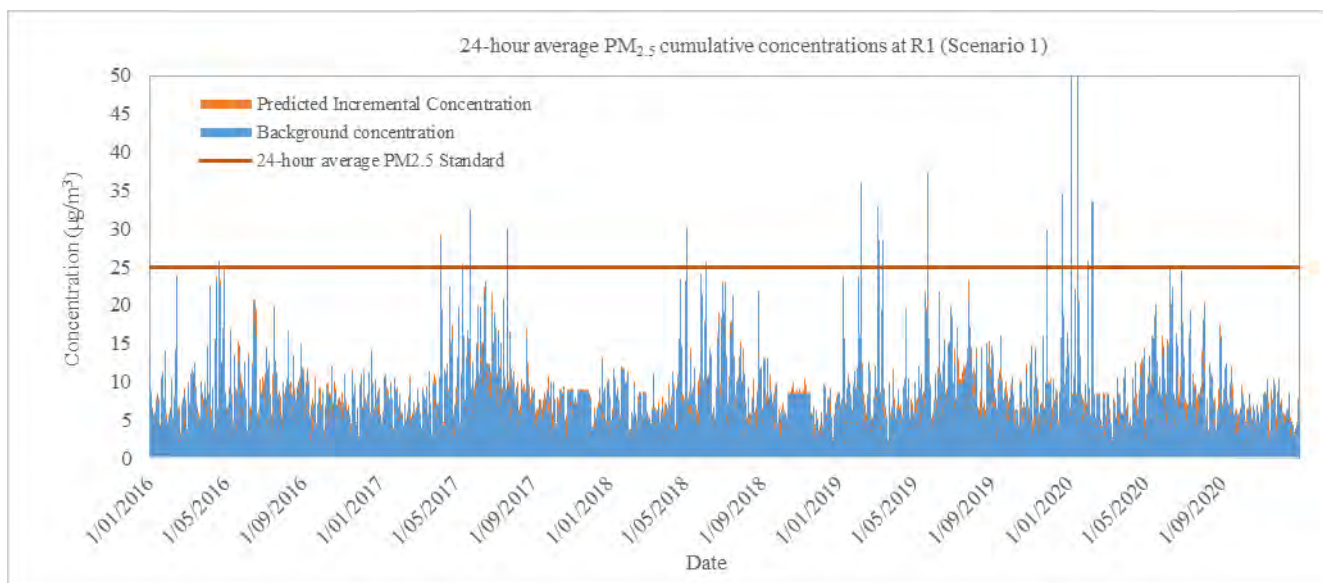
Table 4.17 Summary of the number of increased exceedances of the 24-hour average PM<sub>2.5</sub> criterion due to Project operations – scenario 1

Date	Background (µg/m <sup>3</sup> )	Receptors	Incremental (µg/m <sup>3</sup> )	Cumulative (µg/m <sup>3</sup> )
9/06/2020	24.5	R1	0.7	<b>25.2</b>
<b>APAC</b>				<b>25</b>

Note: Exceedances are highlighted in bold.

A 24-hour PM<sub>2.5</sub> time series plot for the most affected receptor (R1) showing the contribution from the Project and contemporaneous background data is presented in Figure 4-5.

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Note: Background concentrations above 50  $\mu\text{g}/\text{m}^3$  have been removed from the figure to aid visual representation. The complete background dataset is presented in section 3.3.2.2.

Figure 4-5 24-hour average  $\text{PM}_{2.5}$  time-series concentrations at R1 (Scenario 1)

## 4.5.1.3 DEPOSITED DUST

Predicted maximum monthly incremental (project contribution only) dust deposition levels for all sensitive receptors are presented in Table 4.18. Given there is no background monitoring data for dust deposition available at any AAQMS in Victoria, only incremental results are presented. The contour plot for predicted maximum monthly dust deposition levels is presented in Appendix A.

The modelling results indicate that the maximum increase in dust deposition levels at all receptors are below the assessment criterion of 2  $\text{g}/\text{m}^2/\text{month}$ .

Table 4.18 Predicted maximum monthly deposited dust levels

Receptors	Maximum incremental ( $\text{g}/\text{m}^2/\text{month}$ )
R1	1.6
R2	0.11
R3	0.14
R4	0.09
R5	0.04
<b>Maximum increase in deposited dust criterion</b>	<b>2</b>

## 4.5.2 SCENARIO 2

### 4.5.2.1 $\text{PM}_{10}$

Predicted maximum incremental  $\text{PM}_{10}$  results over the five modelled years (2016 to 2020) are presented in Table 4.19. Contour plots for 24-hour average and annual average  $\text{PM}_{10}$  incremental concentrations are presented in Appendix A

The predicted maximum project contribution and corresponding cumulative concentrations indicate that the:

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- maximum incremental 24-hour average PM<sub>10</sub> concentration at all receptors is 29.2 µg/m<sup>3</sup> (R2) over the five modelled years, and cumulative concentrations (maximum Project contribution plus contemporaneous background) are below the assessment criterion of 50 µg/m<sup>3</sup> at all five sensitive receptors.
- maximum incremental annual average PM<sub>10</sub> concentration at all receptors is 1.9 µg/m<sup>3</sup> (R2) over the five modelled years, accounting for 9.5% of the assessment criterion. Cumulative concentrations (maximum project contribution plus contemporaneous background) are below the assessment criterion of 20 µg/m<sup>3</sup> at all five receptors.

Table 4.19 Predicted 24-hour and annual average PM<sub>10</sub> concentrations – scenario 2

Receptors	24-hour average (µg/m <sup>3</sup> )			Annual average (µg/m <sup>3</sup> )		
	Maximum incremental	Background	Cumulative	Maximum incremental	Background	Cumulative
R1	3.3	19.3	22.6	0.1	17.6	17.7
R2	29.2	19.5	48.7	1.9	14.3	16.2
R3	17.8	14.2	32.1	1.3	14.3	15.6
R4	18.3	19.5	37.8	1.2	14.3	15.5
R5	3.4	8.6	12.0	0.2	19.2	19.4
<b>APAC</b>			<b>50</b>			<b>20</b>

Note: Exceedances are highlighted in bold

A 24-hour PM<sub>10</sub> time series analysis over the five modelled years (2016 to 2020) was undertaken at each of the nearest five sensitive receptors. The results are presented in Table 4.20 and show the increased number of days the 24-hour PM<sub>10</sub> criterion is exceeded due to Project operations.

The results indicate that:

- The number of exceedances predicted to occur over five years due to Project operations are increased by three days at R3. The background concentrations account for 98.4%, 97% and 99.5% of the criterion respectively.
- The number of exceedances predicted to occur over five years due to Project Operations are increased by two days at R3 and R4. The background concentrations account for 98.4% and 99.5% of the criterion respectively.

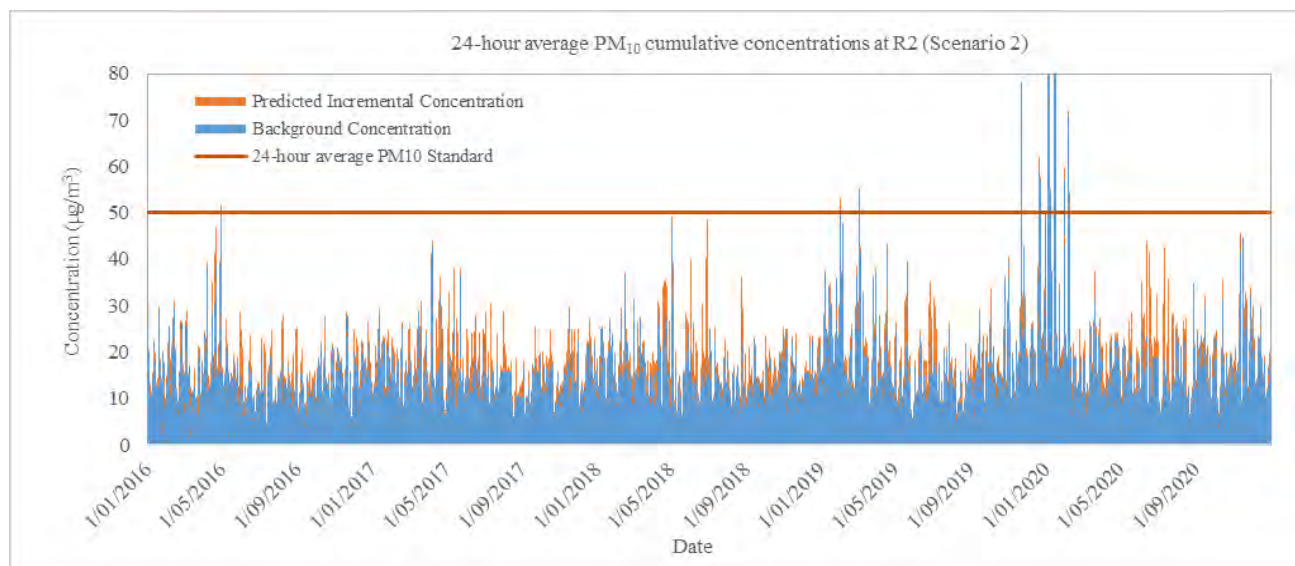
Table 4.20 Summary of the number of increased exceedances of the 24-hour average PM<sub>10</sub> criterion due to Project operations – scenario 2

Date	Background (µg/m <sup>3</sup> )	Receptors	Incremental (µg/m <sup>3</sup> )	Cumulative (µg/m <sup>3</sup> )
28/04/2016	49.2	R2	2.6	<b>51.8</b>
		R3	1.9	<b>51.1</b>
		R4	1.6	<b>50.8</b>
30/12/2019	48.5	R2	1.9	<b>50.4</b>
7/02/2020	49.8	R2	4.7	<b>54.5</b>
		R3	3.0	<b>52.8</b>
		R4	3.6	<b>53.4</b>
<b>APAC</b>				<b>50</b>

Note: Exceedances are highlighted in bold

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A 24-hour PM<sub>10</sub> time series plot for the most affected receptor (R2) showing the contribution from the Project and contemporaneous background data is presented in Figure 4-6.



Note: Background concentrations above 80 µg/m<sup>3</sup> have been removed from the figure to aid visual representation. The whole background dataset is presented in section 3.3.2.1.

Figure 4-6 24-hour average PM<sub>10</sub> time-series concentrations at R2 (Scenario 2)

## 4.5.2.2 PM<sub>2.5</sub>

Predicted maximum PM<sub>2.5</sub> incremental results over the five modelled years (2016 to 2020) are presented in Table 4.21. Contour plots for 24-hour average and annual average PM<sub>2.5</sub> incremental concentrations are presented in Appendix A.

The predicted maximum Project contribution and corresponding cumulative concentrations indicate that the:

- maximum incremental 24-hour average PM<sub>2.5</sub> concentration at all receptors is 4.2 µg/m<sup>3</sup> over the five modelled years, and cumulative concentrations (maximum Project contribution plus contemporaneous background) are below the assessment criterion of 25 µg/m<sup>3</sup> at R1, R3 and R5. At receptors R2 and R4 the criterion is exceeded with the background concentration accounting for 90% of the criterion.
- maximum incremental annual average PM<sub>2.5</sub> concentration at all receptors is 0.18 µg/m<sup>3</sup> over the five modelled years, accounting for 2.3% of the assessment criterion. Cumulative concentrations (maximum project contribution plus contemporaneous background) exceed the criterion at all five receptors due to existing exceedances of the background.

Table 4.21 Predicted 24-hour and annual average PM<sub>2.5</sub> concentrations – scenario 2

Receptors	24-hour average (µg/m <sup>3</sup> )			Annual average (µg/m <sup>3</sup> )		
	Maximum incremental	Background	Cumulative	Maximum incremental	Background	Cumulative
R1	0.5	18.7	19.2	0.01	<b>8.9</b>	<b>8.9</b>
R2	4.2	22.5	<b>26.7</b>	0.18	<b>8.4</b>	<b>8.6</b>
R3	2.2	14.6	16.8	0.13	<b>8.4</b>	<b>8.5</b>
R4	2.6	22.5	<b>25.1</b>	0.11	<b>8.4</b>	<b>8.5</b>
R5	0.5	4.7	5.2	0.02	<b>8.8</b>	<b>8.8</b>
<b>APAC</b>			<b>25</b>			<b>8</b>

Note: Exceedances are highlighted in bold

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A 24-hour PM<sub>2.5</sub> time series analysis over the five modelled years (2016 to 2020) was undertaken at each of the nearest five sensitive receptors. The results are presented in Table 4.22 and show the increased number of days the 24 hour PM<sub>10</sub> criterion is exceeded due to Project operations.

The results indicate that the

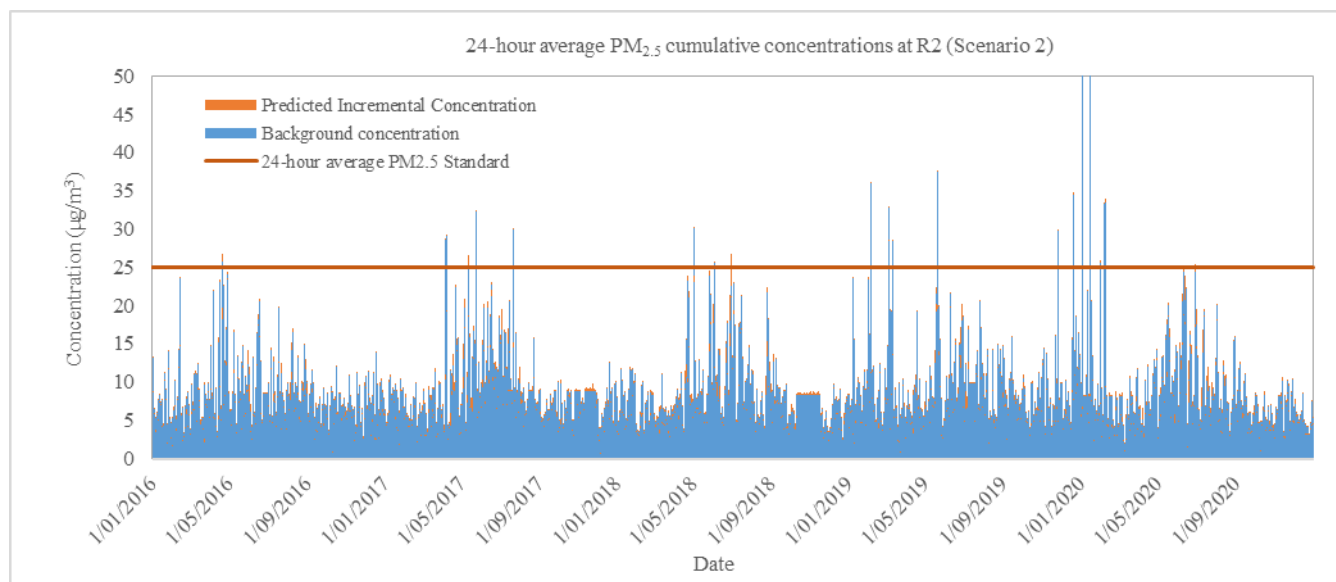
- number of exceedances predicted to occur over five years due to Project operations are increased by three days of at receptor R2. The background concentrations account for 90%, 98% and 97.6% of the criterion respectively.
- number of exceedances predicted to occur over five years due to Project operations are increased by two days of at receptor R4. The background concentrations account for 90% and 97.6% of the criterion respectively.

Table 4.22 Summary of the number of increased exceedances of 24-hour average PM<sub>2.5</sub> concentrations due to Project operations – scenario 2

Date	Background (µg/m <sup>3</sup> )	Receptors	Incremental (µg/m <sup>3</sup> )	Cumulative (µg/m <sup>3</sup> )
28/06/2018	22.5	R2	4.2	<b>26.7</b>
		R4	2.6	<b>25.1</b>
9/06/2020	24.5	R2	0.6	<b>25.1</b>
28/06/2020	24.4	R2	1.1	<b>25.5</b>
		R4	0.7	<b>25.1</b>
<b>APAC</b>				<b>25</b>

Note: Exceedances are highlighted in bold

A 24-hour PM<sub>2.5</sub> time series plot for the most affected receptor (R2) showing the contribution from the Project and contemporaneous background data is presented in Figure 4-7.



Note: Background concentrations above 50 µg/m<sup>3</sup> have been removed from the figure to aid visual representation. The whole background dataset is presented in section 3.3.2.2

Figure 4-7 24-hour average PM<sub>2.5</sub> time-series concentrations at R2 (Scenario 2)

### 4.5.2.3 DEPOSITED DUST

Predicted maximum monthly incremental dust deposition levels are presented in Table 4.23. The contour plot for predicted maximum monthly dust deposition levels for scenario 2 is presented in Appendix A. The modelling results

indicate that maximum increase in dust deposition levels for scenario 2 at all receptors are below the assessment criterion of 2 g/m<sup>2</sup>/month.

Table 4.23 Predicted maximum monthly deposited dust levels

Receptors	Maximum incremental (g/m <sup>2</sup> /month)
R1	0.05
R2	0.26
R3	0.20
R4	0.15
R5	0.04
<b>Maximum increase in deposited dust criterion</b>	<b>2</b>

### 4.5.3 RESPIRABLE CRYSTALLINE SILICA

At the time of preparing this report, there was no measured RCS (as PM<sub>2.5</sub>) data available. It was conservatively assumed that 100% of PM<sub>2.5</sub> is present as RCS. The concentrations of RCS at the Project site and beyond the Site boundary are expected to be much lower.

The predicted annual PM<sub>2.5</sub> concentrations are as follows:

- Scenario 1: the maximum incremental annual PM<sub>2.5</sub> concentrations at all five receptors and all of the five modelled years is 0.19 µg/m<sup>3</sup>.
- Scenario 2: the maximum incremental annual PM<sub>2.5</sub> concentrations at all five receptors and all of the five modelled years is 0.18 µg/m<sup>3</sup>.

As such, the maximum annual RCS (as PM<sub>2.5</sub>) under the two scenarios is 0.19 µg/m<sup>3</sup>, accounting for 6.3% of the 3 µg/m<sup>3</sup> assessment criterion as prescribed in the Guideline for Assessing and Minimising Air Pollution in Victoria (EPA Victoria 2022). The actual proportion of RCS in the PM<sub>2.5</sub> fraction is expected to be lower during Project operations given that there are no on-site operations where RCS would be generated (i.e., crushing, grinding), the RCS concentrations under scenario 1 and scenario 2 are expected to be lower than the estimated concentrations and below the APAC. It is important to note that the RCS (as PM<sub>2.5</sub>) criterion refers to off-site impacts on the receiving environment only.

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# 5 MANAGEMENT MEASURES

To minimise potential air quality impacts from air emissions generated from site activities, an Air Quality Management Plan (AQMP) would be developed prior to the commencing of site operations. This plan would identify the key sources (hazards) and types of air pollutants (i.e., PM<sub>10</sub>, and PM<sub>2.5</sub>) and include management measures to minimise air emissions during Project operations. The AQMP would be proactive focussing on identifying the hazards, assessing the risk, and implementing appropriate controls to ensure emissions are minimised so far as reasonably practical.

Table 5.1 presents management and mitigation measures that would be included in the AQMP, and these proposed controls are industry standards for quarrying operations.

Table 5.1 Proposed management measures

OPERATION	PROPOSED MANAGEMENT MEASURES
Machinery operation	<ul style="list-style-type: none"> <li>— all plant and equipment to be maintained and regularly serviced in accordance with the manufacturer’s instructions</li> <li>— all mobile plant and equipment would be restricted to designated areas</li> </ul>
Material handling <ul style="list-style-type: none"> <li>— Loading trucks</li> <li>— Loading/unloading from stockpiles</li> <li>— Transfer and conveying of material</li> <li>— Excavation works</li> </ul>	<ul style="list-style-type: none"> <li>— dry excavated material to be wetted in particular during dry conditions.</li> <li>— all trucks are not to be overloaded and are to be covered prior to leaving the site.</li> <li>— reduce or suspend operations where dust is observed to be leaving the Site during hot, dry and windy conditions</li> </ul>
Wheel generated dust	<ul style="list-style-type: none"> <li>— all vehicles to adhere to the site speed limit</li> <li>— all paved roads to be swept / cleaned as required</li> <li>— all vehicles to be restricted to designed routes</li> <li>— a water cart to be used on unpaved roads during dry and windy conditions</li> <li>— all trucks leaving the site to pass through an on-site wheel-wash/wheel bath.</li> <li>— all trucks and plant machinery to be maintained and regularly serviced in accordance with the manufacturer’s instructions.</li> <li>— reduce or suspend truck movements where dust is observed to be leaving the site</li> </ul>

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OPERATION	PROPOSED MANAGEMENT MEASURES
Wind erosion (exposed areas and stockpiles)	<ul style="list-style-type: none"> <li>— all internal haul roads, stockpiles and other exposed areas would be wet down using water trucks as required.</li> <li>— the access road from the site entrance to the processing plant would be sealed.</li> <li>— a wheel wash facility would be located near the stockpile area to ensure all truck wheels would be cleaned before leaving the site.</li> <li>— the screening bunds to be constructed in segments and would be covered with soil and grassed as soon as practicable.</li> <li>— all exposed / disturbed areas would be minimised and would comply with the maximum disturbed area at any given time.</li> <li>— temporary dumps would be soiled and grassed, if to be retained more than 6 months</li> <li>— topsoil and overburden bunds would be vegetated within 6 months of construction.</li> <li>— a water cart to be used to dampen exposed areas.</li> <li>— minimise open areas that may be exposed to wind erosion.</li> <li>— topsoil stripping to be avoided during periods of high winds.</li> </ul>
Screening plant	<ul style="list-style-type: none"> <li>— ensure the water bay bars are operational during screening activities</li> <li>— operations would be reduced or ceased where dust is observed to be leaving the Site</li> <li>— screening activities would cease during excessively windy conditions</li> </ul>
Track-out	<ul style="list-style-type: none"> <li>— tailgates to be locked</li> <li>— any spillage from side rails, tail gates and drawbars to be cleared immediately</li> <li>— all trucks to use the wheel wash prior to leaving the Site</li> </ul>
Air monitoring	<ul style="list-style-type: none"> <li>— daily visual dust monitoring by all staff</li> <li>— where dust is observed to be leaving the site, the Quarry Manager must be notified immediately for remedial action</li> <li>— implement an ambient air monitoring program (see section 5.1)</li> </ul>

## 5.1 MONITORING PROGRAM

A monitoring program at the proposed quarry would be prepared for the Project. The following sections provide details of the program.

### 5.1.1 PARAMETERS TO BE MONITORED

The following parameters are proposed to be monitored:

- Monthly dust deposition
- Continuous PM<sub>10</sub> and PM<sub>2.5</sub>
- Continuous meteorological parameters i.e., wind speed and wind direction.

## 5.1.2 LOCATION OF AMBIENT AIR QUALITY MONITORING STATIONS

Where possible, the sampling equipment would be sited in accordance with Australian Standard AS 3580.1.1 – 2007 ‘Methods for the Sampling and Analysis of Ambient Air- Guide to Siting Air Monitoring Equipment’.

Air quality monitoring would be conducted at the following proposed locations as presented in Table 5.2 and Figure 5-1.

Table 5.2 Ambient air monitoring locations

Monitoring location	Monitoring parameter
Air monitoring location 1	Dust deposition PM <sub>10</sub> and PM <sub>2.5</sub> Wind speed and wind direction
Air monitoring location 2	Dust deposition

## 5.1.3 SAMPLING METHODOLOGIES

### 5.1.3.1 DUST DEPOSITION

Dust deposition monitoring would be undertaken at two locations (Table 5.2 and Figure 5-1) in accordance with the sampling methodology AS/NZS: 3580.9.9 – 2017 ‘Methods for Sampling and Analysis of Ambient Air – Determination of suspended particulate matter – Deposited matter – Gravimetric method’.

Dust deposition gauges would initially be deployed at the two proposed monitoring locations. Following one month of sampling (30 days +/-2 days), the dust gauge bottles would be replaced with fresh bottles. The sampled bottles would be sent to a National Association of Testing Authorities (NATA) laboratory for deposition analysis (total insoluble solids).

### 5.1.3.2 CONTINUOUS PM<sub>10</sub> AND PM<sub>2.5</sub>

PM<sub>10</sub> and PM<sub>2.5</sub> would be continuously sampled in real-time using a light scattering instrument. It is noted that this type of instrument does not comply with Australian Standards. However, they are widely used at construction and extractive sites for non-compliance monitoring.

### 5.1.3.3 CONTINUOUS METEOROLOGICAL MONITORING

The light scattering instruments would be fitted with meteorological sensors to monitor for wind speed and wind direction.

## 5.1.4 MONITORING FREQUENCY

Dust deposition monitoring would be conducted on a monthly basis at air monitoring locations 1 and 2 (Figure 5-1).

Continuous PM<sub>10</sub>, PM<sub>2.5</sub> and meteorological monitoring (wind speed and wind direction) would be conducted at one location (air monitoring location 1).

## 5.1.5 QUALITY CONTROL/QUALITY ASSURANCE

Equipment calibration and maintenance would be conducted in accordance with the manufacturer’s instructions, the EPA publication 440.1: A Guide to the Sampling and Analysis of Air Emissions and Air Quality, 2002 and the EPA publication 1955: Guide to ambient air pollution monitoring (to be published).

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## 6 CONCLUSION

Air dispersion modelling using AERMOD was conducted for the following two scenarios to assess potential air quality impacts from the Project:

- Scenario 1: sand extraction at stage 1 while the screening bund is under construction (in the first three years of site operation).
- Scenario 2: sand extraction at stage 3 following completion of the screening bund (beyond five years following commencement of site operations).

Contemporaneous (i.e., the same time period) background data were added to the predicted contribution from the Project to determine cumulative impacts. The modelling results indicate that:

### Scenario 1:

- The cumulative 24-hour average PM<sub>10</sub> and PM<sub>2.5</sub> concentrations (maximum project contribution plus contemporaneous background) at five receptors are predicted to be below the corresponding assessment criteria.
- The cumulative annual average PM<sub>10</sub> concentrations (maximum project contribution plus contemporaneous background) are predicted to be below the assessment criteria at four receptors and exceeds the criterion at R3 due to high background (the background accounting for 96% of the criterion).
- The cumulative annual average PM<sub>2.5</sub> concentrations (maximum project contribution plus contemporaneous background) are predicted to exceed the assessment criterion at all five receptors due to existing background exceedances.
- A 24-hour PM<sub>10</sub> time series analysis at all five receptors indicated that the number of days the 24-hour PM<sub>10</sub> criterion is exceeded is increased by two days at receptors R1, R2 and R3 and by one day at receptors R4 and R5
- A 24-hour PM<sub>2.5</sub> time series analysis at all five receptors indicated that the number of days the 24-hour PM<sub>10</sub> criterion is exceeded is increased by one day at receptor R1 only
- The maximum increase in dust deposition levels at all receptors are below the assessment criterion of 2 g/m<sup>2</sup>/month.
- The maximum annual RCS concentrations at all receptors are estimated to be below the APAC.

### Scenario 2:

- The cumulative 24-hour average PM<sub>10</sub> concentrations (maximum project contribution plus contemporaneous background) at five receptors are predicted to be below the assessment criterion.
- The cumulative 24-hour average PM<sub>2.5</sub> concentrations (maximum project contribution plus contemporaneous background) are predicted to exceed the assessment criterion at R2 and R4 with the background concentration accounting for 90% of the criterion.
- The cumulative annual average PM<sub>10</sub> concentrations (maximum project contribution plus contemporaneous background) are predicted to be below the assessment criteria at all five receptors
- The cumulative annual average PM<sub>2.5</sub> concentrations (maximum project contribution plus contemporaneous background) are predicted to exceed the assessment criterion at all five receptors due to existing background exceedances.
- A 24-hour PM<sub>10</sub> time series analysis at all five receptors indicated that the number of days the 24-hour PM<sub>10</sub> criterion is exceeded is increased by three days at receptor R2 and by two days at receptors R3 and R4
- A 24-hour PM<sub>2.5</sub> time series analysis at all five receptors indicated that the number of days the 24-hour PM<sub>10</sub> criterion is exceeded is increased by three days at receptor R2 and by 2 days at receptor R4

- The maximum increase in dust deposition levels at all receptors are below the assessment criterion of 2 g/m<sup>2</sup>/month
- The maximum annual RCS concentrations at all receptors are estimated to be below the APAC.

The assessment was conducted based on conservative assumptions (refer to section 4.3.4.6) including, but not limited to:

- The emission sources were configured at locations close to the sensitive receptors.
- All emission sources were configured on or above ground level. In practice, some sources would be below ground level especially for sources at the extraction pits.
- Sand extraction for the top 6 m (above groundwater level) was modelled for a whole year while in practice it is not likely to continue for a full year.
- The exposed areas at the extraction pits are likely to be smaller than the modelled area of 40,000 m<sup>2</sup>.

Given these assumptions, actual emissions from both scenarios are expected to be lower than that predicted. In addition, the predicted cumulative exceedances are mainly due to high background concentrations or existing background exceedances.

Implementation of an air quality management plan that focusses on a risk-based approach to minimising dust so far as reasonably practical together with an ambient air monitoring program that would assist in evaluating the proposed control measures and confirm the level of impact that has been predicted for the two scenarios assessed.

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## 7 LIMITATIONS

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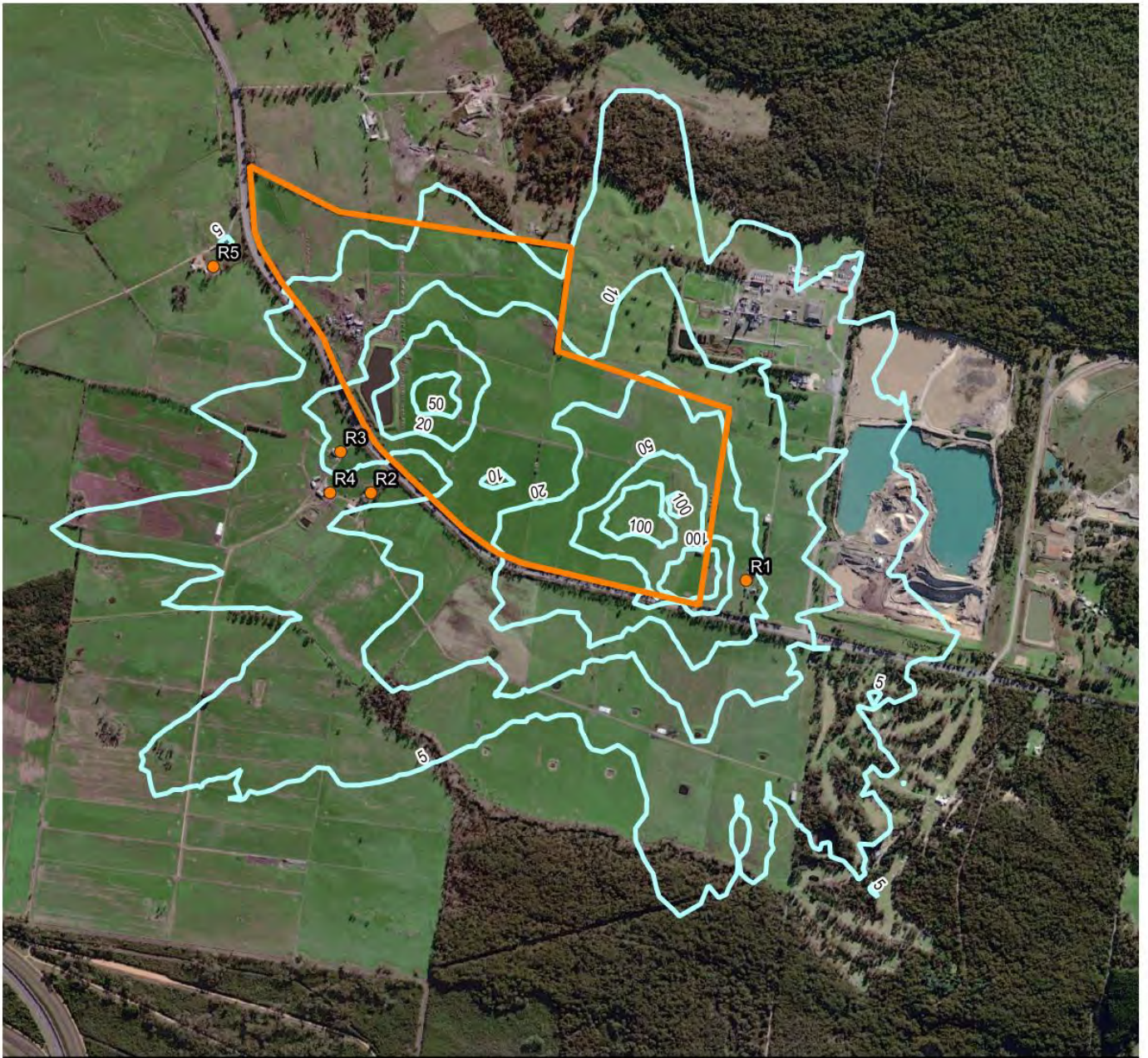
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# APPENDIX A

## CONTOUR PLOTS

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**Legend**

- Site Boundary
- 24hr average PM10 ( $\mu\text{g}/\text{m}^3$ ) - Scenario 1
- Sensitive Receptors

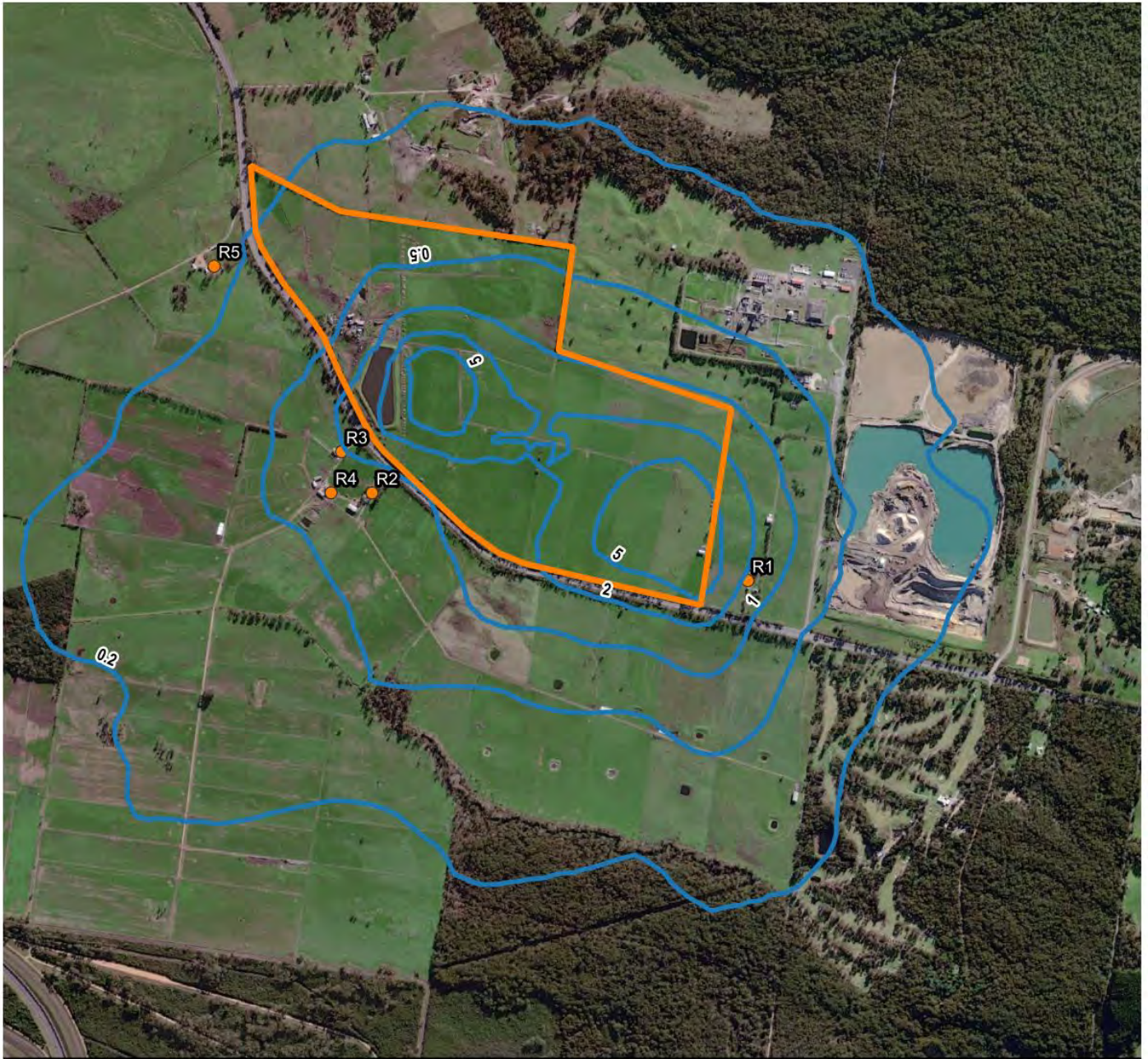
0 100 200 300 400 m





24-hour average PM10 under scenario 1

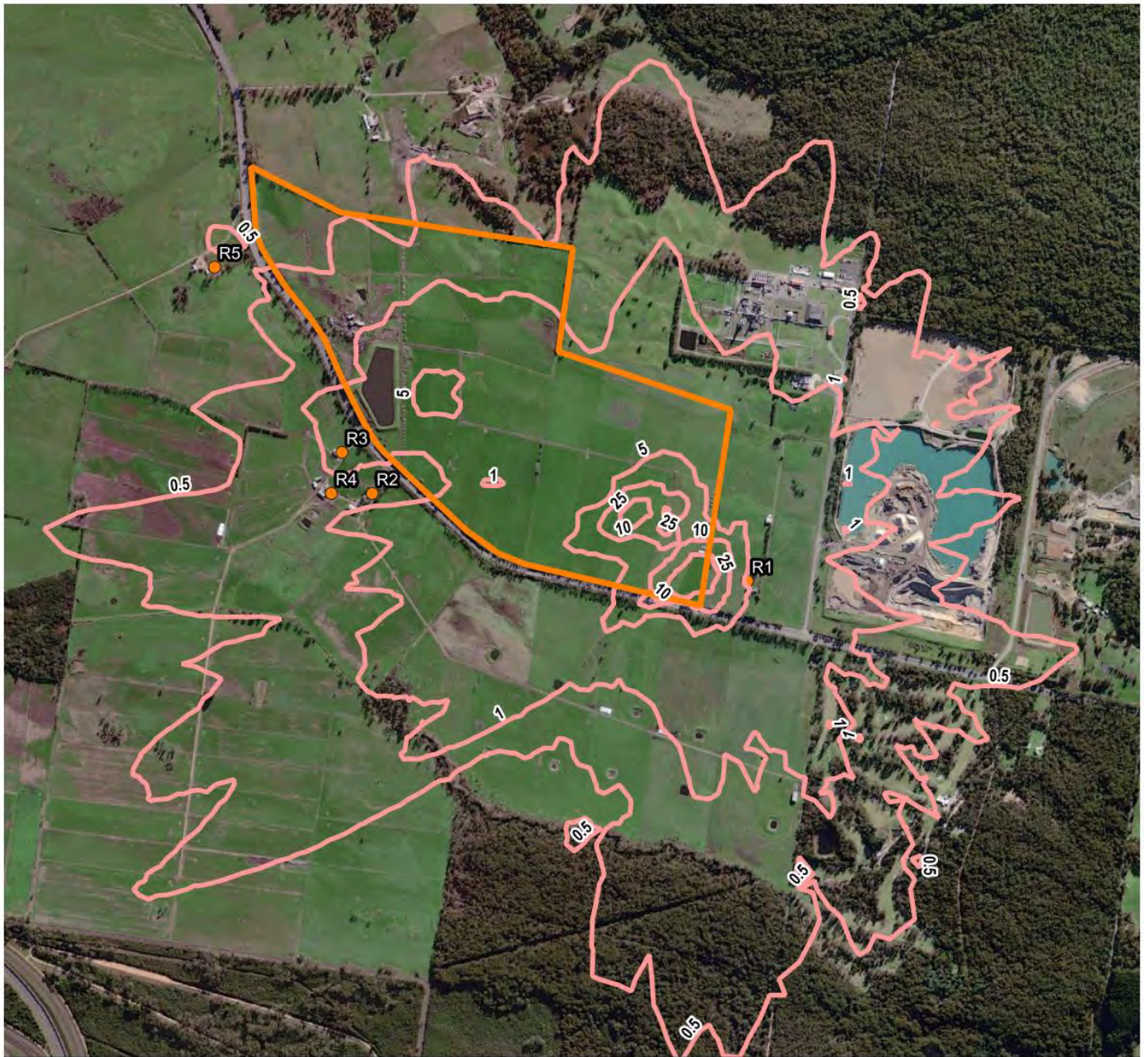
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<p><b>Legend</b></p> <ul style="list-style-type: none"> <li><span style="border: 1px solid orange; display: inline-block; width: 15px; height: 10px; margin-right: 5px;"></span> Site Boundary</li> <li><span style="color: orange; font-size: 12px; margin-right: 5px;">●</span> Sensitive Receptors</li> <li><span style="border-bottom: 1px solid blue; width: 20px; display: inline-block; margin-right: 5px;"></span> Annual average PM10 (<math>\mu\text{g}/\text{m}^3</math>)</li> </ul>	<p>0 100 200 300 400 m</p> 		<p>Annual average PM10 under scenraio 1</p>
<p><a href="http://www.wsp.com">www.wsp.com</a></p>			

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**Legend**

- Site Boundary
- Sensitive Receptors
- 24hr average PM2.5 ( $\mu\text{g}/\text{m}^3$ )

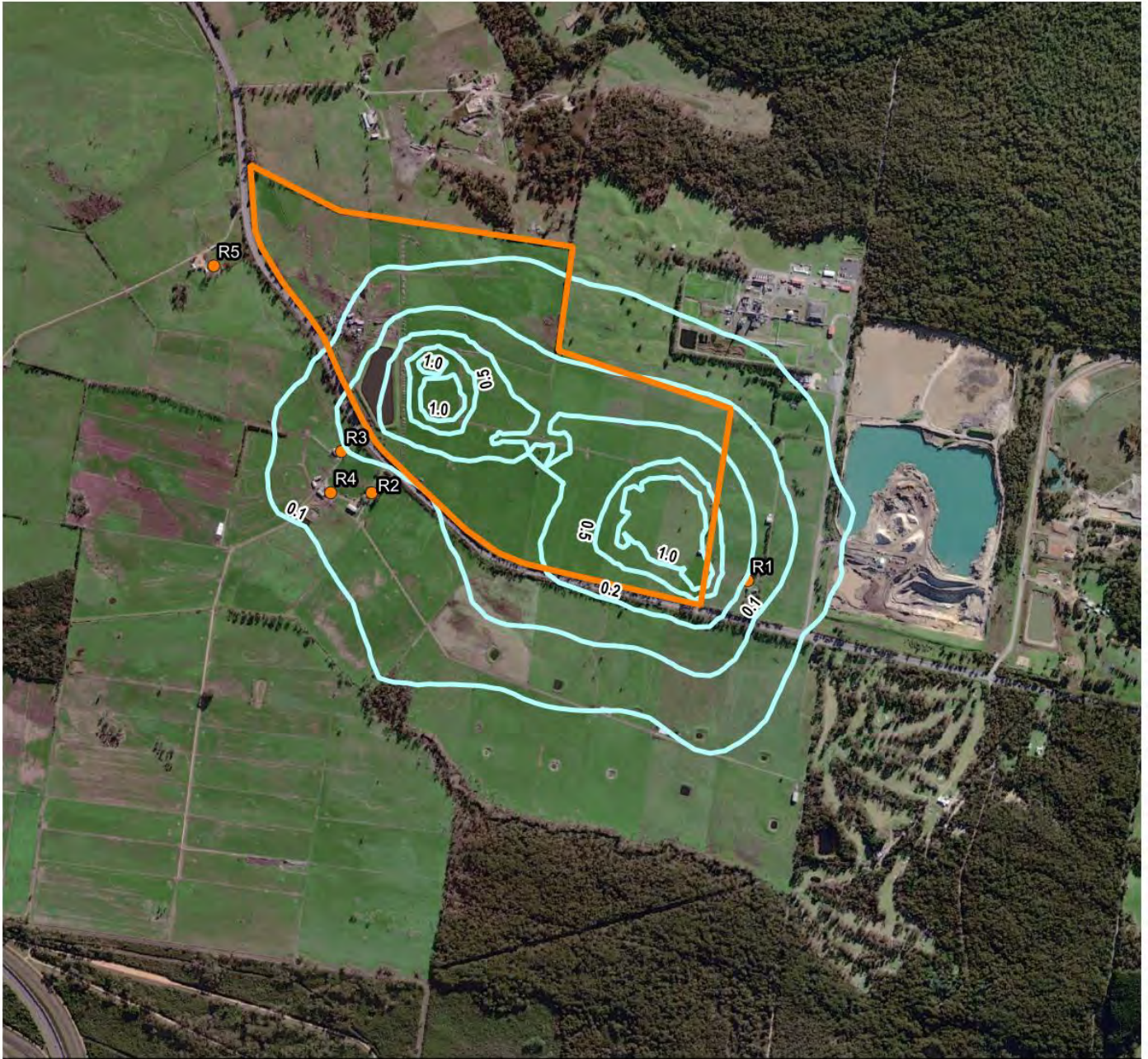
0 100 200 300 400 m



24-hour average PM2.5  
under scenraio 1

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**Legend**

- Site Boundary
- Sensitive Receptors
- Annual average PM2.5 (µg/m3)

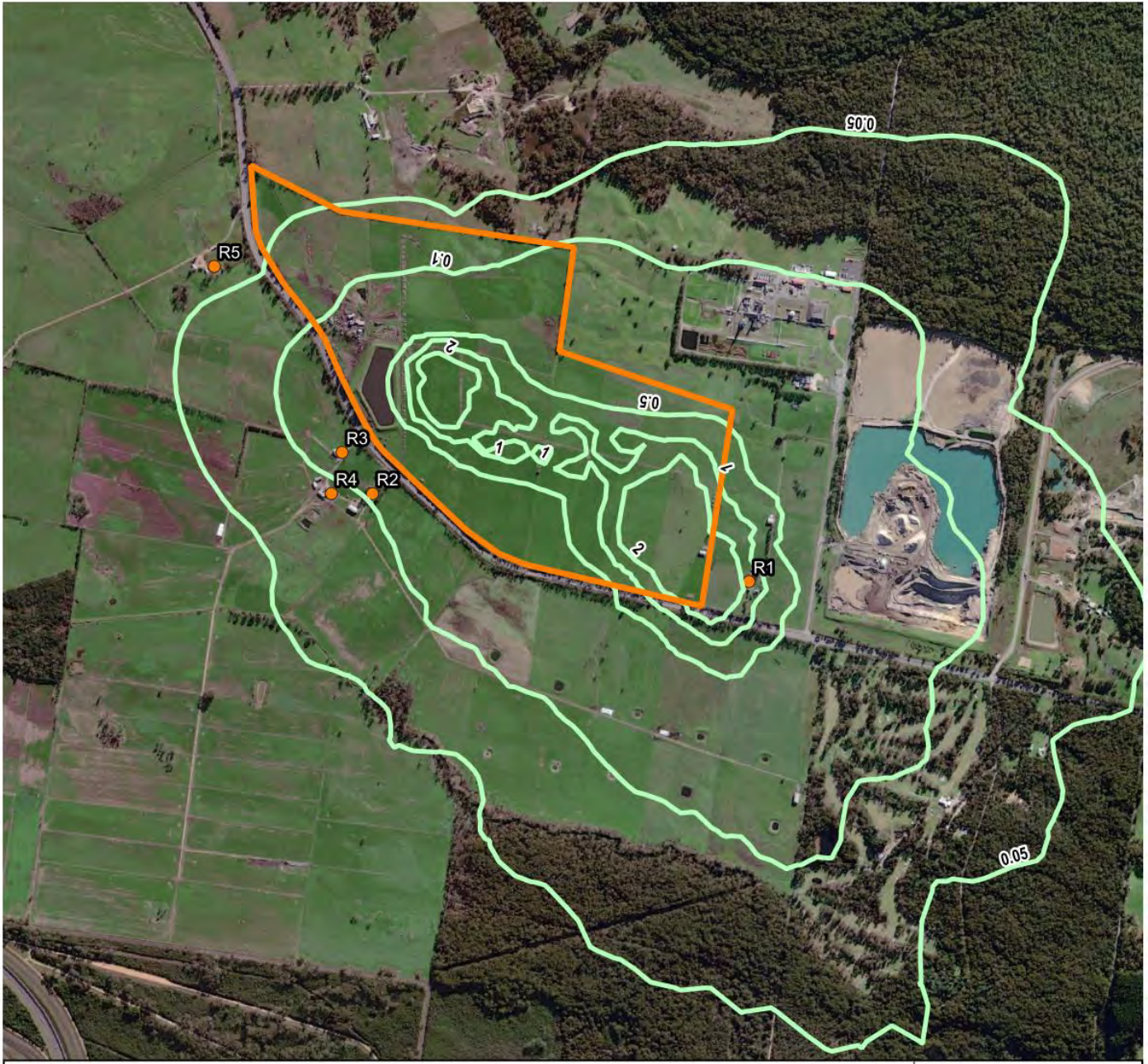
0 100 200 300 400 m



Annual average PM2.5 under  
scenraio 1

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**Legend**

- Site Boundary
- Sensitive Receptors
- Dust deposition (g/m<sup>2</sup>/month)

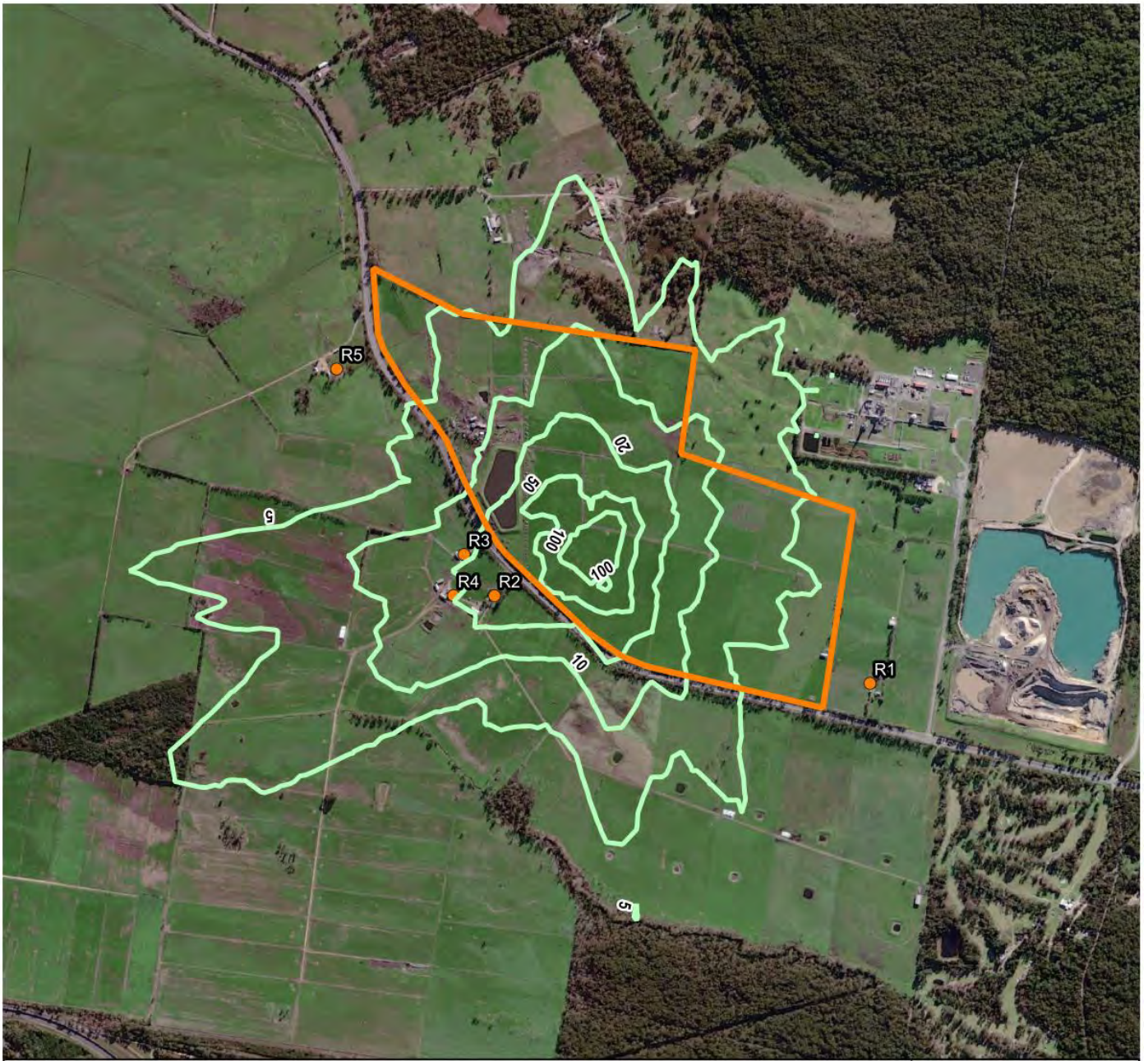
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Monthly dust deposition  
under scenraio 1

[www.wsp.com](http://www.wsp.com)

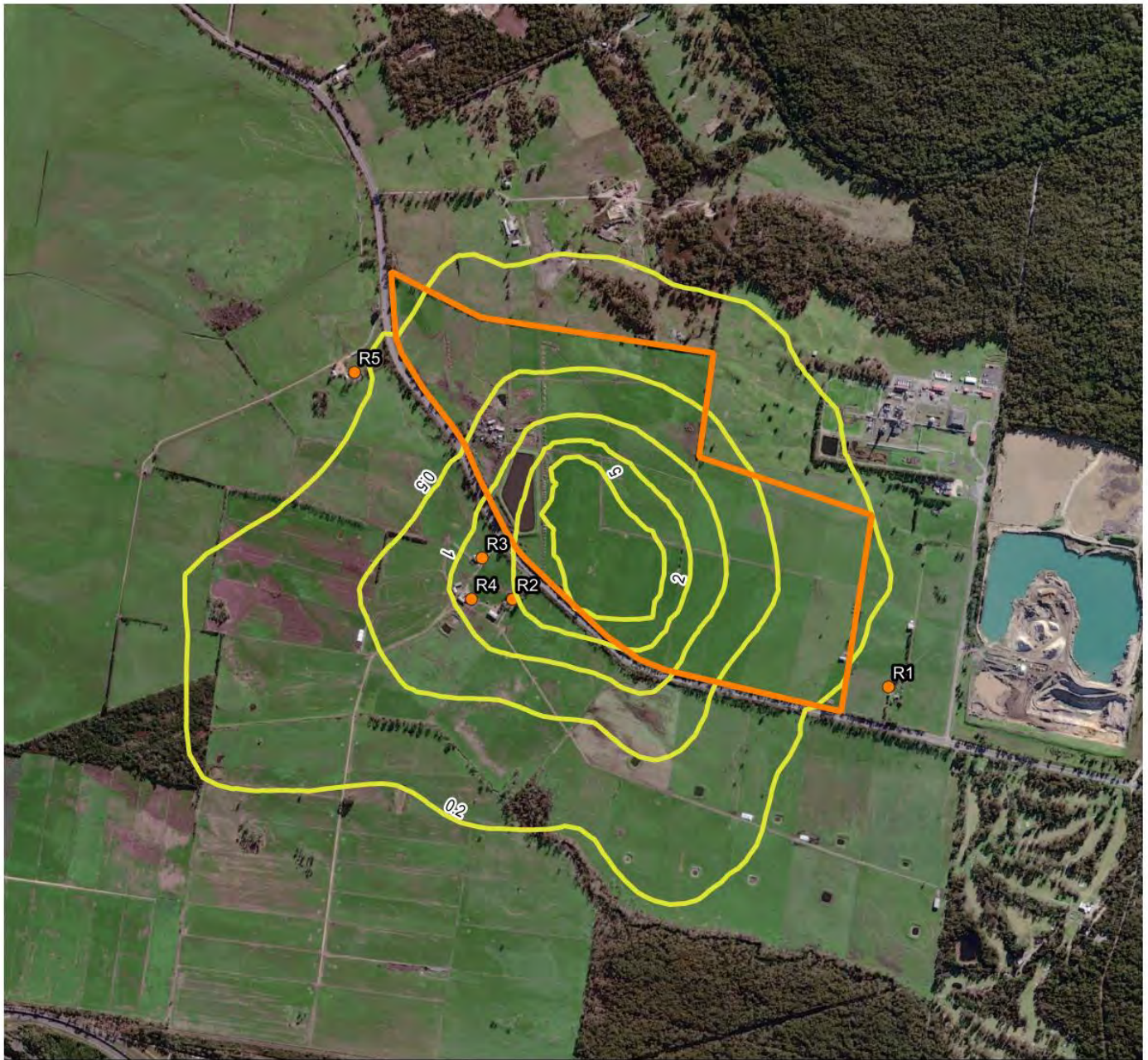
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<p><b>Legend</b></p> <ul style="list-style-type: none"> <li><span style="border: 1px solid orange; display: inline-block; width: 15px; height: 10px; margin-right: 5px;"></span> Site Boundary</li> <li><span style="color: orange; font-size: 12px; margin-right: 5px;">●</span> Sensitive Receptors</li> <li><span style="border-bottom: 1px solid green; width: 20px; display: inline-block; margin-right: 5px;"></span> 24hr average PM10 (<math>\mu\text{g}/\text{m}^3</math>)</li> </ul>	<p>0 100 200 300 400 m</p> 	<p>24-hour average PM10 under scenraio 2</p>
<a href="http://www.wsp.com">www.wsp.com</a>		

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**Legend**

- Site Boundary
- Sensitive Receptors
- Annual Average PM10 (µg/m3)

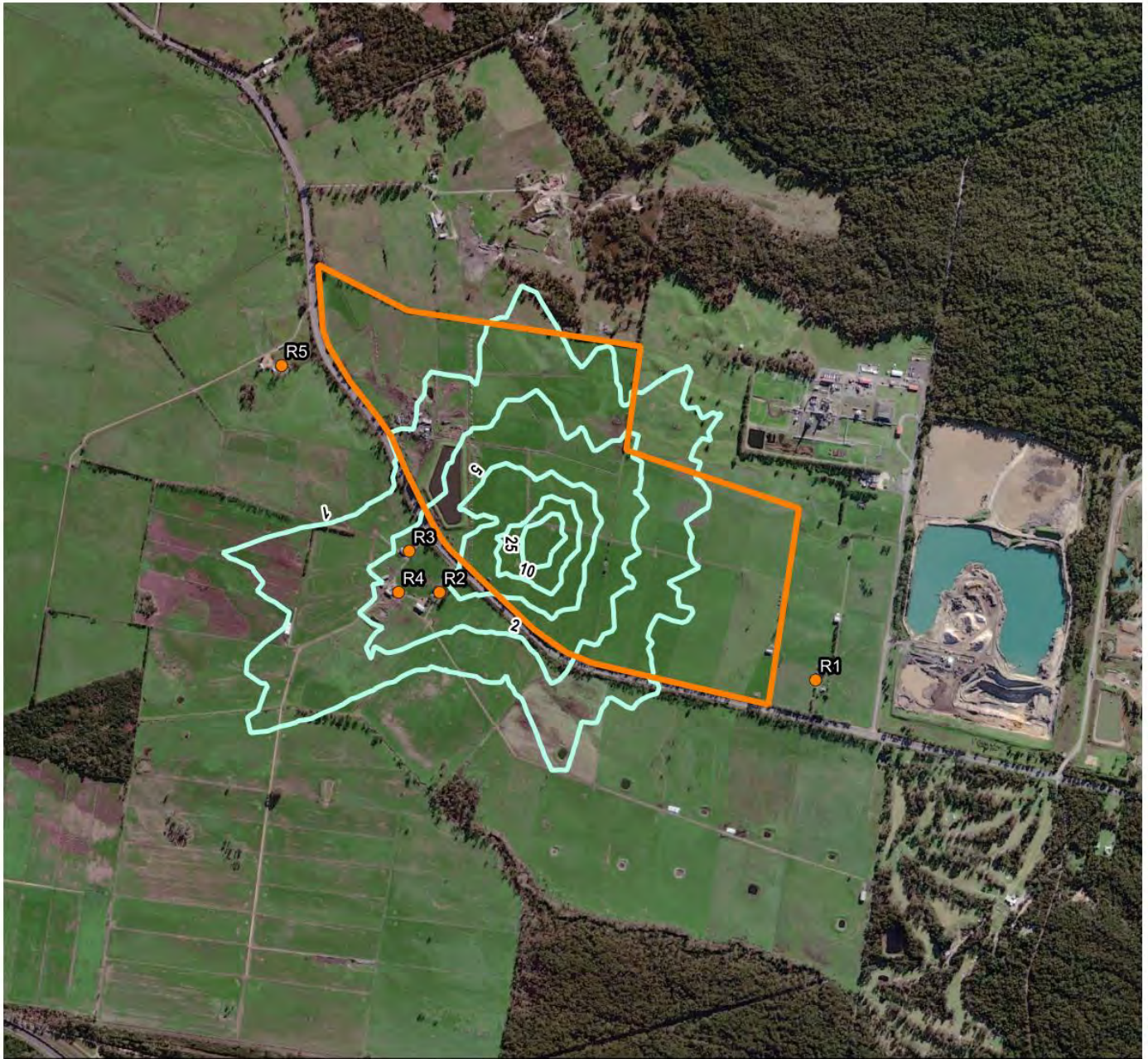
0 100 200 300 400 m



Annual average PM10 under  
scenraio 2

[www.wsp.com](http://www.wsp.com)

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**Legend**

- Site Boundary
- Sensitive Receptors
- 24hr Average PM2.5 ( $\mu\text{g}/\text{m}^3$ )

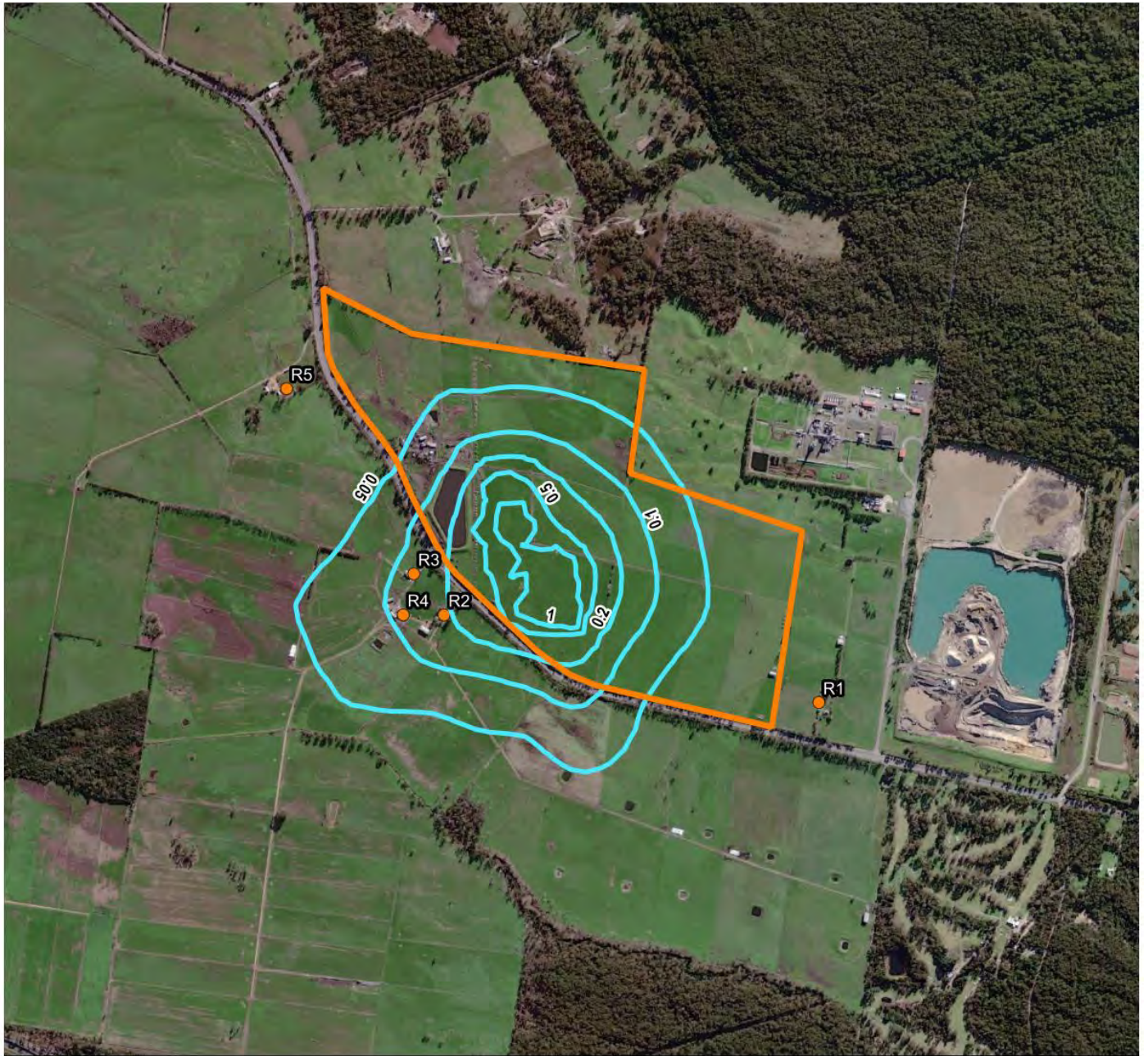
0 100 200 300 400 m



24-hour average PM2.5  
under scenraio 2

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**Legend**

- Site Boundary
- Sensitive Receptors
- Annual Average PM2.5 ( $\mu\text{g}/\text{m}^3$ )

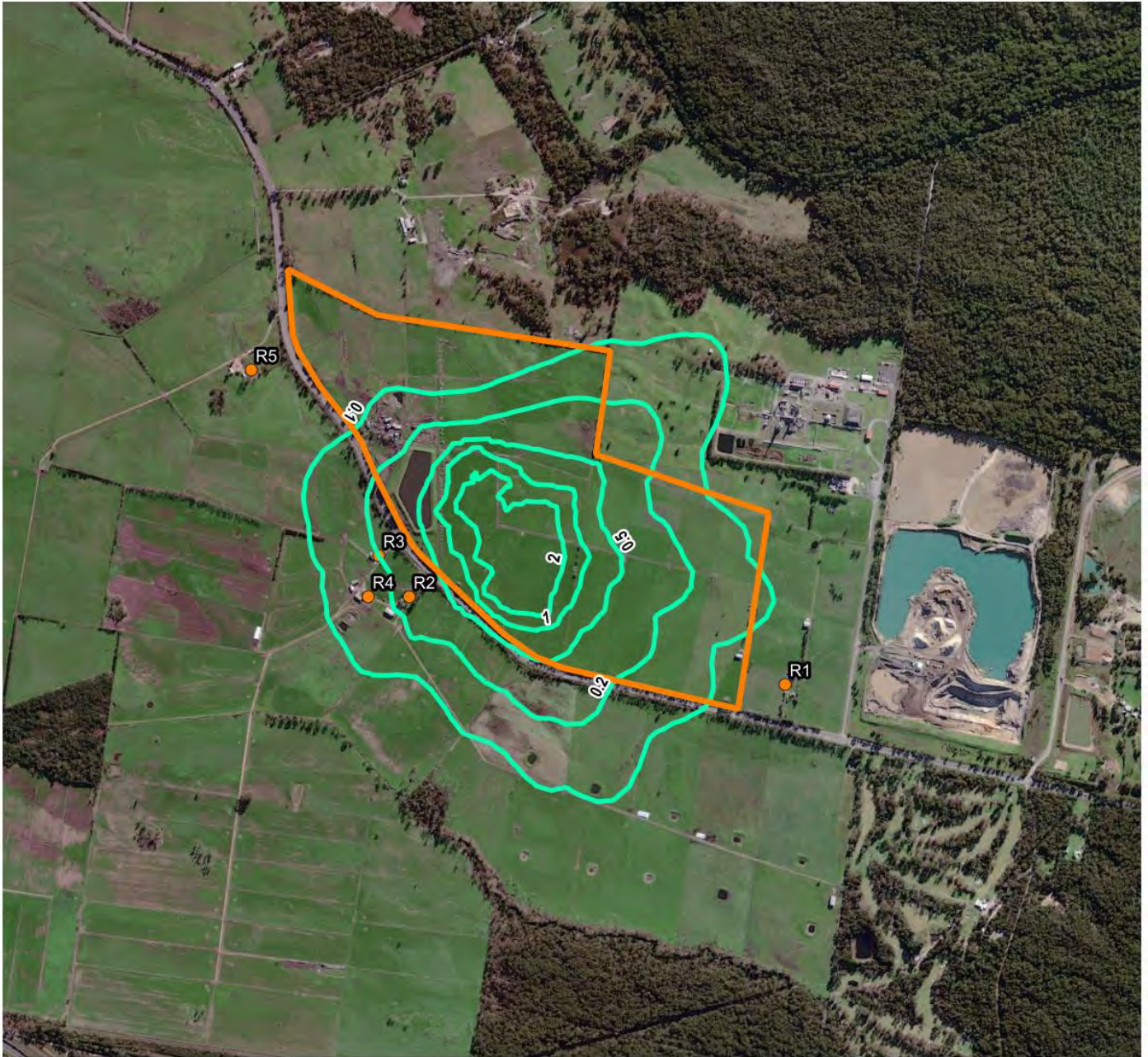
0 100 200 300 400 m



Annual average PM2.5 under scenario 2

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**Legend**

- Site Boundary
- Sensitive Receptors
- Dust deposition (g/m<sup>2</sup>/month)

0 100 200 300 400 m



Monthly dust deposition  
under scenraio 2

[www.wsp.com](http://www.wsp.com)

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**NOISE**  
**VIBRATION**

# LANG LANG SAND PIT

Acoustic Report for Work Authority  
No: WA 007541

For

**AURORA CONSTRUCTION MATERIALS**

DOC. REF: V299-01-P ACOUSTIC REPORT (R3)  
20 JUNE 2022

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Enfield Acoustics Pty Ltd  
ABN 15 628 634 391  
Ph: +61 3 9111 0090  
PO Box 920  
North Melbourne, VIC 3051

Project Lang Lang Sand Pit  
Subject Acoustic Report for Work Authority No: WA 007541  
Client Aurora Construction Materials  
Document Reference V299-01-P Acoustic Report (r3).docx  
Date of Issue 20 June 2022

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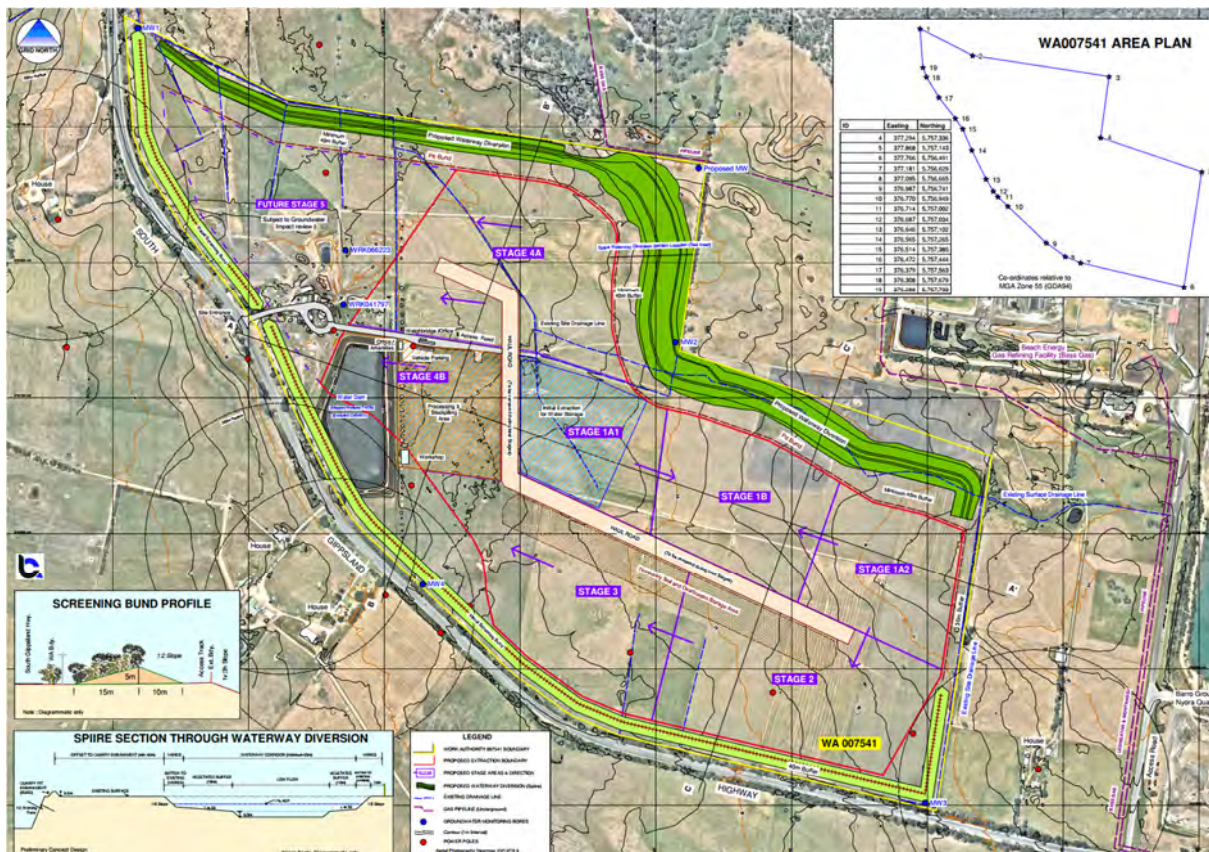


## 1 Introduction & Scope

Enfield Acoustics has been engaged by Aurora Construction Materials (ACM) to assess potential noise impacts from the proposed sand quarry operation at 5575 South Gippsland highway, Lang Lang (Subject Land).

This report is written in support of Work Authority No: WA 007541, which proposes extraction, processing sale of sand resource on the Subject Land. Our instruction is that the operational hours proposed on the Subject Land will be 6am to 6pm Monday-Saturday for extraction, processing and sales.

Extraction is proposed over 5 stages across the Subject Land. The WA plan is shown below:



To this end, Enfield Acoustics has:

1. Visited the Subject Land to survey nearby noise sensitive uses;
2. Conducted attended background noise monitoring to establish noise limits in accordance with EPA guidelines and policies;
3. Visited another benchmark sand quarry to obtain empirical noise data;
4. Prepared 3D computational noise modelling to assess potential noise impacts from the Subject Land proposal; and
5. Recommended noise mitigation measures where required so that the Subject Land can comply with the relevant noise limits.



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This assessment has been conducted in reference to Site Layout Plan (Plans) prepared by BCA Consulting, dated 17 March 2022.

## 2 Site Inspection

Enfield Acoustics visited the Subject Land between 6am to 7am on 23 September 2020 to survey nearby sensitive uses and to conduct attended background noise monitoring. We note that relatively high volumes of traffic were observed on the South Gippsland Highway.

Nearby sensitive uses were identified as follows:

1. Residential dwelling at 5755 South Gippsland Highway, located approximately 150m East of the Subject Land boundary;
2. Residential dwelling at 5620 South Gippsland Highway, located approximately 120m Southwest of the Subject Land boundary; and
3. Residential dwelling at 5520 South Gippsland Highway, located approximately 160m West of the Subject Land boundary.

Refer to the site map below for locations of nearby sensitive uses and monitoring survey locations.



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The following background noise levels were measured:

Location	Background Noise Level, $L_{A90}$
Location A – 6am to 6.15am	50dB(A)
Location B – 6.15am to 6.30am	49dB(A)

## 3 Policy Requirements

Noise from any earth resource use must comply with the EP Regulations 2021 and *Publication 1826: Noise Limit and Assessment Protocol for the Control of Noise from Commercial, Industrial and Trade Premises and Entertainment Venues* (Noise Protocol).

Given that elevated background noise was observed at all identified sensitive uses (due to high volumes of traffic), the Subject Land and surrounding uses are considered to be within a ‘background-relevant area’ as defined by the Noise Protocol. We note that this is normal where industry proposes to operate between defined ‘Night’ and ‘Day’ periods (i.e. 6am-7am).

The Noise Protocol proposes the following noise limits for earth resource uses located within ‘background-relevant areas’:

- ‘Day’ period (7am to 6pm) – Background level + 8dB(A)
- ‘Night’ period (10pm to 7am) – Background level + 5dB(A)

Based on the lowest background noise level measured for the proposed operating hours, the following noise limit applies between 6am-7am:

Location	Noise Protocol Limit
All identified sensitive uses	54dB(A)

It is noted that the noise limit would be higher for the ‘Day’ period, however this is not deemed to be material for this assessment unless further operational controls are considered for different periods of the day (e.g. extraction only after 7am).

The Noise Protocol considers 30-minute average energy noise emissions, meaning that the relevant assessment metric being considered is  $L_{Aeq-30min}$ , dB(A).

## 4 Assessment

### 4.1 Noise Protocol Assessment

Key noise sources from the proposal include:

1. Excavator, dump trucks and front-end loader working in the extraction area;
2. Sales trucks with front end loaders working in stockpile areas; and
3. Processing facility.

Enfield Acoustics visited Sand Supplies, located at 1113 Bass Highway (processing and sales) and the Grantville Quarry (extraction), to obtain benchmark noise measurements on 30 March 2021. Our instruction is that the proposal is for equivalent plant operations and that no extraction is to be carried out on the Subject Land using rock breakers.

The following noise levels were recorded:

Description	Measured Noise Level, $L_{Aeq}$
<p><b>Processing Facility</b> at a distance of 85m</p> <p><u>Audible noise sources include:</u></p> <ul style="list-style-type: none"> <li>- Processing screens</li> <li>- Sand agitators</li> <li>- Pumps</li> <li>- Sand Washing</li> </ul>	58dB(A)
<p><b>Extraction Area</b> at a distance of 150-200m</p> <p><u>Noise sources include:</u></p> <ul style="list-style-type: none"> <li>- Dump trucks</li> <li>- Excavator</li> <li>- Front end loaders</li> </ul>	57dB(A)
<p><b>Sales and Stockpile Area</b> at a distance of 50m</p> <p><u>Noise sources include:</u></p> <ul style="list-style-type: none"> <li>- Front end loaders</li> </ul>	64dB(A)

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*Processing Facility with Screen*



*Measurement of Extraction Activities*



*Measurement of Front-End Loader*

Where our office was unable to isolate noise measurements for specific mobile plant (i.e. sales and dump trucks) during the site visit, we have consulted previous measurements captured at other quarry sites, noting that these sources are not unique to sand quarrying.

Sound Power Levels (SWL) were derived for use in our noise model, as follows:

Item	dB(A)	63Hz	125Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz
Processing facility – SWL $L_{Aeq30-min}$	108	114	101	99	107	101	101	95
Extractive activities – SWL $L_{Aeq30-min}$	112	122	113	110	109	105	106	97
Front end loader – SWL $L_{Aeq30-min}$	109	117	118	112	106	102	98	95
Sales trucks – SWL $L_{max passby}$	108	112	112	105	104	104	100	93
Dump trucks – SWL $L_{max passby}$	113	117	117	110	109	109	105	98

Based on our observations of the benchmark site and instructions from the Applicant, we have assumed the following in our noise model:

- Up to two front end loaders operating within the processing and stockpiling area;
- Up to 15 sales trucks entering and exiting the Subject Land within a 30-minute period during peak periods

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- Up to 10 dump truck movements within the designated 'Haul Road' within a 30-minute period
- Extraction generally begins at natural ground level, after topsoil and overburden is stripped

To assess the proposal, a 3D computational noise model has been generated using the software package CadnaA using the input data and assumptions presented in the sections above. All proposed extraction Stages indicated on the WA Plan have been modelled, representative of a worst-case operational condition where mobile plant in the extraction area is sited closest to sensitive receptors.

The model considers acoustic propagation factors including attenuation from screening, noting that the 5m high bunds indicated on the Plans have been included in the model. The model also assumes worst-case meteorological conditions, meaning that downwind noise propagation is assumed in all directions. The modelling has been carried out in accordance with ISO 9613.

The results of the model indicate that noise emissions from the proposal are expected to comply with the Noise Protocol limits for all proposed Stages of extraction, with the following worst-case noise levels modelled:

Location <sup>^</sup>	Stage	Modelled Noise Level, L <sub>Aeq</sub>	'Night' Compliance (6am-7am)	'Day' Compliance (7am-6pm)
5755 South Gippsland Highway	Stage 1A1 & 1A2	51 dB(A)	YES	YES
5620 South Gippsland Highway	Stage 3 & 4B	51 dB(A)	YES	YES
5520 South Gippsland Highway	Stage 5	48 dB(A)	YES	YES
Notes:	<sup>^</sup> Measurement location taken at 10m from the boundary of the dwelling in accordance with the Noise Protocol. Non-habitable spaces (e.g. sheds or garages) are not considered.			

Noise modelling contours for all stages are presented in Appendix A.

Based on our assessment and review of the WA Plans, the proposal is expected to comply with the Noise Protocol over all operation hours proposed. We note that the outcome is assisted by the background noise environment observed during the morning shoulder period (due to proximity to a major highway). This results in higher noise limits than what would occur at quarries located in rural areas having lower background noise environments.

Further, our assessment is considered conservative as the model assumes extraction only occurring during initial Stages, where plant will be closer to natural ground level. As extraction progresses, pit formation will provide increased screening of noise.

On this basis, Enfield Acoustics is satisfied that the risk of adverse noise impacts from the Subject Land use is low and that the Work Authority can be approved.

## 4.2 Cumulative Impacts

Noise from all commercial and industrial uses are required to cumulatively comply with the Noise Protocol. Based on the context of the site, the worst impacted sensitive use with regards to cumulative impacts is likely to be at 5755 South Gippsland Highway.

The above sensitive use is adjacent to two other industrial uses, as follows:

- BassGas facility to the North
- Nyora Quarry to the East

During our site inspection between 6am to 6.30am, we confirm that no material noise emission was observed from either uses at either Location A or B, noting that the ambient background environment was dominated by traffic noise from the South Gippsland Highway.

To that end, no cumulative noise impacts are expected to occur as a result of the Subject Land use, in particular during the most sensitive hours relevant to the Application.

Regardless, assuming that both BassGas and Nyora Quarry noise emissions are at their permitted limits (being 54dB during the 'Night' and >57dB during the 'Day'), the risk of any cumulative impacts are considered minor, given that:

1. Cumulative impacts are in the order of 2dB(A) when the quarry is operating under the worst-case scenario (Stage 1A2) during the 'Night' period.
2. Cumulative impacts are in the order of 1dB(A) when the quarry is operating under the worst-case scenario (Stage 1A2) during the 'Day' period. However, it is noted that noise limits during the 'Day' hours are expected to be at least 3dB higher than the 'Night' period limits between 6am to 7am, and would likely offset any risk of non-compliance resulting from potential cumulative impacts.
3. Any risk of cumulative impacts is further mitigated as the project progresses down the pit level or as plant and equipment moves away from the boundary.

Further, our attended measurement at Location B indicated that the background level was 49dB(A)  $L_{90}$ , which further affirms that any continuous noise emission from both industries is unlikely to be operating at their permissible limits.

Overall, Enfield Acoustics is satisfied that the risk of non-compliance resulting from cumulative noise impacts is considered low.

## 4.3 General Environmental Duty

Under the Environment Protection Act 2017, any industry is required to fulfill their General Environmental Duty (GED), as follows:

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- (1) A person who is engaging in an activity that may give rise to risks of harm to human health or the environment from pollution or waste must minimise those risks, so far as reasonably practicable.

In effect, the GED requires that environmental impacts are minimised by reasonable and practicable means, however the GED does not set out prescriptive or objective targets.

Further guidance of the GED is provided in EPA Publication 1741, extract as follows:

### Working under the general environmental duty

Generally speaking, most businesses would not have to do anything differently. Most businesses already follow good management practices and would find that these aid compliance with the GED. This can be through following responsibilities under OHS laws, meeting industry standards, adopting industry better management practices, and following other relevant legislation related to the environment. In effect, the GED just makes it clear that it is your responsibility to manage your business to reduce risk to the environment.

For businesses that may not be clear on what they should be doing to protect the environment, the GED also helps. By focusing on how you operate, the GED provides a clear framework that EPA and you can follow to understand risks and take steps to address them.

It is difficult to determine what is reasonable and practicable in the context where noise emissions:

- Are expected to reasonably comply with the Noise Protocol
- Measures to mitigate noise have been demonstrated
- The risk of adverse impacts is considered low (by virtue of complying with the objective targets of the Noise Protocol)

The assessment of practicability also requires input by others as it includes assessment of other engineering requirements, costing etc, that extends beyond the scope of an acoustic consultant.

However, guidance on the process of determining what is reasonable and practicable is provided within EPA Publication 1856, as follows:

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To show you have thought about what is reasonably practicable, consider these **six factors**:

1. **Eliminate first:** Can you eliminate the risk?
2. **Likelihood:** What's the chance that harm will occur?
3. **Degree (consequence):** How severe could the harm be on human health or the environment?
4. **Your knowledge about the risks:** What do you know, or what can you find out, about the risks your activities pose?
5. **Availability and suitability:** What technology, processes or equipment are available to control the risk? What controls are suitable for use in your circumstances?
6. **Cost:** How much does the control cost to put in place compared to how effective it would be in reducing the risk?

Based on the guidance above, our comments as follows:

## Eliminate First

Extractive industries rely on a multitude of plant and equipment to operate and noise emissions cannot be eliminated entirely.

## Likelihood

Extractive industries that carry the highest likelihood of noise impacts usually occur when rock breaking or blasting occurs, which is not proposed for the site.

## Degree (consequence)

The degree of harm is usually correlated to the existing ambient background environment, which is considered high given the context of the site. To this end, our view is that the degree of harm is considered tempered for sensitive uses nearby the Subject Land and the area is not considered particularly sensitive to noise.

## Knowledge about the Risks

Benchmark noise measurements and site observations of a comparable operation have been conducted as part of our assessment. This informs the impacts of the proposed quarry and is considered more reliable than non-benchmarked noise data. This assists in eliminating some risk from inconsistent assumptions used in the noise model.

## Availability and Suitability

Generally, new quarries are likely to rely on newer and more current technologies as a general approach to improve the efficiency of the operation. This inherently compliments efforts in reducing noise impacts as newer equipment tend to have lower noise emissions compared to older equipment with older technologies.

Regardless, in complying with the GED, we recommend that the Applicant considers the following:

- Where extraction occurs close to sensitive use boundaries, efforts should be made to limit noisy activities during the 'Night' period (e.g. between 6am to 7am)
- Install broadband reversing alarms on vehicles and machinery in preference to 'beeper' reversing alarms
- Turning off plant and equipment when not in use
- Maintain plant and equipment to ensure that noise emissions do not increase over time

### Cost

Extensive earth bunding has already been proposed. Given that compliance with the Noise Protocol is expected with the proposed bunding, we do not consider increasing the extents or heights of the earth bunds to provide improvements proportional to the cost impacts of additional mitigation.

Earth bunding serves to protect sensitive uses primarily during initial extraction. As extraction progresses down to pit level, there are diminishing returns from the bunding in terms of noise mitigation, therefore the effectiveness of increased bunding to further mitigate noise is unlikely to be material over the life of the project.

Overall, compliance with the GED would be an on-going requirement for the Applicant to implement during operation, however our view is that no further demonstration is required at this stage with respect to noise impacts.

## 5 Conclusion and Recommendations

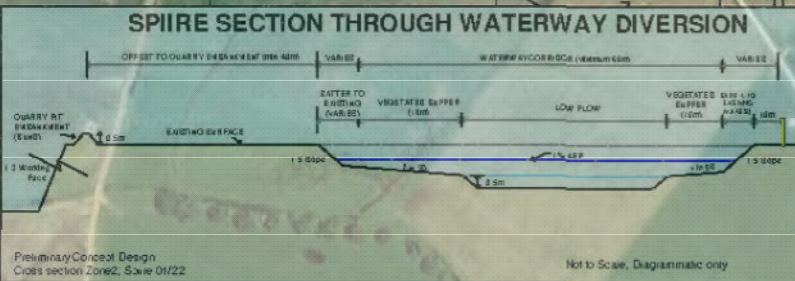
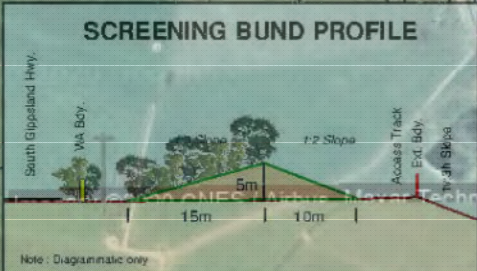
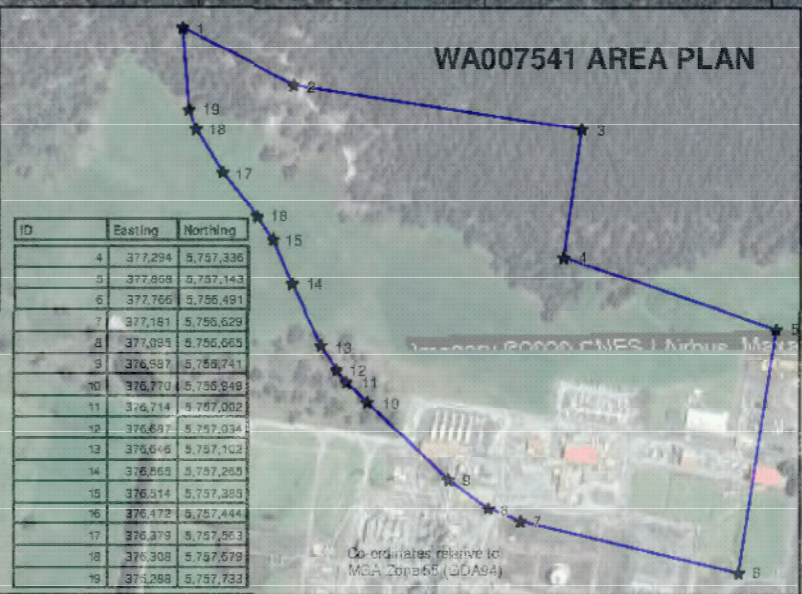
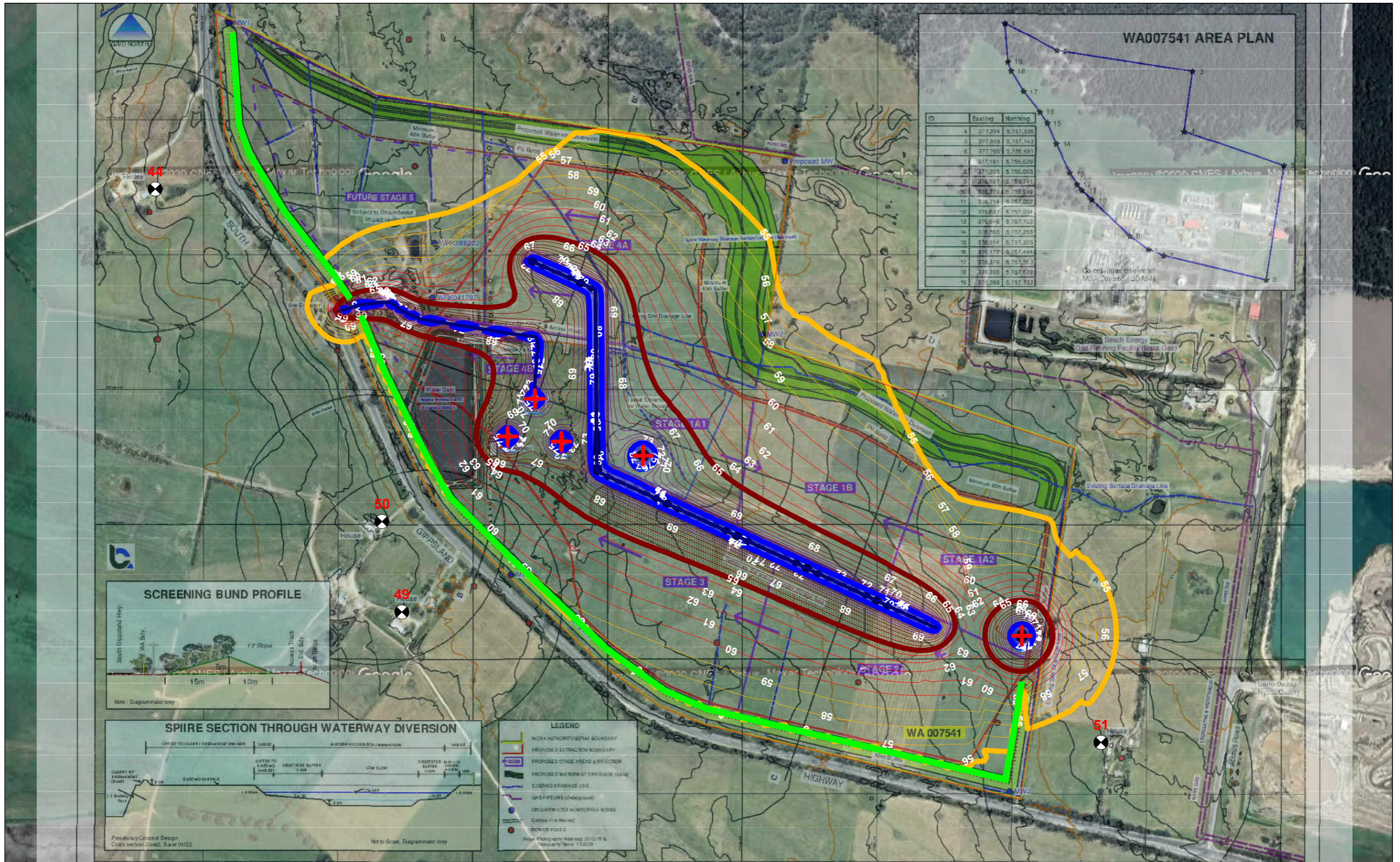
Enfield Acoustics is satisfied that the proposed use of the Subject Land as a sand quarry will not result in adverse noise impacts and the Work Authority can be approved under the following conditions:

1. Earth bunds are to be constructed as shown on the WA Plans.
2. The hours of operation are between 6am-6pm Monday to Saturday

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## Appendix A: Noise Modelling Contours

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### LEGEND

- WORK AUTHORITY 007541 BOUNDARY
- PROPOSED EXTRACTION BOUNDARY
- PROPOSED STAGE AREAS & DIRECTION
- PROPOSED WATERWAY DIVERSION (Spillway)
- EXISTING DRAINAGE LINE
- GAS PIPELINE (Underground)
- GROUNDWATER MONITORING BORE
- Contour (1m Interval)
- POWER POLES

Scale: 1: 6608 @ A3

Legend:

- Point Source
- Line Source
- Embankment
- Ground Absorption
- Contour Line
- Receiver
- Calculation Area

Noise Level - dB(A)

- 55.0 <= ... < 60.0
- 60.0 <= ... < 65.0
- 65.0 <= ... < 70.0
- 70.0 <= ... < 75.0
- 75.0 <= ... < 80.0
- 80.0 <= ... < 85.0
- 85.0 <= ...



### ENFIELD ACOUSTICS NOISE VIBRATION

PO Box 920  
North Melbourne, VIC 3051  
P: 03 9111 0090

### ACM - LANG LANG QUARRY

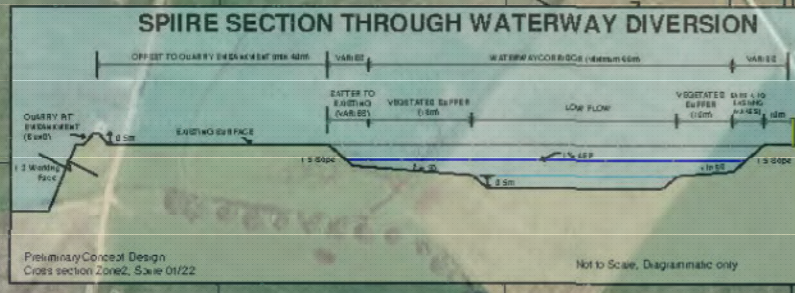
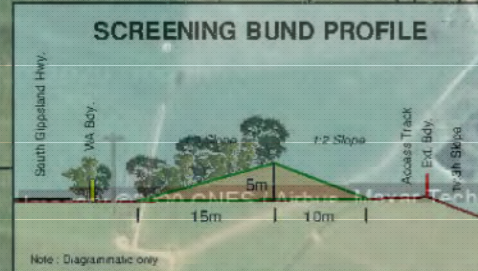
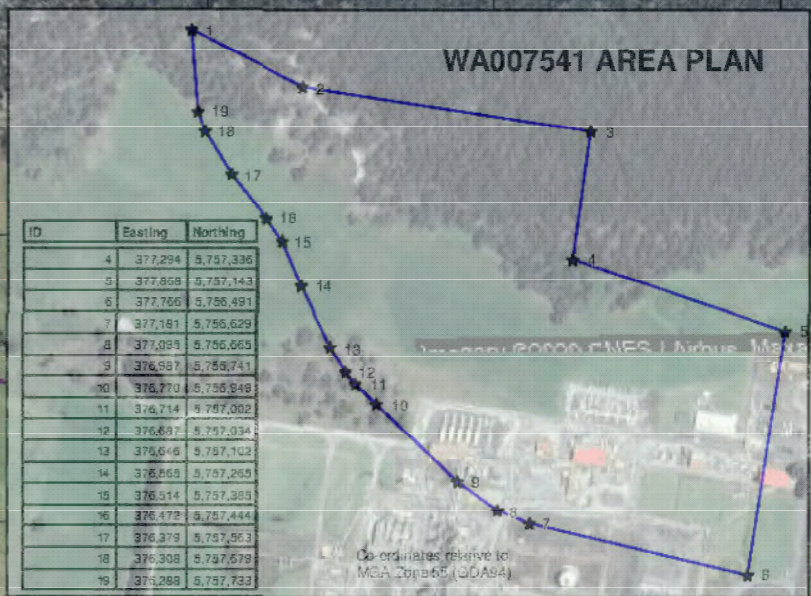
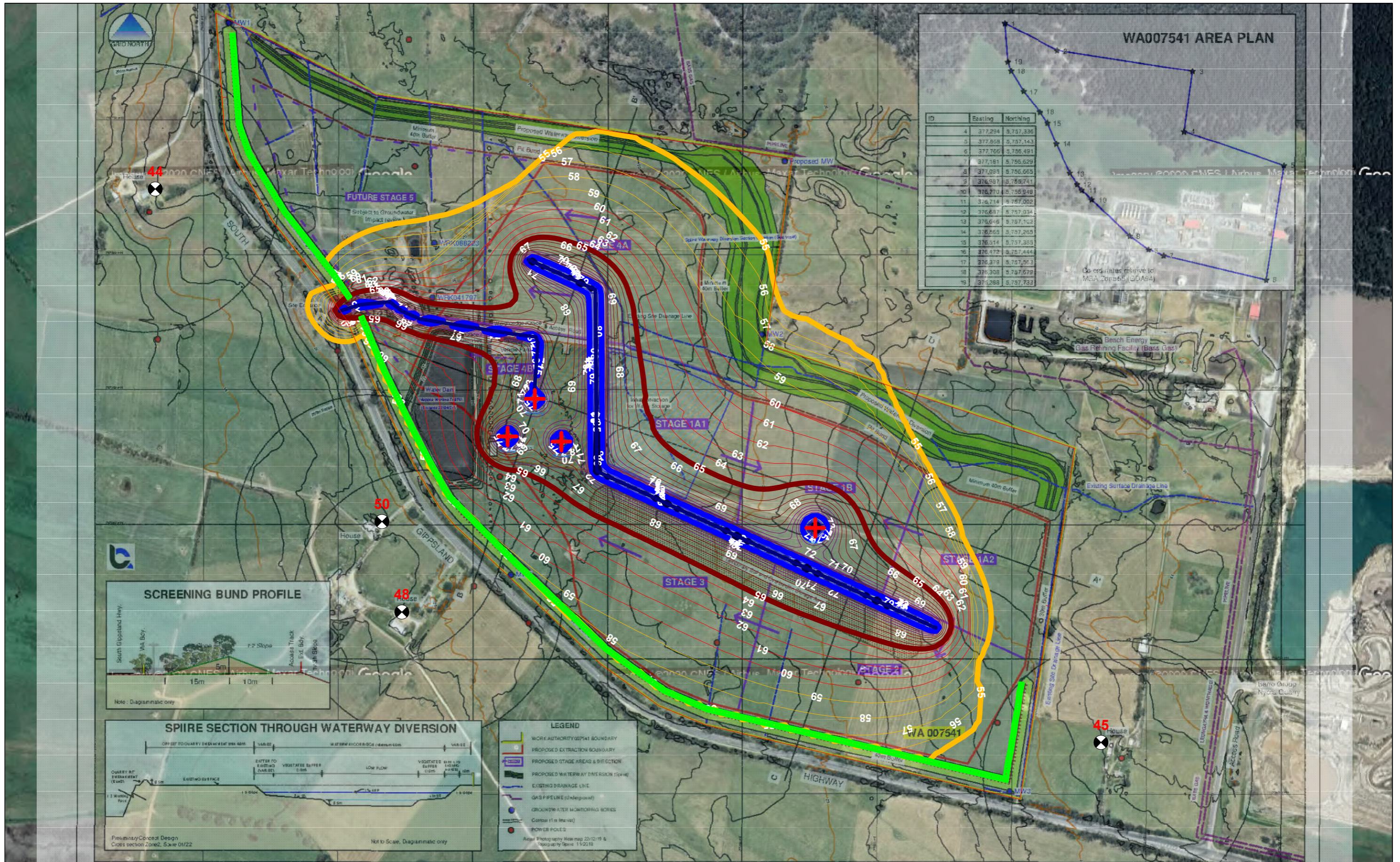
Noise emission levels for LANG LANG QUARRY  
LAeq, 30-min noise levels, Noise Protocol Assessment - Day/Night  
STAGE 1A1 & 1A2

Project No: V299-01      Drawing No: MAP-01      Date: 22.03.2022

NOTES:

- \*Propagation in accordance with ISO9613
- \*Model includes land topography (10-20m contours)
- \*Refer to report for SWL

# ADVERTISED PLAN



### LEGEND

- WORK AUTHORITY 007541 BOUNDARY
- PROPOSED EXTRACTION BOUNDARY
- PROPOSED STAGE AREAS & DIRECTION
- PROPOSED WATERWAY DIVERSION (Spill-off)
- EXISTING DRAINAGE LINE
- GAS PIPELINE (Underground)
- GROUNDWATER MONITORING BORES
- Contour (1m Interval)
- POWER POLES

Scale: 1: 6608 @ A3

Legend:

- Point Source
- Line Source
- Embankment
- Ground Absorption
- Contour Line
- Receiver
- Calculation Area

Noise Level - dB(A)

- 55.0 <= ... < 60.0
- 60.0 <= ... < 65.0
- 65.0 <= ... < 70.0
- 70.0 <= ... < 75.0
- 75.0 <= ... < 80.0
- 80.0 <= ... < 85.0
- 85.0 <= ...



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P: 03 9111 0090

### ACM - LANG LANG QUARRY

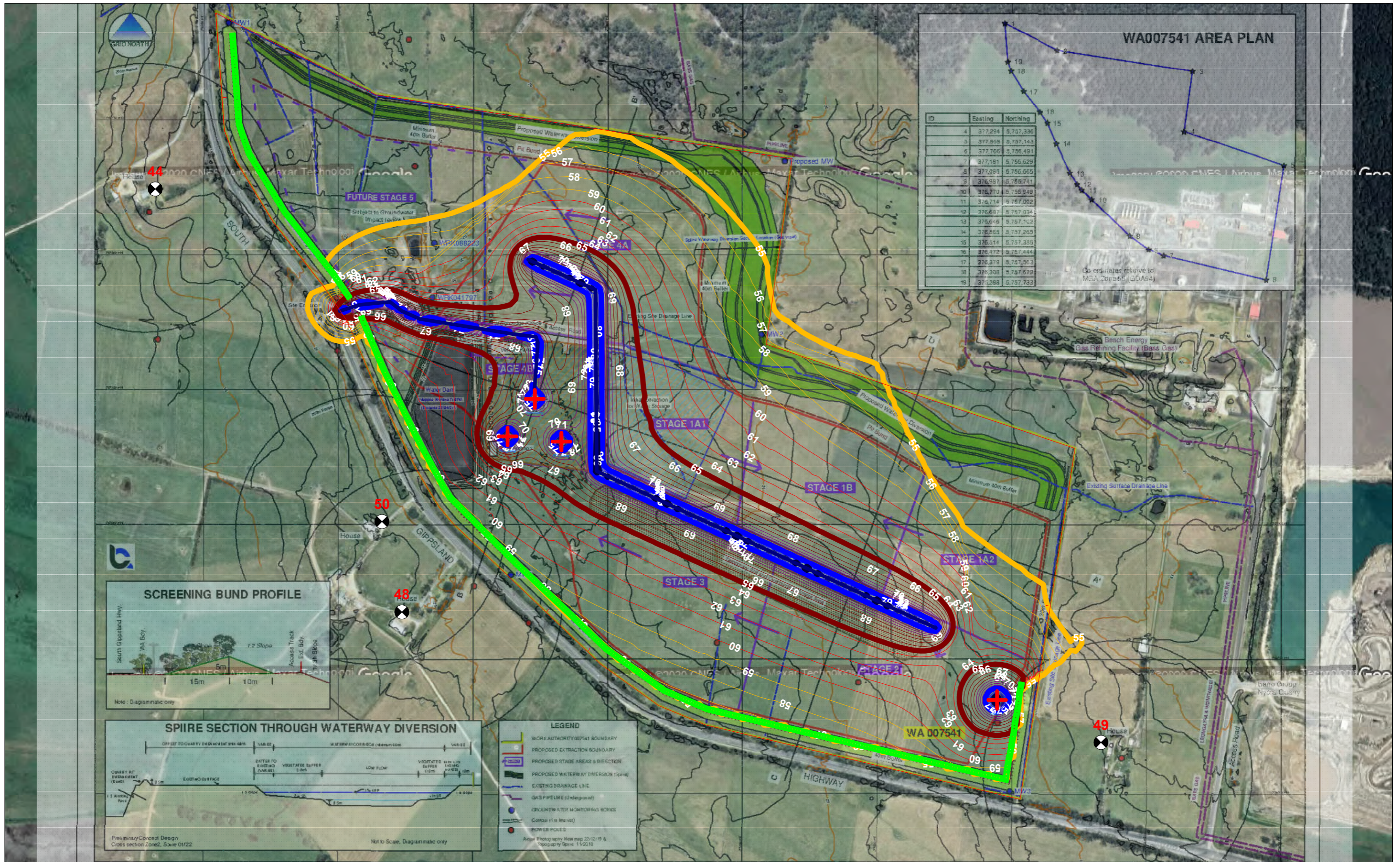
Noise emission levels for LANG LANG QUARRY  
LAeq, 30-min noise levels, Noise Protocol Assessment - Day/Night  
STAGE 1B

Project No: V299-01      Drawing No: MAP-02      Date: 22.03.2022

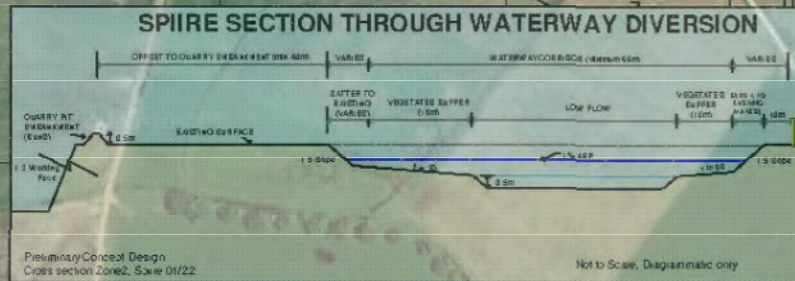
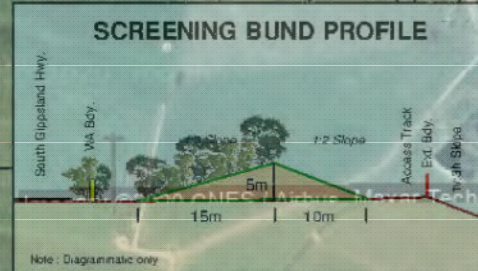
NOTES:

- \*Propagation in accordance with ISO9613
- \*Model includes land topography (10-20m contours)
- \*Refer to report for SWL

## ADVERTISED PLAN



ID	Easting	Northing
4	377,294	5,797,336
5	377,868	5,797,143
6	377,766	5,796,491
7	377,161	5,796,629
8	377,995	5,796,665
9	376,997	5,796,741
10	376,770	5,796,948
11	376,714	5,797,002
12	376,697	5,797,034
13	376,646	5,797,102
14	376,665	5,797,265
15	376,514	5,797,380
16	376,472	5,797,444
17	376,379	5,797,563
18	376,308	5,797,679
19	374,288	5,797,733



**LEGEND**

- WORK AUTHORITY 007541 BOUNDARY
- PROPOSED EXTRACTION BOUNDARY
- PROPOSED STAGE AREAS & DIRECTION
- PROPOSED WATERWAY DIVERSION (Spine)
- EXISTING DRAINAGE LINE
- GAS PIPELINE (Underground)
- GROUNDWATER MONITORING BORES
- Contour (1m Interval)
- POWER POLES

**Legend:**

- Point Source
- Line Source
- Embankment
- Ground Absorption
- Contour Line
- Receiver
- Calculation Area

**Noise Level - dB(A)**

- 55.0 <= ... < 60.0
- 60.0 <= ... < 65.0
- 65.0 <= ... < 70.0
- 70.0 <= ... < 75.0
- 75.0 <= ... < 80.0
- 80.0 <= ... < 85.0
- 85.0 <= ...

Scale: 1: 6608 @ A3

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P: 03 9111 0090

**ACM - LANG LANG QUARRY**

Noise emission levels for LANG LANG QUARRY

LAeq, 30-min noise levels, Noise Protocol Assessment - Day/Night

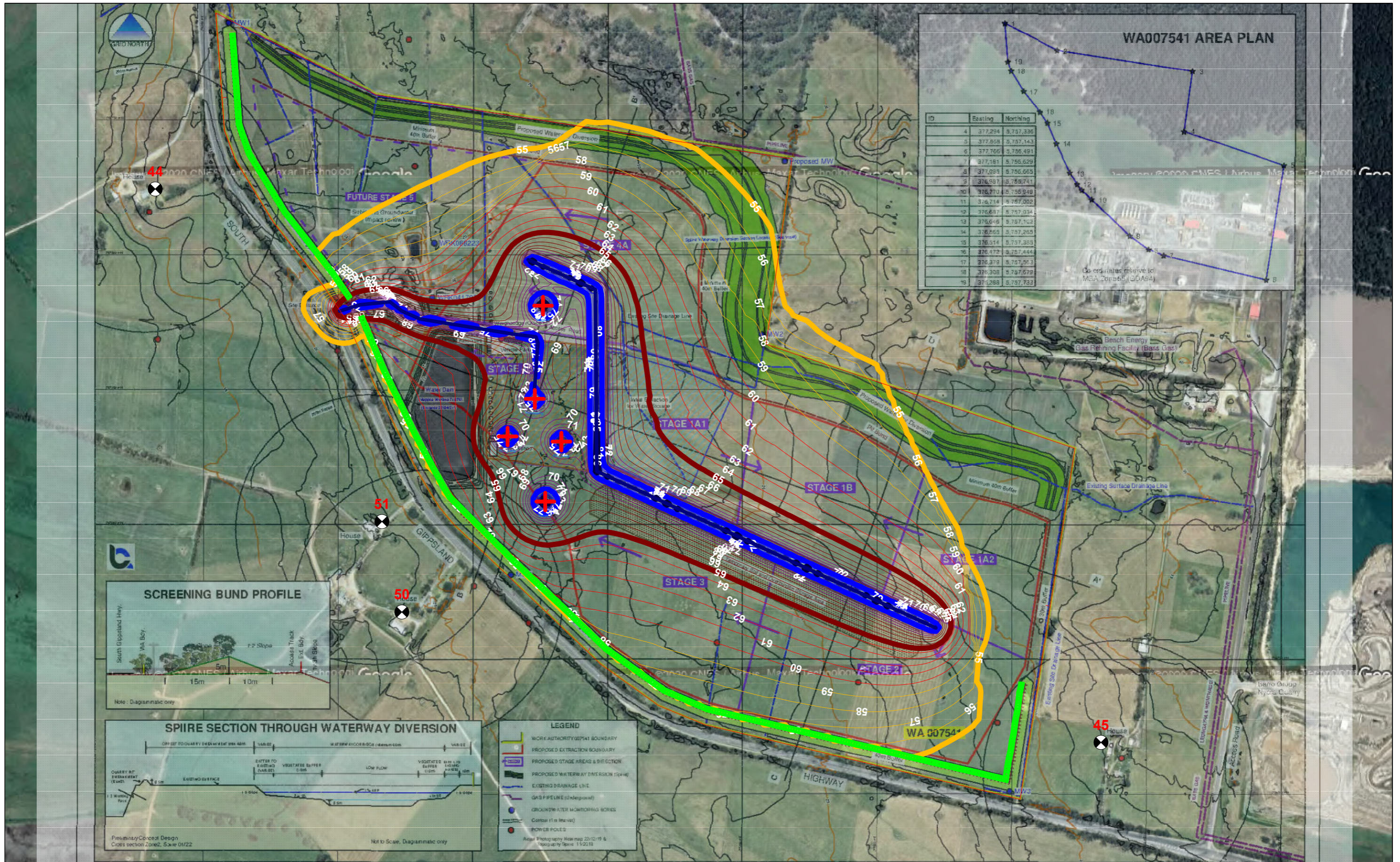
STAGE 2

Project No: V299-01      Drawing No: MAP-03      Date: 22.03.2022

**NOTES:**

- \*Propagation in accordance with ISO9613
- \*Model includes land topography (10-20m contours)
- \*Refer to report for SWL

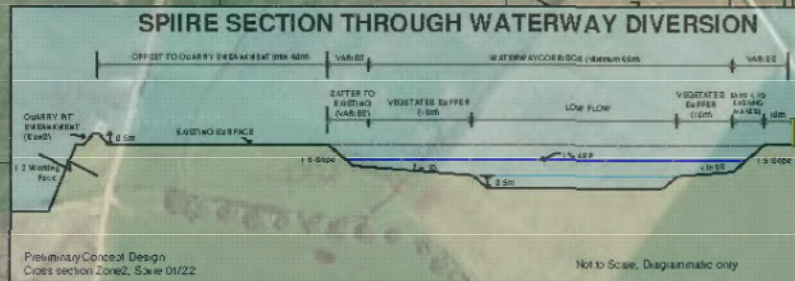
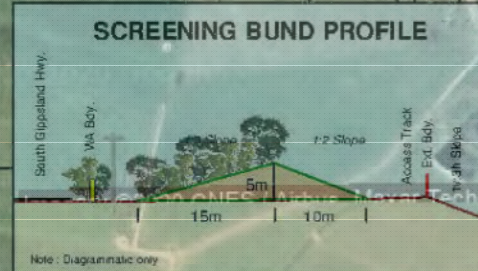
**ADVERTISED PLAN**



### WA007541 AREA PLAN

ID	Easting	Northing
4	377,294	5,797,336
5	377,868	5,797,143
6	377,765	5,796,491
7	377,161	5,796,629
8	377,935	5,796,665
9	376,997	5,796,741
10	376,770	5,796,948
11	376,714	5,797,002
12	376,697	5,797,034
13	376,646	5,797,102
14	376,655	5,797,255
15	376,514	5,797,383
16	376,472	5,797,444
17	376,379	5,797,553
18	376,308	5,797,679
19	374,288	5,797,733

Coordinates relative to MGA Zone 55 (GDA94)



### LEGEND

- WORK AUTHORITY 007541 BOUNDARY
- PROPOSED EXTRACTION BOUNDARY
- PROPOSED STAGE AREAS & DIRECTION
- PROPOSED WATERWAY DIVERSION (Spire)
- EXISTING DRAINAGE LINE
- GAS PIPELINE (Underground)
- GROUNDWATER MONITORING BORES
- Contour (1m Interval)
- POWER POLES

Scale: 1: 6608 @ A3

Legend:

- Point Source
- Line Source
- Embankment
- Ground Absorption
- Contour Line
- Receiver
- Calculation Area

Noise Level - dB(A)

- 55.0 <= ... < 60.0
- 60.0 <= ... < 65.0
- 65.0 <= ... < 70.0
- 70.0 <= ... < 75.0
- 75.0 <= ... < 80.0
- 80.0 <= ... < 85.0
- 85.0 <= ...

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P: 03 9111 0090

### ACM - LANG LANG QUARRY

Noise emission levels for LANG LANG QUARRY  
LAeq, 30-min noise levels, Noise Protocol Assessment - Day/Night

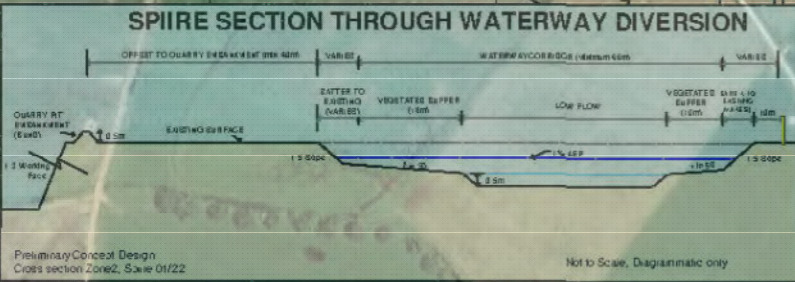
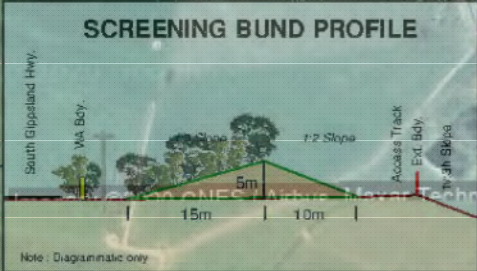
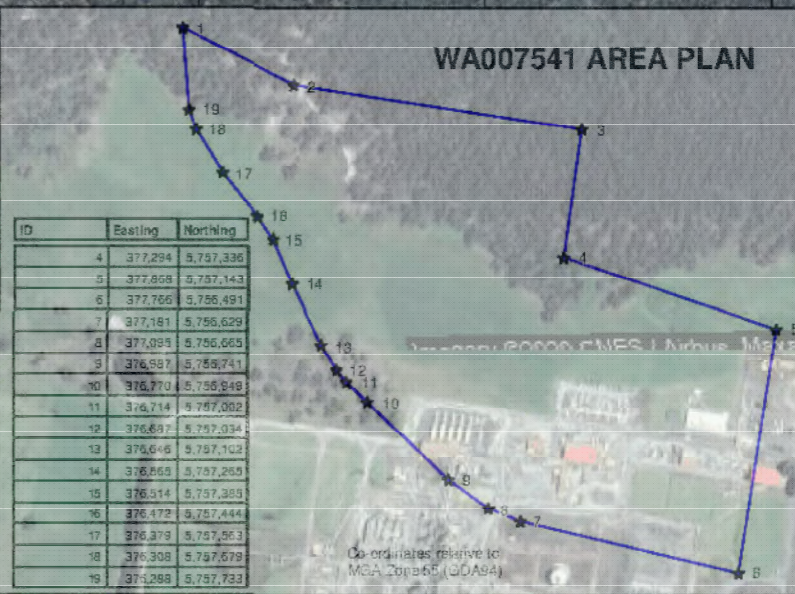
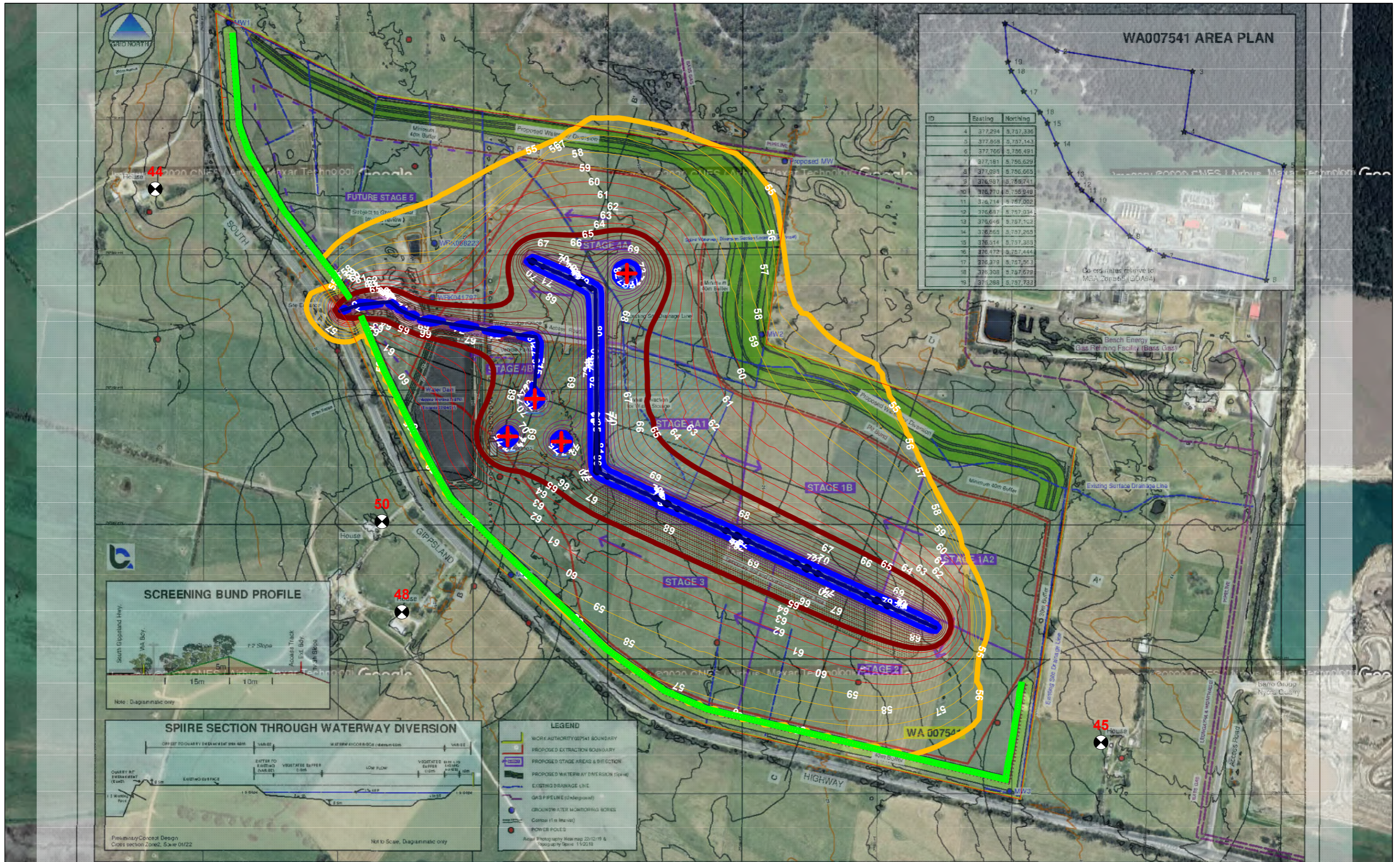
STAGE 3

Project No: V299-01      Drawing No: MAP-04      Date: 22.03.2022

NOTES:

- \*Propagation in accordance with ISO9613
- \*Model includes land topography (10-20m contours)
- \*Refer to report for SWL

# ADVERTISED PLAN



### LEGEND

- WORK AUTHORITY 007541 BOUNDARY
- PROPOSED EXTRACTION BOUNDARY
- PROPOSED STAGE AREAS & DIRECTION
- PROPOSED WATERWAY DIVERSION (Spire)
- EXISTING DRAINAGE LINE
- GAS PIPELINE (Underground)
- GROUNDWATER MONITORING BORES
- Contour (1m Interval)
- POWER POLES

Acoustic Propagation Map map 22/12/19 & Topography Spire 11/20/19

Scale: 1: 6608 @ A3

Legend:

- Point Source
- Line Source
- Embankment
- Ground Absorption
- Contour Line
- Receiver
- Calculation Area

Noise Level - dB(A)

- 55.0 <= ... < 60.0
- 60.0 <= ... < 65.0
- 65.0 <= ... < 70.0
- 70.0 <= ... < 75.0
- 75.0 <= ... < 80.0
- 80.0 <= ... < 85.0
- 85.0 <= ...



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### ACM - LANG LANG QUARRY

Noise emission levels for LANG LANG QUARRY  
LAeq, 30-min noise levels, Noise Protocol Assessment - Day/Night  
STAGE 4A

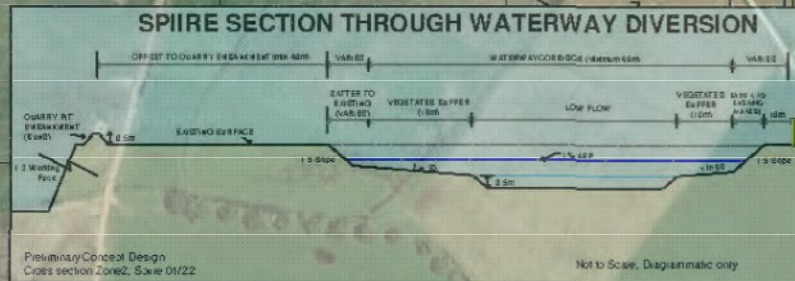
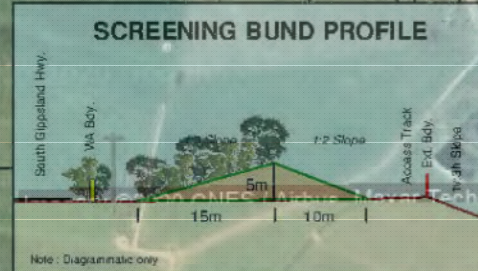
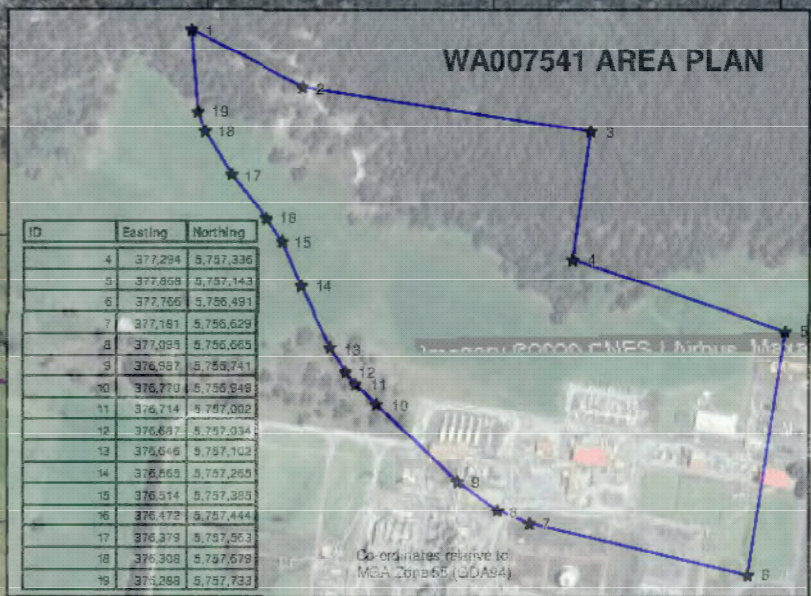
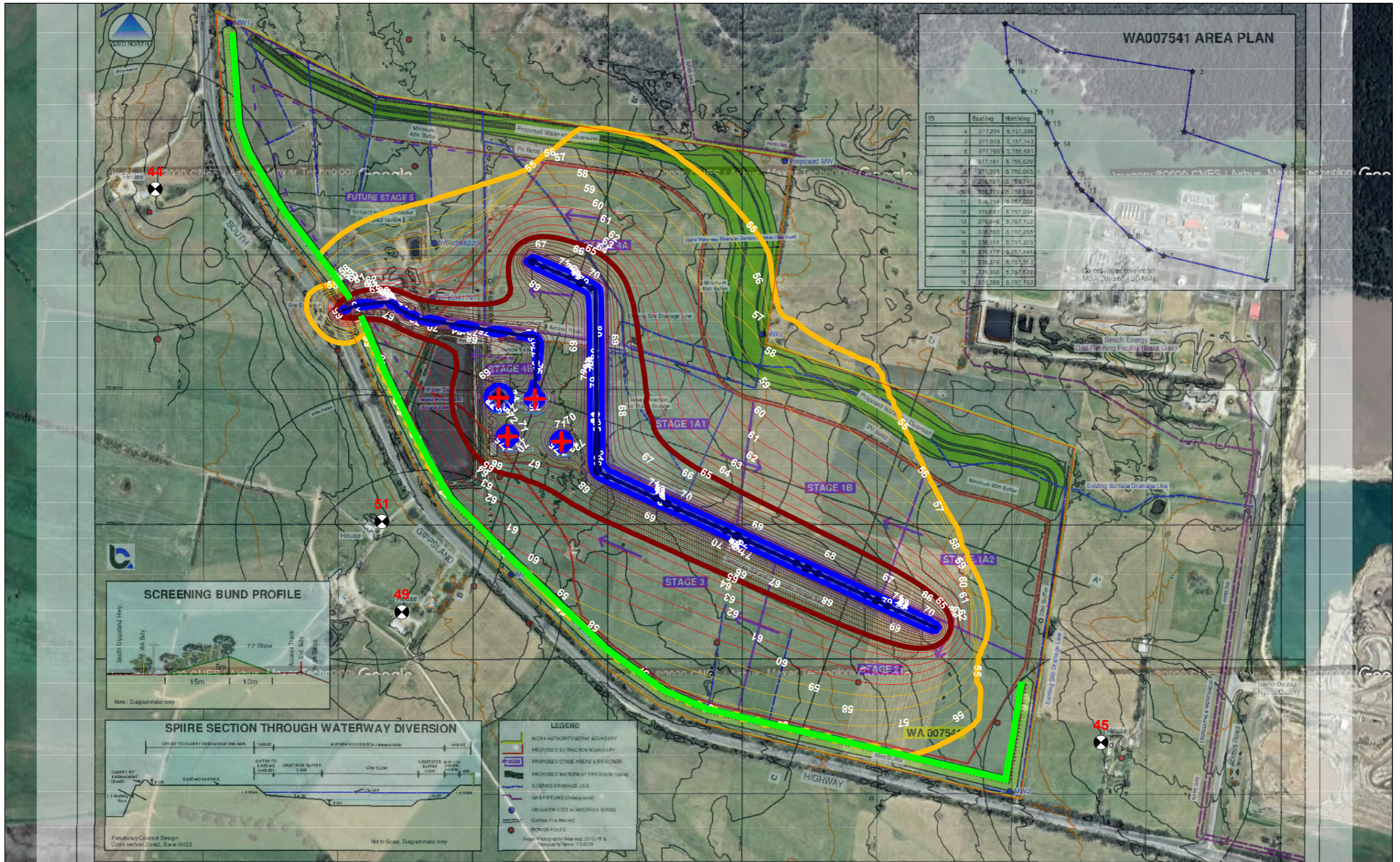
Project No: V299-01      Drawing No: MAP-05      Date: 22.03.2022

NOTES:

- \*Propagation in accordance with ISO9613
- \*Model includes land topography (10-20m contours)
- \*Refer to report for SWL

## ADVERTISED PLAN





### LEGEND

- WORK AUTHORITY 007541 BOUNDARY
- PROPOSED EXTRACTION BOUNDARY
- PROPOSED STAGE AREAS & DIRECTION
- PROPOSED WATERWAY DIVERSION (Spire)
- EXISTING DRAINAGE LINE
- GAS PIPELINE (Underground)
- GROUNDWATER MONITORING BORES
- Contour (1m Interval)
- POWER POLES

Acoustic Propagation Map map 221219 & Propagation Spire 11/2019

Scale: 1: 6608 @ A3

Legend:

- Point Source
- Line Source
- Embankment
- Ground Absorption
- Contour Line
- Receiver
- Calculation Area

Noise Level - dB(A)

- 55.0 <= ... < 60.0
- 60.0 <= ... < 65.0
- 65.0 <= ... < 70.0
- 70.0 <= ... < 75.0
- 75.0 <= ... < 80.0
- 80.0 <= ... < 85.0
- 85.0 <= ...



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P: 03 9111 0090

### ACM - LANG LANG QUARRY

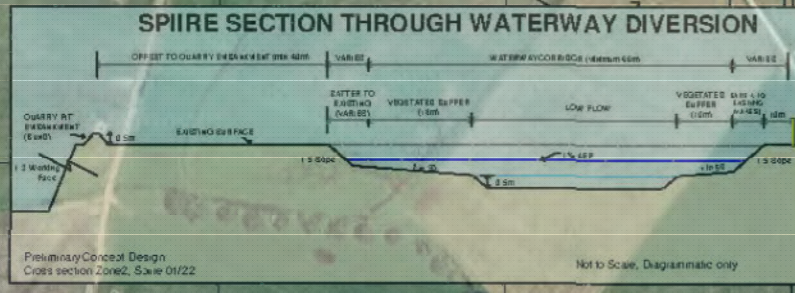
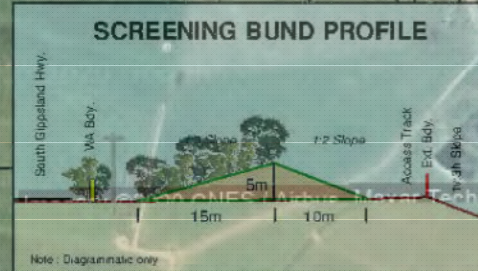
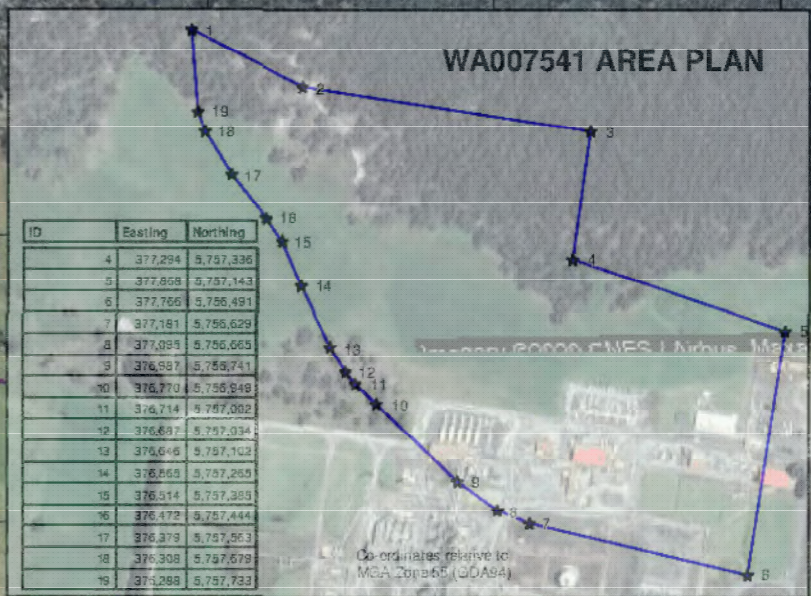
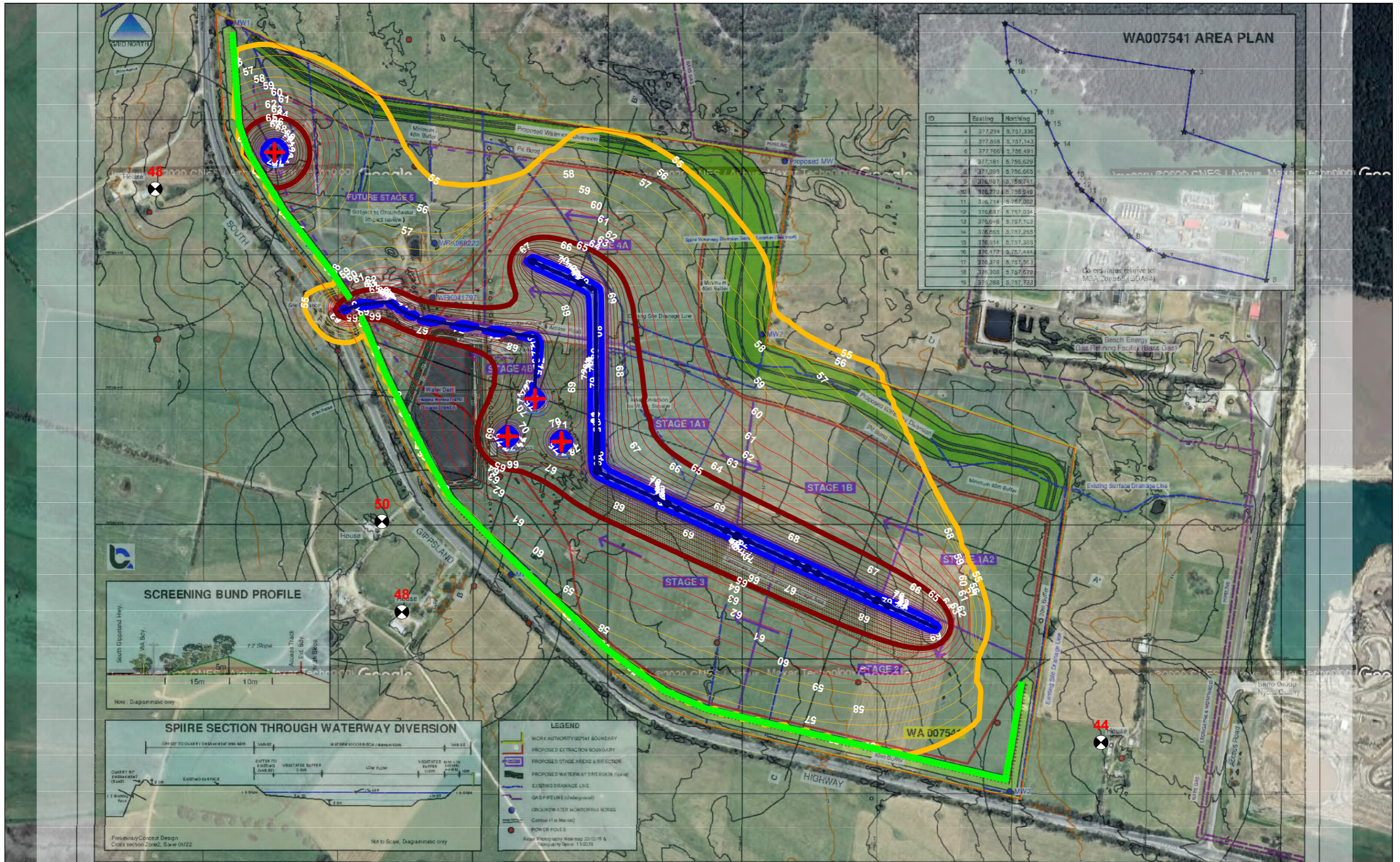
Noise emission levels for LANG LANG QUARRY  
LAeq, 30-min noise levels, Noise Protocol Assessment - Day/Night  
STAGE 4B

Project No: V299-01      Drawing No: MAP-06      Date: 22.03.2022

NOTES:

- \*Propagation in accordance with ISO9613
- \*Model includes land topography (10-20m contours)
- \*Refer to report for SWL

# ADVERTISED PLAN



### LEGEND

- WORK AUTHORITY 007541 BOUNDARY
- PROPOSED EXTRACTION BOUNDARY
- PROPOSED STAGE AREAS & DIRECTION
- PROPOSED WATERWAY DIVERSION (Spire)
- EXISTING DRAINAGE LINE
- GAS PIPELINE (Underground)
- GROUNDWATER MONITORING BORES
- Contour (1m Interval)
- POWER POLES

Scale: 1: 6608 @ A3

Legend:

- Point Source
- Line Source
- Embankment
- Ground Absorption
- Contour Line
- Receiver
- Calculation Area

Noise Level - dB(A)

- 55.0 <= ... < 60.0
- 60.0 <= ... < 65.0
- 65.0 <= ... < 70.0
- 70.0 <= ... < 75.0
- 75.0 <= ... < 80.0
- 80.0 <= ... < 85.0
- 85.0 <= ...



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### ACM - LANG LANG QUARRY

Noise emission levels for LANG LANG QUARRY  
LAeq, 30-min noise levels, Noise Protocol Assessment - Day/Night  
STAGE 5

Project No: V299-01      Drawing No: MAP-07      Date: 22.03.2022

NOTES:

- \*Propagation in accordance with ISO9613
- \*Model includes land topography (10-20m contours)
- \*Refer to report for SWL

## ADVERTISED PLAN

## **COPY OF RECORD IN THE VICTORIAN WATER REGISTER LICENCE TO CONSTRUCT WORKS**

### *under Section 67 of the Water Act 1989*

*The information in this copy of record is as recorded at the time of printing. Current information should be obtained by a search of the register. The State of Victoria does not warrant the accuracy or completeness of this information and accepts no responsibility for any subsequent release, publication or reproduction of this information.*

*This licence does not remove the need to apply for any authorisation or permission necessary under any other Act of Parliament with respect to anything authorised by the works licence.*

*Water used under this licence is not fit for any use that may involve human consumption, directly or indirectly, without first being properly treated.*

*This licence is not to be interpreted as an endorsement of the design and/or construction of any works (including dams). The Authority does not accept any responsibility or liability for any suits or actions arising from injury, loss, damage or death to person or property which may arise from the maintenance, existence or use of the works.*

*Each person named as a licence holder is responsible for ensuring all the conditions of this licence are complied with.*

This licence authorises its holders to construct the described works, subject to the conditions.

### **Licence Holder(s)**

AURORA CONSTRUCTION MATERIALS of PO BOX 656 NIDDRIE VIC 3042

### **Licence Contact Details**

AURORA CONSTRUCTION MATERIALS PO BOX 656  
NIDDRIE VIC 3042

### **Licence Details**

Expiry date	29 Sep 2021
Status	Active
Authority	Southern Rural Water
Name of waterway or aquifer	NA for construct/decommission
Water system	Koo Wee Rup (GMU)

### **Summary of Licensed Works**

The details in this section are a summary only. They are subject to the conditions specified in this licence.

<i>Works ID</i>	<i>Works type</i>	<i>Use of water</i>
WRK122746	Bore	Observation
WRK122747	Bore	Observation
WRK122748	Bore	Observation
WRK122749	Bore	Observation

### **Description of Licensed Works**

---

**WORKS ID** WRK122746

Works type	Bore
Works subtype	Drilled bore
Proposed maximum depth	50.000 metres

**Works location**

<i>Easting</i>	<i>Northing</i>	<i>Zone MGA</i>
377742.541	5756499.894	Zone 55

**Land description**

Volume 10257 Folio 299  
Lot 1 of Plan PS312674E

**ADVERTISED  
PLAN**

**Property address**

5575 SOUTH GIPPSLAND HIGHWAY, LANG LANG, VIC 3984

**Description of Licensed Works**

---

**WORKS ID** WRK122747

Works type	Bore
Works subtype	Drilled bore
Proposed maximum depth	50.000 metres

**Works location**

<i>Easting</i>	<i>Northing</i>	<i>Zone MGA</i>
376796.479	5756926.544	Zone 55

**Land description**

Volume 10613 Folio 500  
Lot 1 of Plan TP023467H

**Property address**

5575 SOUTH GIPPSLAND HIGHWAY, LANG LANG, VIC 3984

**Description of Licensed Works**

---

**WORKS ID** WRK122748

Works type	Bore
Works subtype	Drilled bore
Proposed maximum depth	50.000 metres

**Works location**

<i>Easting</i>	<i>Northing</i>	<i>Zone MGA</i>
376280.324	5757914.369	Zone 55

**Land description**

Volume 10613 Folio 500  
Lot 1 of Plan TP023467H

**Property address**

5575 SOUTH GIPPSLAND HIGHWAY, LANG LANG, VIC 3984

**Description of Licensed Works**

---

**WORKS ID** WRK122749

Works type	Bore
Works subtype	Drilled bore
Proposed maximum depth	50.000 metres

**Works location**

<i>Easting</i>	<i>Northing</i>	<i>Zone MGA</i>
377281.772	5757329.920	Zone 55

**Land description**

Volume 10613 Folio 500  
Lot 1 of Plan TP023467H

**Property address**

5575 SOUTH GIPPSLAND HIGHWAY, LANG LANG, VIC 3984

**Related Instruments**

**Related entitlements** Nil

**Related water-use entities** Nil

**Application History**

<i>Reference</i>	<i>Type</i>	<i>Status</i>	<i>Lodged date</i>	<i>Approved date</i>	<i>Recorded date</i>
WLI613512	Issue	Approved	29 Sep 2020	29 Sep 2020	

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## Conditions

Licence WLE079258 is subject to the following conditions:

### Siting and construction

- 1 The bore(s) must be drilled at the location specified in the application approved by the Authority.
- 2 If after drilling the bore is considered unsatisfactory a replacement bore may be drilled on the land specified in the licence.

### Preventing pollution

- 3 All earthworks must be carried out, and all drilling fluids and waters produced during construction and development must be disposed of, in ways that avoid contaminating native vegetation, waterways, aquifers, the riparian environment, the riverine environment or other people's property.
- 4 Construction must stop immediately if the Authority reasonably believes that fuel, lubricant, drilling fluid, soil or water produced during construction and development is at risk of being spilled into native vegetation, waterways, aquifers, the riparian environment, the riverine environment or other people's property.
- 5 The licence holder must construct and maintain bund walls, in accordance with the timeframe, specifications, guidelines or standards prescribed by the Authority, to prevent fuel, lubricant, drilling fluid, soil or water produced during construction and development from being spilled into native vegetation, waterways, aquifers, the riparian environment, the riverine environment or other people's property.

### Drilling licence and supervision requirements

- 6 The bore(s) must be constructed by, or under the direct supervision of, a driller licensed under the Water Act 1989 and endorsed as a Class 1, 2, or 3 driller, with appropriate endorsements.
- 7 If artesian pressure is expected or encountered, then a driller licensed under the Water Act 1989, and endorsed as a class 3 driller, must install casing in the bore(s) to a suitable depth, and in a suitable manner, to prevent its outbreak. A suitable valve must also be fitted to the bore.

### Bore completion report

- 8 A Bore Completion Report must be submitted to the Authority within 28 working days of the bore(s) being completed.

### Protecting water resources

- 9 No more than 4 bore(s) may be brought to final development under this licence.
- 10 At the completion of drilling and before the drilling rig leaves the site, all but 4 bore(s) must be decommissioned so as to eliminate physical hazards, conserve aquifer yield, prevent groundwater contamination and prevent the intermingling of desirable and undesirable waters.
- 11 The bore(s) must be located at least 30 metres from any authority's channel, reserve or easement unless authorised by the Authority.

### Protecting water quality

- 12 Drilling must not exceed the maximum depth.
- 13 The bore(s) must be constructed so as to prevent aquifer contamination caused by vertical flow outside the casing.
- 14 If two or more aquifers are encountered, the bore(s) must be constructed to ensure that an impervious seal is made and maintained between each aquifer to prevent aquifer connection through vertical flow outside the casing; under no circumstances are two or more aquifers to be screened within the one bore or in any other manner to allow connection between them.
- 15 Boreheads must be constructed, to ensure that no flood water, surface runoff or potential subsurface contaminated soakage can enter the bore or bore annulus.

### Protecting other water users

- 16 The diameter of the drill casing must not exceed 130 millimetres.

17 The bore(s) must be constructed so that water levels in the bore(s) can be measured by an airline, a piezometer or a method approved in writing by the Authority.

**Fees and charges**

18 The licence holder must, when requested by the Authority, pay all fees, costs and other charges under the Water Act 1989 in respect of this licence.

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END OF COPY OF RECORD

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# COPY OF RECORD IN THE VICTORIAN WATER REGISTER LICENCE TO OPERATE WORKS

## *under Section 67 of the Water Act 1989*

*The information in this copy of record is as recorded at the time of printing. Current information should be obtained by a search of the register. The State of Victoria does not warrant the accuracy or completeness of this information and accepts no responsibility for any subsequent release, publication or reproduction of this information.*

*This licence does not remove the need to apply for any authorisation or permission necessary under any other Act of Parliament with respect to anything authorised by the works licence.*

*Water used under this licence is not fit for any use that may involve human consumption, directly or indirectly, without first being properly treated.*

*This licence is not to be interpreted as an endorsement of the design and/or construction of any works (including dams). The Authority does not accept any responsibility or liability for any suits or actions arising from injury, loss, damage or death to person or property which may arise from the maintenance, existence or use of the works.*

*Each person named as a licence holder is responsible for ensuring all the conditions of this licence are complied with.*

This licence authorises its holders to operate the described works, subject to the conditions.

### Licence Holder(s)

LANG LANG SAND RESOURCES PTY LTD of SUITE 2  
LEVEL 1  
20 ENGLISH STREET ESSENDON FIELDS VIC 3041

### Licence Contact Details

LANG LANG SAND RESOURCES PTY LTD	SUITE 2 LEVEL 1 20 ENGLISH STREET ESSENDON FIELDS VIC 3041
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### Licence Details

Expiry date	30 Jun 2035
Status	Active
Authority	Southern Rural Water
Name of waterway or aquifer	UNC-Koo Wee Rup
Water system	Koo Wee Rup (GMU)

### Summary of Licensed Works

The details in this section are a summary only. They are subject to the conditions specified in this licence.

<i>Works ID</i>	<i>Works type</i>	<i>Use of water</i>
WRK041821	Bore	Industrial or commercial
WRK125327	Bore	Industrial or commercial



## Description of Licensed Works

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### WORKS ID WRK041821

Works type Bore  
Constructed depth 39.790 metres

### Extraction Details

Service point/s SP075496 KWR.74595  
Maximum extraction rate 1.300 megalitres per day (The physical capacity of the works)  
Maximum daily volume 0.450 megalitres (The volume authorised to be extracted via the works)  
Maximum annual volume 60.000 megalitres  
Use of water Industrial or commercial use - as well as domestic and stock use

### Works location

<i>Easting</i>	<i>Northing</i>	<i>Zone MGA</i>
376657	5757487	Zone 55

### Land description

Volume 10613 Folio 500  
Lot 1 of Plan TP023467H

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### Property address

5575 SOUTH GIPPSLAND HIGHWAY, LANG LANG, VIC 3984

## Description of Licensed Works

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### WORKS ID WRK125327

Works type Bore  
Works subtype Dragline hole  
Maximum depth 30.000 metres  
Constructed depth 30.000 metres

### Extraction Details

Service point/s SP132623 WRK125327  
Maximum extraction rate 5.000 megalitres per day (The physical capacity of the works)  
Maximum daily volume 1.500 megalitres (The volume authorised to be extracted via the works)  
Maximum annual volume 201.900 megalitres  
Use of water Industrial or commercial use - as well as domestic and stock use

### Works location

<i>Easting</i>	<i>Northing</i>	<i>Zone MGA</i>
376649.412	5757489.332	Zone 55

**Land description**

Volume 10613 Folio 500  
Lot 1 of Plan TP023467H

**Property address**

5575 SOUTH GIPPSLAND HIGHWAY, LANG LANG, VIC 3984

**Related Instruments**

**Related entitlements** BEE077726

**Related water-use entities** Nil

**Application History**

<i>Reference</i>	<i>Type</i>	<i>Status</i>	<i>Lodged date</i>	<i>Approved date</i>	<i>Recorded date</i>
WLV906521	Modify	Approved	04 Mar 2021	04 Mar 2021	
WLV712668	Modify	Approved	22 Dec 2020	22 Dec 2020	
WLR004204	Modify	Approved	16 Jun 2020	16 Jun 2020	
WLV704020	Modify	Approved	17 Mar 2017	17 Mar 2017	
WLV701648	Modify	Approved	02 Sep 2015	30 Nov 2015	
WLV037216	Modify	Approved	30 Nov 2011	02 Dec 2011	
WLI556725	Issue	Approved	29 Aug 2009	29 Aug 2009	

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## Conditions

Licence WLE038316 is subject to the following conditions:

### Preventing pollution

- 1 Water must not be taken through the works if the Authority reasonably believes fuel, or lubricant, or any other matter used in connection with works and appliances associated with this licence, is at risk of contaminating a waterway, or aquifer, or the riparian or riverine environment.
- 2 The licence holder must construct and maintain bund walls around any hydrocarbon-fuel-driven engine, motor, fuel storage, or chemical storage used in connection with this licence, in accordance with the timeframe, specifications, guidelines and standards prescribed by the Authority.

### Rosters and restrictions

- 3 When directed by the Authority, water must be taken in accordance with the rosters and restrictions determined by the Authority, and advised to the licence holder.

### Metering of water taken and used

- 4 Water may only be taken under this licence if it is taken through a meter approved by the Authority.
- 5 Meters must be installed, in accordance with the specifications set by the Authority, at the licence holder's expense.
- 6 Meters used for the purpose of this licence are deemed to be the property of the Authority.
- 7 The licence holder must at all times provide the Authority with safe access to meters for the purpose of reading, calibration or maintenance.
- 8 The licence holder must notify the Authority within one business day if the meter ceases to function or operate properly.
- 9 The licence holder must, if required by the Authority, keep an accurate record of the quantity of water taken under this licence and allow the Authority to inspect this record at all reasonable times, and provide a copy of the record when requested.
- 10 The licence holder must not, without the consent of the Authority, interfere with, disconnect or remove any meter used for the purposes of the licence.
- 11 The Authority may, if it deems necessary, make an estimate of the total volume of water taken under this licence.

### Protecting other water users

- 12 The licence holder must, if required by the Authority, monitor and record water levels in the bore(s) before and after pumping; the licence holder must also provide this information in writing as directed by the Authority.
- 13 The licence holder must, at the licence-holder's expense, if required by the Authority, conduct a pumping test and obtain a hydrogeological report, to the Authority's specification, on the potential for bore operation to interfere with any bore, aquifer, groundwater dependent ecosystem or waterway.
- 14 The licence holder must, if required by the Authority, provide the Authority with the results of water quality tests on samples of water pumped from the bore.
- 15 The licence holder must provide the Authority with safe access to the licensed bore and works for the purposes of obtaining water level measurements, water samples and any other information or data pertaining to the operation of the bore, the works and the aquifer.
- 16 The licence holder must, if required by the Authority, cease taking water entirely, or cease taking water for a given period, or reduce the quantity of water taken during any period if, the Authority reasonably believes, or in accordance with the assessment in a Groundwater Management Plan, the use or disposal of water under this licence may injure or adversely affect any other person or an aquifer or the environment.
- 17 The licence holder must, if required by the Authority, enter into a formal agreement to supply

water to any party affected by interference from bore operation.

- 18 The bore(s) must not be altered or decommissioned without a works licence that authorises alteration, or decommissioning.

**Operation and maintenance**

- 19 Water may only be taken through the works at the specified location.
- 20 The licence holder must keep all works, appliances and dams associated with this licence, including outlet pipes and valves, in a safe and operable condition, and free from obstacles and vegetation that might hinder access to works.
- 21 Water may only be taken through the works if the works are sited, constructed, operated and maintained to the satisfaction of the Authority.
- 22 The licence holder must at all times provide the Authority with safe access to inspect all works and appliances used to take water under this licence.

**Protecting biodiversity**

- 23 Water must not be taken through the works if the Authority reasonably believes that the taking of water, through the works and appliances associated with this licence, is at risk of causing damage to the environment.
- 24 The licence holder must, if required by the Authority, remedy any damage to the environment that in the opinion of the Authority is a result of the installation, operation or maintenance of the works.

**Fees and charges**

- 25 The licence holder must, when requested by the Authority, pay all fees, costs and other charges under the Water Act 1989 in respect of this licence.

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END OF COPY OF RECORD

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## **COPY OF RECORD IN THE VICTORIAN WATER REGISTER TAKE AND USE LICENCE**

### *under Section 51 of the Water Act 1989*

*The information in this copy of record is as recorded at the time of printing. Current information should be obtained by a search of the register. The State of Victoria does not warrant the accuracy or completeness of this information and accepts no responsibility for any subsequent release, publication or reproduction of this information.*

*This licence does not remove the need to apply for any authorisation or permission necessary under any other Act of Parliament with respect to anything authorised by the take and use licence.*

*Water used under this entitlement is not fit for any use that may involve human consumption, directly or indirectly, without first being properly treated.*

*The Authority does not guarantee, by the granting of the licence, that the licensee will obtain any specific quantity or quality of water. The Authority is not liable for any loss or damage suffered by the licensee as a result of the quantity of water being insufficient or the quality of the water being unsuitable for use by the licensee at any particular time or for any particular purpose.*

This take and use licence entitles its holders to take and use water as set out under the licence description, subject to the conditions that are specified.

### **Licence Holder(s)**

LANG LANG SAND RESOURCES PTY LTD of SUITE 2  
LEVEL 1  
20 ENGLISH STREET ESSENDON FIELDS VIC 3041

### **Licence Contact Details**

LANG LANG SAND SUITE 2  
RESOURCES PTY LTD LEVEL 1  
20 ENGLISH STREET  
ESSENDON FIELDS VIC 3041

### **Licence Description**

<b>Expiry date</b>	30 Jun 2035
<b>Status</b>	Active
<b>Authority</b>	Southern Rural Water
<b>Name of waterway, aquifer or works</b>	UNC-Koo Wee Rup
<b>Water system type</b>	Groundwater (Westernport catchment)
<b>River basin or groundwater unit</b>	Koo Wee Rup (GMU)
<b>Licence volume</b>	261.9 megalitres
<b>Licence volume adjusted for temporary trade</b>	261.9 megalitres
<b>Method of taking</b>	Direct extraction from Groundwater
<b>Period during which water can be taken</b>	01 Jul - 30 Jun inclusive

<b>Use of water</b>	Industrial or commercial use - as well as domestic and stock use
<b>Trading Zone</b>	Koo Wee Rup 7 QA

### Licence Volume Details

Licence volume	261.9 megalitres
Licence volume adjusted for temporary trade	261.9 megalitres

### Temporary volume transaction details

<i>Approval date</i>	<i>Volume traded (ML)</i>	<i>Expiry date</i>
Nil		

### Extraction Point Details

<i>Easting</i>	<i>Northing</i>	<i>Zone MGA</i>	<i>Location description</i>
376650	5757490	Zone 55	WRK125327
376657	5757487	Zone 55	WRK041821

### Land on which the Water is to be Used

#### Land description

Volume 8916 Folio 752  
Lot 1 of Plan LP091815

Volume 10257 Folio 300  
Lot 2 of Plan PS312674E

Volume 10257 Folio 299  
Lot 1 of Plan PS312674E

Volume 10613 Folio 500  
Lot 1 of Plan TP023467H

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#### Property address

5575 SOUTH GIPPSLAND HIGHWAY, LANG LANG, VIC 3984

### Related Instruments

<b>Related entitlements</b>	Nil
<b>Related works licences</b>	WLE038316
<b>Other related entities</b>	Nil

### Application History

<i>Reference</i>	<i>Type</i>	<i>Status</i>	<i>Lodged date</i>	<i>Approved date</i>	<i>Recorded date</i>
BER048759	Modify	Approved	09 Mar 2021	09 Mar 2021	
BEX004261	Subdivide or amalgamate	Approved	04 Mar 2021	04 Mar 2021	

# ADVERTISED PLAN

## Conditions

This take and use licence is subject to the following conditions:

### Method of taking

- 1 Water may only be taken under this licence if it is taken by the method specified in this licence.
- 2 The licence holder must at all times provide the Authority with safe access to inspect all works and appliances used to take water under this licence.

### Take location

- 3 Water may only be taken under this licence if it is taken at the location specified in the licence under "extraction point details".

### Take volume and rate

- 4 The volume of water taken under this licence in any twelve-month period from 1 July to 30 June must not exceed the licence volume, less any volume that has been temporarily transferred to another person or location.
- 5 The maximum volume that may be taken under this licence in any one day is 5.00 megalitres per day.

### Temporary transfers to the licence holder

- 6 If there has been a temporary transfer of another licence to take water at the location, and use water on the land, specified in this licence:
  - a) the extra volume of water taken must not exceed the volume transferred, and
  - b) all the conditions of this licence apply to the taking and using of water consequential to the transfer.

### Water allocations

- 7 The Authority may determine water allocations at 1 July or during the course of the subsequent twelve-month period that are less than 100% of the licence volume, in which case the licence volume is correspondingly reduced for that twelve-month period.

### Take period

- 8 Unless otherwise directed by the Authority, water may be taken at any time between 1 July and 30 June.

### Rosters and restrictions

- 9 When directed by the Authority, water must be taken in accordance with the rosters and restrictions determined by the Authority, and advised to the licence holder.

### Metering of water taken and used

- 10 Water may only be taken under this licence if it is taken through a meter approved by the Authority.
- 11 Meters must be installed, in accordance with the specifications set by the Authority, at the licence holder's expense.
- 12 Meters used for the purpose of this licence are deemed to be the property of the Authority.
- 13 The licence holder must at all times provide the Authority with safe access to meters for the purpose of reading, calibration or maintenance.
- 14 The licence holder must notify the Authority within one business day if the meter ceases to function or operate properly.
- 15 The licence holder must, if required by the Authority, keep an accurate record of the quantity of water taken under this licence and allow the Authority to inspect this record at all reasonable times, and provide a copy of the record when requested.
- 16 The licence holder must not, without the consent of the Authority, interfere with, disconnect or remove any meter used for the purposes of the licence.
- 17 The Authority may, if it deems necessary, make an estimate of the total volume of water taken

under this licence.

**Use of water**

- 18 Water taken under this licence may only be used on the land, and for the purposes, specified in the licence.
- 19 The licence holder must at all times provide the Authority with safe access to inspect the land on which water is licensed to be used.

**Managing drainage disposal**

- 20 Where water use results in drainage from the land specified in the licence, that drainage water must be disposed in ways that meet with the standards, terms and conditions adopted from time to time by the Authority.

**Particular conditions**

- 21 The licence holder must undertake monitoring of groundwater levels and water quality around the site perimeter and report on this annually.
- 22 The licence holder must submit the report to SRW by 30 September each year.

**Fees and charges**

- 23 The licence holder must, when requested by the Authority, pay all fees, costs and other charges under the Water Act 1989 in respect of this licence.

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END OF COPY OF RECORD

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4 August 2022

**By Email:** [kelvins@acm.com.au](mailto:kelvins@acm.com.au)

Kelvin Sargent  
Aurora Construction Materials Pty Ltd  
Suite 2 Level 1, 20 English Street,  
Essendon Fields VIC 3041

Dear Kelvin

**Re: Lang Lang Sand Resources - 5575 South Gippsland Highway Lang Lang**

Thank you for email sent 26 July 2022 regarding the proposed works by Lang Lang Sand Resources. In response I can confirm the following:

1. Beach Energy has reviewed the draft design and the site layout plan for the Proposed Waterway Diversion in proximity of the Bass Gas Pipeline and we are comfortable this will not affect the PL 244 gas pipeline.
2. Beach Energy can confirm the minimum setback distance from the Gas Supply easement for the excavated batter of the drainage diversion (approx. 3m vertically with a very shallow slope of 1V:5H) has been met.
3. Beach Energy confirms it requires the groundwater monitoring bore to be placed approximately 30m south from your fence line.

Yours sincerely

Babu Rana  
Senior Pipeline Engineer

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**From:** Tom Dudley <tom.dudley@ausnetservices.com.au>  
**Sent:** Tuesday, 19 July 2022 2:14 PM  
**To:** BCA Consulting  
**Cc:** Kelvin Sargent  
**Subject:** RE: Proposed Extractive Industry 5575 Sth Gippsland Hwy Lang Lang - Initial Site Meeting - 20th October 2020

**JOB No::** A25\_005

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Hi Michael,

In response to your queries, below;

- 1) Does this advice allow planting of “low growth shrub” within the easement? **It is recommended to not plant trees/shrub within the 12m easement however no rule against it. Access is required to each pole/line and the best way is directly under the line.**
- 2) As described in the previous email, we wish to relocate some power poles to be aligned with the toe of the screening bund (5m high at the top, with a 1V:3H slope down to the pole location). Does that mean we can plant “low growth shrub” on the slope of the screening bund, given that the ground surface will rise up away from the power line? **Yes you may plant veg on the bund, recommended to keep it as low as possible. Line of fall needs to be taken into account for larger trees/shrubs planted on the bund in the vicinity of the line.**
- 3) Is there a minimum separation distance required between the tops of the planted vegetation and the power lines? **AusNet likes to maintain a clearance of 5m from the tops of vegetation to the powerline.**  
This number will help us determine the species of any plantings within the easement, or on the adjacent screening bund.
- 4) You have advised that “The poles can be positioned as close to the boundary or as close to the toe of the bund as required depending on your preference and tree clearing requirements.” Presumably, that means that it is allowed for the earthen bund to be constructed within part of the easement, or future easement. Is that the case? **Yes you may install the bund within the easement. Any excavation close to overhead power lines within the NO GO ZONES will require an application to EXTEC. <https://esv.vic.gov.au/technical-information/electrical-installations-and-infrastructure/no-go-zones/distribution-overhead-powerlines/#:~:text=No%20Go%20Zones,-Work%20outside%206.4&text=Work%20between%203.0m%20and,will%20need%20to%20be%20taken.> Given you are excavating outside the easement there shouldn't be any issues encroaching NO GO ZONES.**

Regarding the advice for set-back distances for excavation near power poles:

- 1) Any proposed excavation in the vicinity of a power pole will certainly not be as close as 3m. Can we assume from this statement that any permanent, or long-term excavation, at more than 12m from any pole would be considered by AusNet Services as not posing a risk to the power pole? Noting that the overall site is relatively flat. **This would be dependant on the depth of the excavation up to the 12m wide easement, assuming you are not excavating a sheer cliff (looks like a 1 V 3 slope) I don't see an issue with this.**
- 2) Is there a maximum distance, beyond which AusNet Services would consider that the excavation would not posing a risk to the power pole? Would it be safe to assume this is the required width of the easement (i.e. 12m for standard poles)? **Again dependant on the depth of excavation, however given it's a 1V3 slope outside the easement (6m either side of pole) this would be ok.**

Hope this helps to answer your questions, let me know if you have any further queries.

Regards

**Tom Dudley**



Bunurong Country  
60 Horn St  
Loengatha Vic 3850 Australia

P +61 439 972 545  
E [tom.dudley@ausnetservices.com.au](mailto:tom.dudley@ausnetservices.com.au)  
W [www.ausnetservices.com.au](http://www.ausnetservices.com.au)



## ADVERTISED PLAN

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**From:** BCA Consulting <admin@bcaconsulting.com.au>  
**Sent:** Friday, 15 July 2022 3:20 PM  
**To:** Tom Dudley <tom.dudley@ausnetservices.com.au>  
**Cc:** Kelvin Sargent <kelvins@acm.com.au>  
**Subject:** RE: Proposed Extractive Industry 5575 Sth Gippsland Hwy Lang Lang - Initial Site Meeting - 20th October 2020

**CAUTION:** This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Tom,

Thank you for your reply.

I wish to further clarify a few points in your response if I may.

Regarding the advice for vegetation to be planted near power lines:

*Any vegetation planted close to the new line and easement would be recommended to be low growth shrub and not tall trees.*

- 1) Does this advice allow planting of “low growth shrub” within the easement?
- 2) As described in the previous email, we wish to relocate some power poles to be aligned with the toe of the screening bund (5m high at the top, with a 1V:3H slope down to the pole location). Does that mean we can plant “low growth shrub” on the slope of the screening bund, given that the ground surface will rise up away from the power line?
- 3) Is there a minimum separation distance required between the tops of the planted vegetation and the power lines?  
This number will help us determine the species of any plantings within the easement, or on the adjacent screening bund.
- 4) You have advised that “The poles can be positioned as close to the boundary or as close to the toe of the bund as required depending on your preference and tree clearing requirements.” Presumably, that means that it is allowed for the earthen bund to be constructed within part of the easement, or future easement. Is that the case?

Regarding the advice for set-back distances for excavation near power poles:

*This is for temporary excavation with the original surfaces reinstated. When excavating permanently a closer look at excavation depths and distances from pole will be assessed individually. Whether supports need to be installed to the pole temporarily until the relocation occurs, or if excavation cannot proceed until the relocation occurs.*

*\*When excavating near a **SWER substation pole** no excavation within **12 metres** without a truck appointment for isolation.*

- 1) Any proposed excavation in the vicinity of a power pole will certainly not be as close as 3m. Can we assume from this statement that any permanent, or long-term excavation, at more than 12m from any pole would be considered by AusNet Services as not posing a risk to the power pole? Noting that the overall site is relatively flat.
- 2) Is there a maximum distance, beyond which AusNet Services would consider that the excavation would not posing a risk to the power pole? Would it be safe to assume this is the required width of the easement (i.e. 12m for standard poles)?

If you are able to provide a maximum separation distance, beyond which an excavation will not be considered to pose a risk to any nearby pole, then we can adjust our design accordingly to assure Earth Resources Regulation that the proposal will not pose an unacceptable risk to your power infrastructure. As discussed, the need to relocate the power poles will not be until later stages of the quarry development, so we cannot initiate a relocation project at this stage. Firstly, to get the quarry approved we have to demonstrate that the proposal will not pose unacceptable risks.

Thanks,

Michael Stevenson



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BCA Consulting – Earth Resources  
Unit 29, 41-49 Norcal Road, Nunawading, VIC 3131  
Phone +61 3 9873 5123  
[www.bcaconsulting.com.au](http://www.bcaconsulting.com.au)

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**From:** Tom Dudley <[tom.dudley@ausnetservices.com.au](mailto:tom.dudley@ausnetservices.com.au)>  
**Sent:** Friday, 15 July 2022 10:54 AM  
**To:** BCA Consulting <[admin@bcaconsulting.com.au](mailto:admin@bcaconsulting.com.au)>  
**Cc:** Kelvin Sargent <[kelvins@acm.com.au](mailto:kelvins@acm.com.au)>  
**Subject:** RE: Proposed Extractive Industry 5575 Sth Gippsland Hwy Lang Lang - Initial Site Meeting - 20th October 2020

Hi Michael,

Thanks for you email and phone call yesterday regarding the quarry extension and relocation of existing high voltage SWER line.

AusNet has no objections to relocating the existing high voltage SWER line on one main condition that no downstream customers are affected by the relocation of the line.

I cannot provide a definitive yes or no to your proposed route location without initiating a project and having it assessed by our own surveyors and vegetation management team. There may be a need for slight alterations in the proposed route or possibly the need for tree trimming for larger gum trees overhanging the property with branches that have the potential to cause damage to the line. The poles can be positioned as close to the boundary or as close to the toe of the bund as required depending on your preference and tree clearing requirements. The poles can even be installed in the road reserve of the Hwy (again dependent on tree clearing requirements).

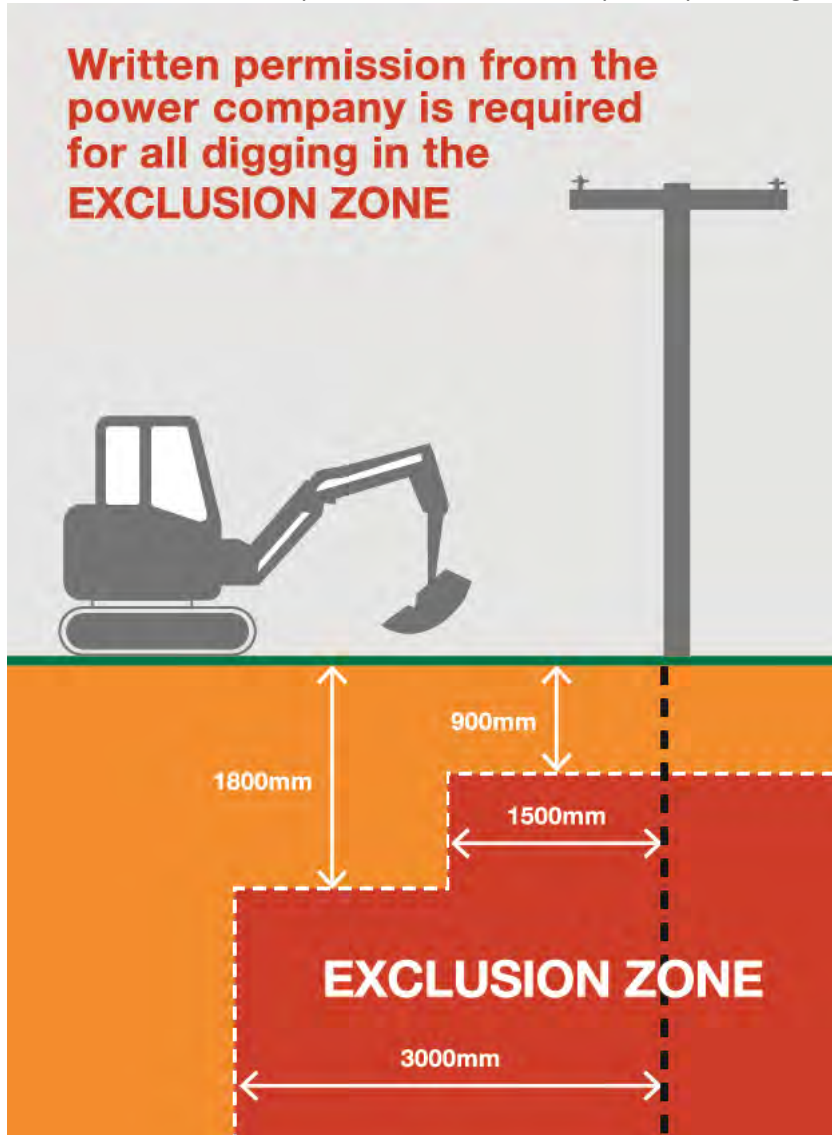
Given we will be installing new assets, Easements will be required to be created where the lines cross private property. As a general rule it will be a 12m wide easement however for taller poles and longer spans the easement width may increase. Any vegetation planted close to the new line and easement would be recommended to be low growth shrub and not tall trees.

Regarding excavation close to poles, this excerpt is taken from the ESV website: \*note. This is for temporary excavation with the original surfaces reinstated. When excavating permanently a closer look at excavation depths and distances from pole will be assessed individually. Whether supports need to be installed to the pole temporarily until the relocation occurs, or if excavation cannot proceed until the relocation occurs.

\*When excavating near a **SWER substation pole** no excavation within **12 metres** without a truck appointment for isolation.

“You must contact the Power Company if you are digging:

- 900mm or deeper within 1,500mm of a power pole or light pole or stay wire
- 1,800mm or deeper within 3,000mm of a power pole or light pole or stay wire.”



**ADVERTISED PLAN**

Hope this helps answer your queries, let me know if you have any further questions. I look forward to receiving the application to relocate the high voltage SWER powerline in the future.

Regards

**Tom Dudley**  
Energy Project Coordinator

**AusNet**

Bunurong Country  
60 Horn St  
Loengatha Vic 3850 Australia



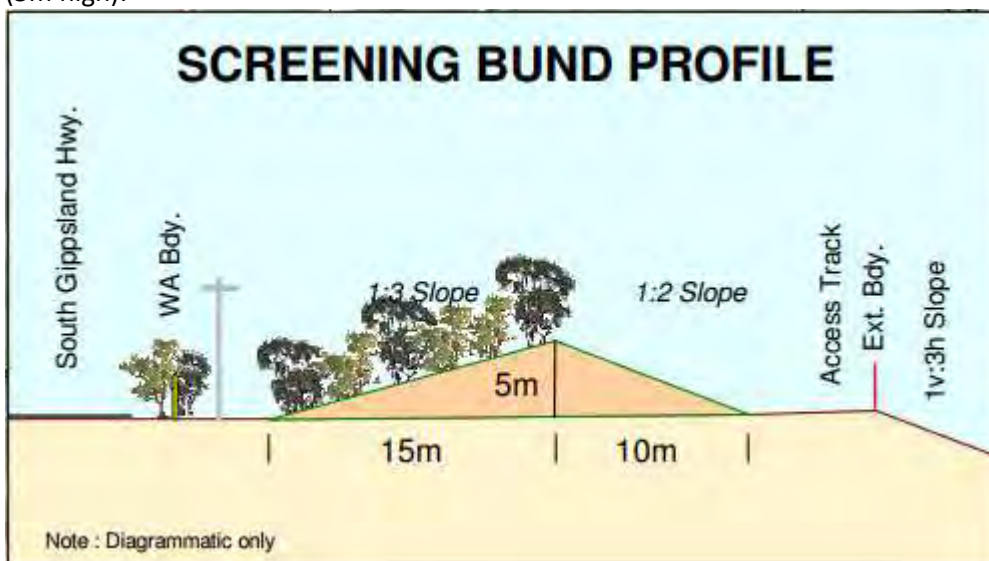
**From:** BCA Consulting <[admin@bcaconsulting.com.au](mailto:admin@bcaconsulting.com.au)>  
**Sent:** Thursday, 14 July 2022 7:21 PM  
**To:** Tom Dudley <[tom.dudley@ausnetservices.com.au](mailto:tom.dudley@ausnetservices.com.au)>  
**Cc:** Kelvin Sargent <[kelvins@acm.com.au](mailto:kelvins@acm.com.au)>  
**Subject:** RE: Proposed Extractive Industry 5575 Sth Gippsland Hwy Lang Lang - Initial Site Meeting - 20th October 2020

**CAUTION:** This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Tom,

In follow-up to today's discussion over the phone, I can provide the following clarifications to add to the detail provided in the previous email.

The provided draft of Figure 4, Rehabilitation Plan, includes the following inset showing the proposed final location of the power poles on the southern side of the property between the property boundary and the screening bund (5m high):



However, as discussed, we can easily adjust this proposal to accommodate an appropriate separation between the powerlines and the trees, noting the following:

- The proposed final location of all power poles (both relocated and retained) are shown as red dots on the previously provided Rehabilitation Plan.
- The distance between the property boundary (labelled "WA Bdy") and the toe of the 1V:3H slope of the screening bund is currently proposed to be 10m (diagram above is not to scale, but this can be clarified in the revised version).
- The poles can be shifted to align with the bottom edge (toe) of the screening bund, providing a 10m separation to the boundary.
- The existing trees are all on the highway side of the property boundary fence, none within the proposed 10m separation to the boundary
- The attached 'Clip1.jpg' from the recent native vegetation assessment shows the larger gum trees that overhang the boundary fence, with the two largest at the south-eastern end.

- The bund can be adjusted away from the two largest at the south-eastern end, as the proposed (red) extraction area does not extend this far, thus providing more space for the relocated powerline.
- We can include in the quarry proposal an obligation that the vegetation to be established on the lower slopes of the screening bund are to be shrubs only, i.e. no trees that may interfere with the powerline to be established at the toe of the screening bund, but we still need to plant trees along the higher parts of the screening bund to maintain the required visual screening.
- The relocated powerline will need to maintain two existing connections passing over the highway to houses located on the other side of the highway

As also discussed, at the north-western end of the site, there will be a need for the relocated powerline to pass over the screening bund to re-join with the original powerline alignment toward the north. I understand from our conversation that, if necessary, taller power poles can be used here to maintain the required vertical separation to the screening bund. In which case, there would be no tree planting on the bund where the powerline passes over the top.

**As per the previous email, at this stage Earth Resources Regulation just want something in writing from AusNet Services to show that the proposed relocation can meet your requirements and that appropriate measures are in place to protect the existing and relocated power assets during operation of the quarry.**

This advice will need to state:

- the required set back distances for excavation near your power poles
- the space required for the relocated powerline easement
- clarifying whether the proposed relocation of the power poles to be aligned with the bottom edge of the screening bund (as described above) is acceptable to AusNet Services, and what, if any, restrictions are relevant to this relocation (e.g. restrictions on vegetation to be planted under or near the powerlines).

For our future reference, if you can any general guidelines you can provide regarding the required separation distances between excavations and power poles that would be useful.

Thanks for your help,

Michael Stevenson



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PLAN**

**BCA Consulting – Earth Resources**  
Unit 29, 41-49 Norcal Road, Nunawading, VIC 3131  
Phone +61 3 9873 5123  
[www.bcaconsulting.com.au](http://www.bcaconsulting.com.au)

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---

**From:** BCA Consulting  
**Sent:** Friday, 8 July 2022 6:09 PM  
**To:** Tom Dudley <[tom.dudley@ausnetservices.com.au](mailto:tom.dudley@ausnetservices.com.au)>  
**Cc:** Kelvin Sargent <[kelvins@acm.com.au](mailto:kelvins@acm.com.au)>  
**Subject:** RE: Proposed Extractive Industry 5575 Sth Gippsland Hwy Lang Lang - Initial Site Meeting - 20th October 2020

Hi Tom,

You may remember that you attended a “virtual site meeting” on 20 October 2020 for a proposed sand quarry at 5575 South Gippsland Hwy, Lang Lang. The finalised minutes of that meeting were distributed by Kelvin Sargent on 5

November 2020. You had provided the attached 'SWER plot' with your email below, showing the presence of a 12.7kV high voltage SWER overhead line.

You had previously been dealing with Colin Thornton from BCA Consulting, but Colin has since retired. The minutes of the virtual site meeting record that:

*AusNet / Tom Dudley (TD) – I have been speaking to Colin Thornton from BCA regarding the relocation of powerlines in to buffer areas. So far, the buffer zone seems to be the better option which may incur removal of some vegetation which will have to be organised by ACM if we need to do so. We will need to assess the supply and demand of the extraction site and we can extend phases if necessary.*

As part of the approval process with Earth Resources Regulation (Dept of Jobs, Precincts and Regions), they are requiring that we:

- 1) Document the proposed power poles that are proposed to be relocated and agreement from AusNet Services for the proposed relocations.
- 2) Document the management and buffer requirements for the power poles, as agreed to by AusNet Services

Noting that the relocation of the power lines does not need to occur for the initial stages of the quarry development, so we do not need to initiate a relocation project (as per your email below) until well after approval of the quarry.

The attached draft Rehabilitation Plan for this quarry shows the proposed final location of power poles (including those that do not need to be relocated), as red dots, diverting the power line around the southern and western sides of the quarry. This plan shows the following:

- the screening bund around the southern and western sides of the quarry, which will be retained as part of the rehabilitated landscape, is approximately 5m in height
- the toe of the screening bund slope, being a 1V:3H slope, is designed to be 10m away from the property boundary to leave a corridor for the relocated power line
- the vegetation adjacent to the property boundary next to the South Gippsland Hwy is all outside of the property, but some trees do hang over the fence. However much of this vegetation is either not native, being pines / cypresses, or is low Melaleuca scrub. There are scattered eucalypts, mostly toward the south-eastern end of this boundary (see yellow dots on the attached figure, Clip1.jpg)
- it will be necessary that upon final rehabilitation the quarry will form a lake, so the power lines cannot be returned to their original course
- it is also worth noting that there are gas pipelines adjacent to the north-eastern boundary of the property, so poles cannot be located in close proximity to that area.

**At this stage Earth Resources Regulation just want something in writing from AusNet Services to show that the proposed relocation can meet your requirements and that appropriate measures are in place to protect the existing and relocated power assets during operation of the quarry.**

In the first instance, if you can provide any guidelines regarding the required separation distances for excavation near power poles that would be helpful.

Please contact me if you would like to discuss the proposed relocation of the power lines for this project and any further clarifications you may require.

Thanks,

Michael Stevenson    Mob: 0411 410 517



BCA Consulting – Earth Resources  
Unit 29, 41-49 Norcal Road, Nunawading, VIC 3131  
Phone +61 3 9873 5123  
[www.bcaconsulting.com.au](http://www.bcaconsulting.com.au)

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**From:** Tom Dudley <[tom.dudley@ausnetservices.com.au](mailto:tom.dudley@ausnetservices.com.au)>  
**Sent:** Monday, 28 September 2020 10:47 AM  
**To:** BCA Consulting <[admin@bcaconsulting.com.au](mailto:admin@bcaconsulting.com.au)>  
**Cc:** Gareth Downes <[gareth.downes@ausnetservices.com.au](mailto:gareth.downes@ausnetservices.com.au)>; Peter Lye <[Peter.Lye@ausnetservices.com.au](mailto:Peter.Lye@ausnetservices.com.au)>; David Green <[David.Green@ausnetservices.com.au](mailto:David.Green@ausnetservices.com.au)>  
**Subject:** RE: Proposed Extractive Industry 5575 Sth Gippsland Hwy Lang Lang - Initial Site Meeting - 20th October 2020

Hi Colin,

Please include myself for the virtual online Microsoft teams meeting on 20<sup>th</sup> October.

Briefly looking at the plan, there is proposed extraction where existing 12.7kV high voltage SWER overhead line is located. To initiate a project to relocate the existing assets you will need to submit an online application via our new Energy Connect portal. See the link below.

<https://www.ausnetservices.com.au/en/New-Connections/Electricity-Connections/Manage-electricity-applications>

Let me know if you have any questions. Look forward to the virtual meeting on the 20<sup>th</sup> October.

Regards

**Tom Dudley**  
Energy Project Coordinator



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**AusNet Services**  
60 Horn St  
Leongatha Victoria 3953 Australia  
Tel (03) 5667 0578 Mob 0439 972 545  
[tom.dudley@ausnetservices.com.au](mailto:tom.dudley@ausnetservices.com.au)  
[www.ausnetservices.com.au](http://www.ausnetservices.com.au)

**From:** LMG <[lmg@ausnetservices.com.au](mailto:lmg@ausnetservices.com.au)>  
**Sent:** Tuesday, 22 September 2020 2:06 PM  
**To:** Gareth Downes <[gareth.downes@ausnetservices.com.au](mailto:gareth.downes@ausnetservices.com.au)>  
**Subject:** FW: Proposed Extractive Industry 5575 Sth Gippsland Hwy Lang Lang - Initial Site Meeting - 20th October 2020

Good afternoon Gareth,

Hope this finds you well,

Please find below invitation for Virtual site inspection for Proposed quarry extension at 5575 South Gippsland Highway, Lang Lang.

This proposal may effect current distribution services in the area.

Can one of your team members please take on the case?

**REGISTER SEARCH STATEMENT (Title Search) Transfer of Land Act 1958**

VOLUME 10613 FOLIO 500

Security no : 124072559368A  
Produced 26/06/2018 10:45 am

**LAND DESCRIPTION**

Lot 1 on Title Plan 023467H.

PARENT TITLES :

Volume 05977 Folio 234      Volume 07520 Folio 065

Created by instrument X772759X 27/09/2001

**REGISTERED PROPRIETOR**

Estate Fee Simple

Sole Proprietor

GEOFFREY JAMES PATE of RMB 5575 SOUTH GIPPSLAND HIGHWAY LANG LANG 3984  
X772759X 27/09/2001

**ENCUMBRANCES, CAVEATS AND NOTICES**

MORTGAGE AF107456U 02/06/2007  
COMMONWEALTH BANK OF AUSTRALIA

CAVEAT AQ672485K 29/01/2018

Caveator

LANG LANG SAND RESOURCES PTY LTD ACN: 623521657

Grounds of Claim

PURCHASERS' CONTRACT WITH THE FOLLOWING PARTIES AND DATE.

Parties

THE REGISTERED PROPRIETOR(S)

Date

25/01/2018

Estate or Interest

FREEHOLD ESTATE

Prohibition

ABSOLUTELY

Lodged by

HARWOOD ANDREWS LAWYERS - SLADEN LEGAL

Notices to

SLADEN LEGAL of LEVEL 5 707 COLLINS STREET DOCKLANDS VIC 3008

Any encumbrances created by Section 98 Transfer of Land Act 1958 or Section 24 Subdivision Act 1988 and any other encumbrances shown or entered on the plan set out under DIAGRAM LOCATION below.

**DIAGRAM LOCATION**

SEE TP023467H FOR FURTHER DETAILS AND BOUNDARIES

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PLAN**

**ACTIVITY IN THE LAST 125 DAYS**

NIL

-----END OF REGISTER SEARCH STATEMENT-----

Additional information: (not part of the Register Search Statement)

Street Address: 5575 SOUTH GIPPSLAND HIGHWAY LANG LANG VIC 3984

**REGISTER SEARCH STATEMENT (Title Search) Transfer of  
Land Act 1958  
ADMINISTRATIVE NOTICES**

Page 2 of 2

NIL

eCT Control 15940N COMMONWEALTH BANK OF AUSTRALIA  
Effective from 23/10/2016

DOCUMENT END

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Number of Pages (excluding this cover sheet)	<b>1</b>
Document Assembled	<b>26/06/2018 10:51</b>

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PLAN**

<b>TITLE PLAN</b>	<b>EDITION 1</b>	<b>TP23467H</b>
-------------------	------------------	-----------------

**Location of Land**

Parish: LANG LANG  
 Township:  
 Section:  
 Crown Allotment: 41C & 76C  
 Crown Portion:  
  
 LTO Base Record: S.C.M.B.  
 Last Plan Reference: Lot 2 (Pt) LP91815  
 Title References: Vol.5977 Fol.234 & Vol.7520  
 Fol.065  
 Depth Limitation: 15.24 Metres (Crown Allotment 76C)

**Notations**

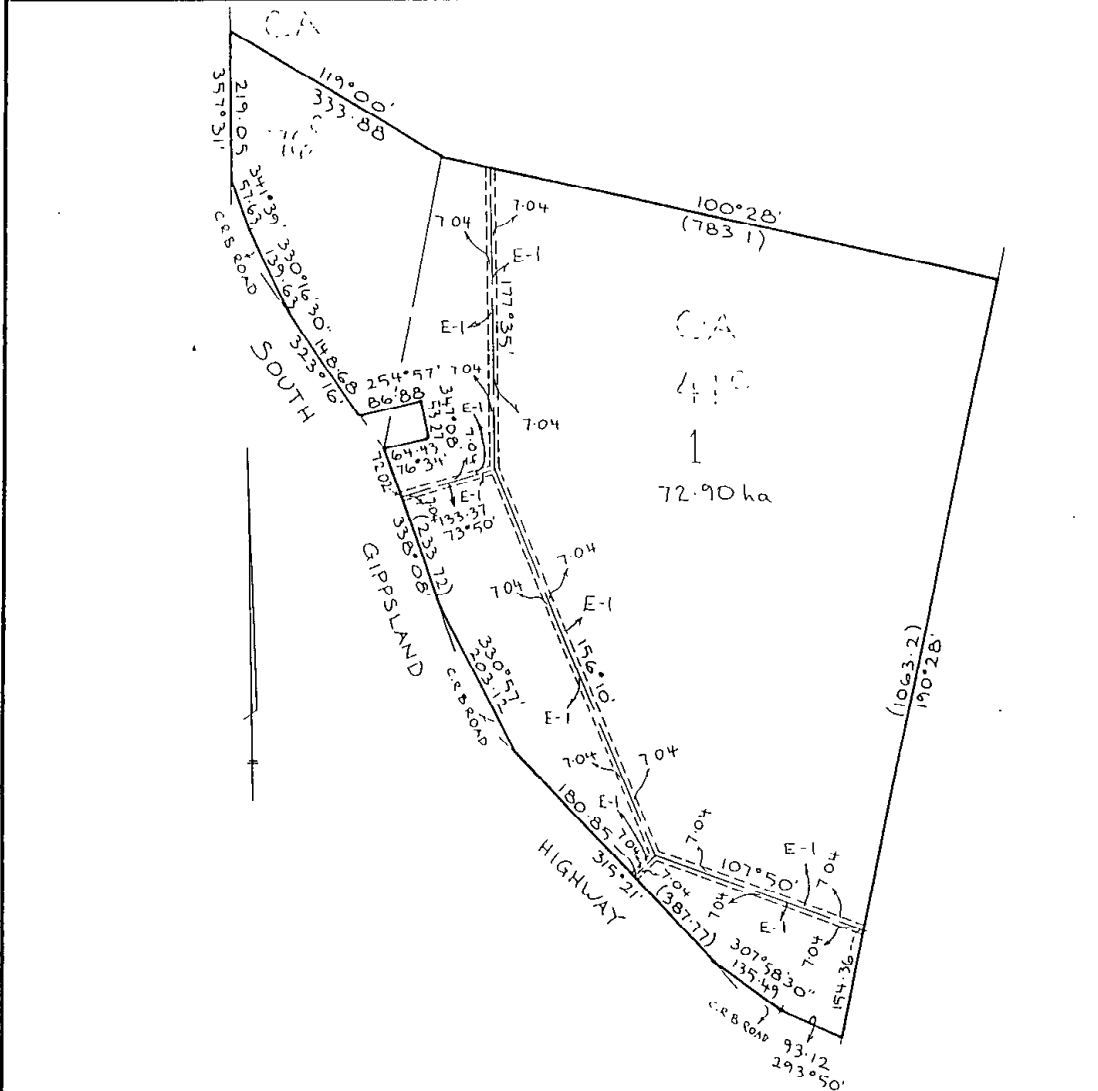
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PLAN

Easement Information				
Easement Reference	Purpose / Authority	Width (Metres)	Origin	Land benefited / In favour of
E-1	Electricity Supply	See Plan	LP91815	Lots in LP91815

THIS PLAN HAS BEEN PREPARED FOR LAND REGISTRY, LAND VICTORIA FOR TITLE DIAGRAM PURPOSES

Checked by *[Signature]*

Date 8 / 11 / 2001  
 Assistant Registrar of Titles



LENGTHS ARE IN METRES	SCALE	SHEET SIZE A3	FILE NO: X772759X
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**REGISTER SEARCH STATEMENT (Title Search) Transfer of Land Act 1958**

VOLUME 08916 FOLIO 752

Security no : 124072559367C  
Produced 26/06/2018 10:45 am

**LAND DESCRIPTION**

Lot 1 on Plan of Subdivision 091815.

PARENT TITLES :

Volume 05977 Folio 234      Volume 07520 Folio 065  
Created by instrument E251351 14/12/1971

**ADVERTISED  
PLAN**

**REGISTERED PROPRIETOR**

Estate Fee Simple  
Sole Proprietor

GEOFFREY JAMES PATE of RMB 5575, SOUTH GIPPSLAND HIGHWAY LANG LANG 3984  
X772759X 27/09/2001

**ENCUMBRANCES, CAVEATS AND NOTICES**

MORTGAGE AF107456U 02/06/2007  
COMMONWEALTH BANK OF AUSTRALIA

CAVEAT AQ672485K 29/01/2018

Caveator  
LANG LANG SAND RESOURCES PTY LTD ACN: 623521657  
Grounds of Claim  
PURCHASERS' CONTRACT WITH THE FOLLOWING PARTIES AND DATE.  
Parties  
THE REGISTERED PROPRIETOR(S)  
Date  
25/01/2018  
Estate or Interest  
FREEHOLD ESTATE  
Prohibition  
ABSOLUTELY  
Lodged by  
HARWOOD ANDREWS LAWYERS - SLADEN LEGAL  
Notices to  
SLADEN LEGAL of LEVEL 5 707 COLLINS STREET DOCKLANDS VIC 3008

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**DIAGRAM LOCATION**

SEE LP091815 FOR FURTHER DETAILS AND BOUNDARIES

**ACTIVITY IN THE LAST 125 DAYS**

NIL

-----END OF REGISTER SEARCH STATEMENT-----

Additional information: (not part of the Register Search Statement)

Street Address: 5575 SOUTH GIPPSLAND HIGHWAY LANG LANG VIC 3984

**REGISTER SEARCH STATEMENT (Title Search) Transfer of  
Land Act 1958  
ADMINISTRATIVE NOTICES**

Page 2 of 2

NIL

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Document Type	<b>Plan</b>
Document Identification	<b>LP091815</b>
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Document Assembled	<b>26/06/2018 10:51</b>

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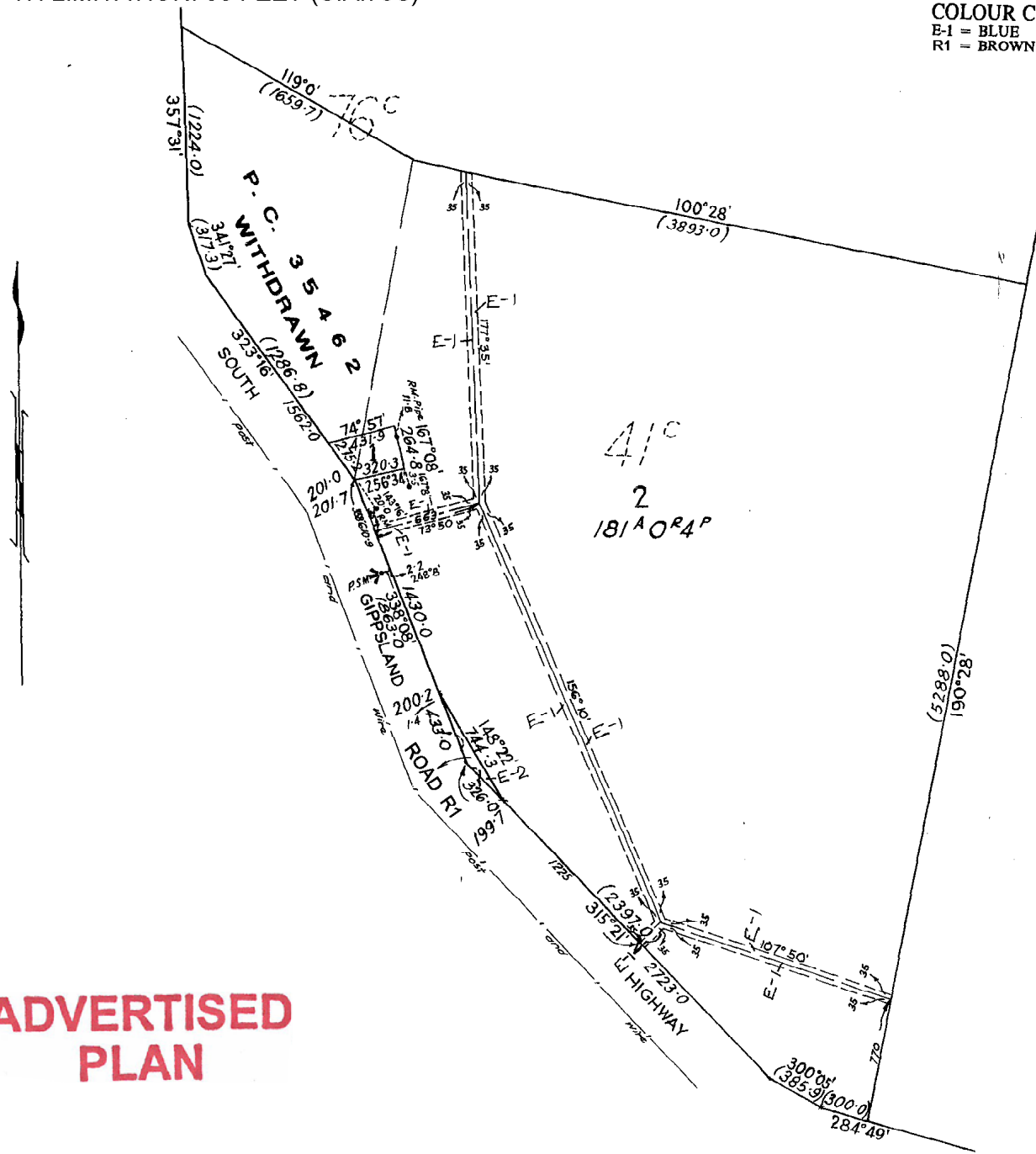
**PLAN OF SUBDIVISION**  
**PART OF CROWN ALLOTMENTS**  
**41<sup>c</sup> & 76<sup>c</sup>**  
**PARISH OF LANG LANG**  
**COUNTY OF MORNINGTON**  
 VOL.5977 FOL.234  
 VOL.7520 FOL.065

APPROPRIATIONS
Brown..... Carriageway
Blue..... Supply of alectricity.

ENCUMBRANCES & OTHER NOTATIONS
Measurements shown in brackets are not derived from this survey.
Road widths are not to scale.

Measurements are in Links  
 Conversion Factor  
 LINKS X 0.201168 = METRES  
 DEPTH LIMITATION: 50 FEET (C.A.76C)

**COLOUR CONVERSION**  
 E-1 = BLUE  
 R1 = BROWN



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**REGISTER SEARCH STATEMENT (Title Search) Transfer of Land Act 1958**

VOLUME 10257 FOLIO 299

Security no : 124072559365D  
Produced 26/06/2018 10:45 am

**LAND DESCRIPTION**

Lot 1 on Plan of Subdivision 312674E.  
PARENT TITLE Volume 03973 Folio 584  
Created by instrument PS312674E 02/11/1995

**REGISTERED PROPRIETOR**

Estate Fee Simple  
Sole Proprietor  
GEOFFREY JAMES PATE of 5575 SOUTH GIPPSLAND HY LANG LANG 3984  
V117593V 27/11/1997

**ENCUMBRANCES, CAVEATS AND NOTICES**

MORTGAGE V243918M 06/02/1998  
COMMONWEALTH BANK OF AUSTRALIA

CAVEAT AQ672485K 29/01/2018

Caveator  
LANG LANG SAND RESOURCES PTY LTD ACN: 623521657  
Grounds of Claim  
PURCHASERS' CONTRACT WITH THE FOLLOWING PARTIES AND DATE.  
Parties  
THE REGISTERED PROPRIETOR(S)  
Date  
25/01/2018  
Estate or Interest  
FREEHOLD ESTATE  
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SLADEN LEGAL of LEVEL 5 707 COLLINS STREET DOCKLANDS VIC 3008

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**DIAGRAM LOCATION**

SEE PS312674E FOR FURTHER DETAILS AND BOUNDARIES

**ACTIVITY IN THE LAST 125 DAYS**

NIL

-----END OF REGISTER SEARCH STATEMENT-----

Additional information: (not part of the Register Search Statement)

Street Address: 5575 SOUTH GIPPSLAND HIGHWAY LANG LANG VIC 3984

**ADMINISTRATIVE NOTICES**

**REGISTER SEARCH STATEMENT (Title Search) Transfer of  
Land Act 1958**

NIL

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**REGISTER SEARCH STATEMENT (Title Search) Transfer of Land Act 1958**

VOLUME 10257 FOLIO 300

Security no : 124072559366B  
Produced 26/06/2018 10:45 am

**LAND DESCRIPTION**

Lot 2 on Plan of Subdivision 312674E.  
PARENT TITLE Volume 03973 Folio 584  
Created by instrument PS312674E 02/11/1995

**ADVERTISED PLAN**

**REGISTERED PROPRIETOR**

Estate Fee Simple  
Sole Proprietor  
GEOFFREY JAMES PATE of RMB 5575 SOUTH GIPPSLAND HIGHWAY LANG LANG 3984  
X772759X 27/09/2001

**ENCUMBRANCES, CAVEATS AND NOTICES**

MORTGAGE AF107456U 02/06/2007  
COMMONWEALTH BANK OF AUSTRALIA

CAVEAT AQ672485K 29/01/2018

Caveator  
LANG LANG SAND RESOURCES PTY LTD ACN: 623521657  
Grounds of Claim  
PURCHASERS' CONTRACT WITH THE FOLLOWING PARTIES AND DATE.  
Parties  
THE REGISTERED PROPRIETOR(S)  
Date  
25/01/2018  
Estate or Interest  
FREEHOLD ESTATE  
Prohibition  
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**DIAGRAM LOCATION**

SEE PS312674E FOR FURTHER DETAILS AND BOUNDARIES

**ACTIVITY IN THE LAST 125 DAYS**

NIL

-----END OF REGISTER SEARCH STATEMENT-----

Additional information: (not part of the Register Search Statement)

Street Address: 5575 SOUTH GIPPSLAND HIGHWAY LANG LANG VIC 3984

**ADMINISTRATIVE NOTICES**

**REGISTER SEARCH STATEMENT (Title Search) Transfer of  
Land Act 1958**

NIL

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<b>PLAN OF SUBDIVISION</b>	STAGE NO —	LTO use only <b>EDITION 1</b>	Plan Number <b>PS 312674E</b>
----------------------------	---------------	----------------------------------	----------------------------------

**Location of Land**

**Parish LANG LANG**  
**Crown Allotment: 76B**  
**LTO Base Record: PARISH (2968 )**  
**Title Reference: VOL 3973 FOL 584**  
**Last Plan Reference: -**

**Postal Address: STH GIPPSLAND HWY**  
 (at time of subdivision) **LANG LANG 3984**

**AMG Co-ordinates** E 376 840 Zone 55  
 (of approx. centre of land in plan) N 5 756 360

**Council Certification and Endorsement**  
 Council Name: SHIRE OF CRANBOURNE  
 Ref: 4706

1- This plan is certified under section 6 of the Subdivision Act 1988.  
~~2- This plan is certified under section 11(7) of the Subdivision Act 1988.~~  
~~Date of original certification under section 6 / /~~  
~~3- This is a statement of compliance issued under section 21 of Subdivision Act 1988.~~

**OPEN SPACE**  
 (i) A requirement for public open space under section 18 of the Subdivision Act 1988 has/has not been made.  
~~(ii) The requirement has been satisfied.~~  
~~(iii) The requirement is to be satisfied in Stage.....~~

Council Delegate  
~~Council Seal~~  
 Date 11 / 1 / 94

Re-certified under section 11(7) of the Subdivision Act 1988  
 Council Delegate  
 Council Seal  
 Date / /

**LTO use only**  
 Statement of Compliance/  
 Exemption Statement

Received   
 Date 31 / 10 / 95

**LTO use only**  
 PLAN REGISTERED  
 TIME 12 : 15  
 Date 2 / 11 / 95

*K Osborne*  
 Assistant Registrar of Titles

**Vesting of roads and/or Reserves**

Identifier	Council/Body/Person
NIL	NIL

**Notations**

**Survey** This plan is based on survey  
 This survey has been connected to permanent marks no(s)  
 In proclaimed Survey Area No.

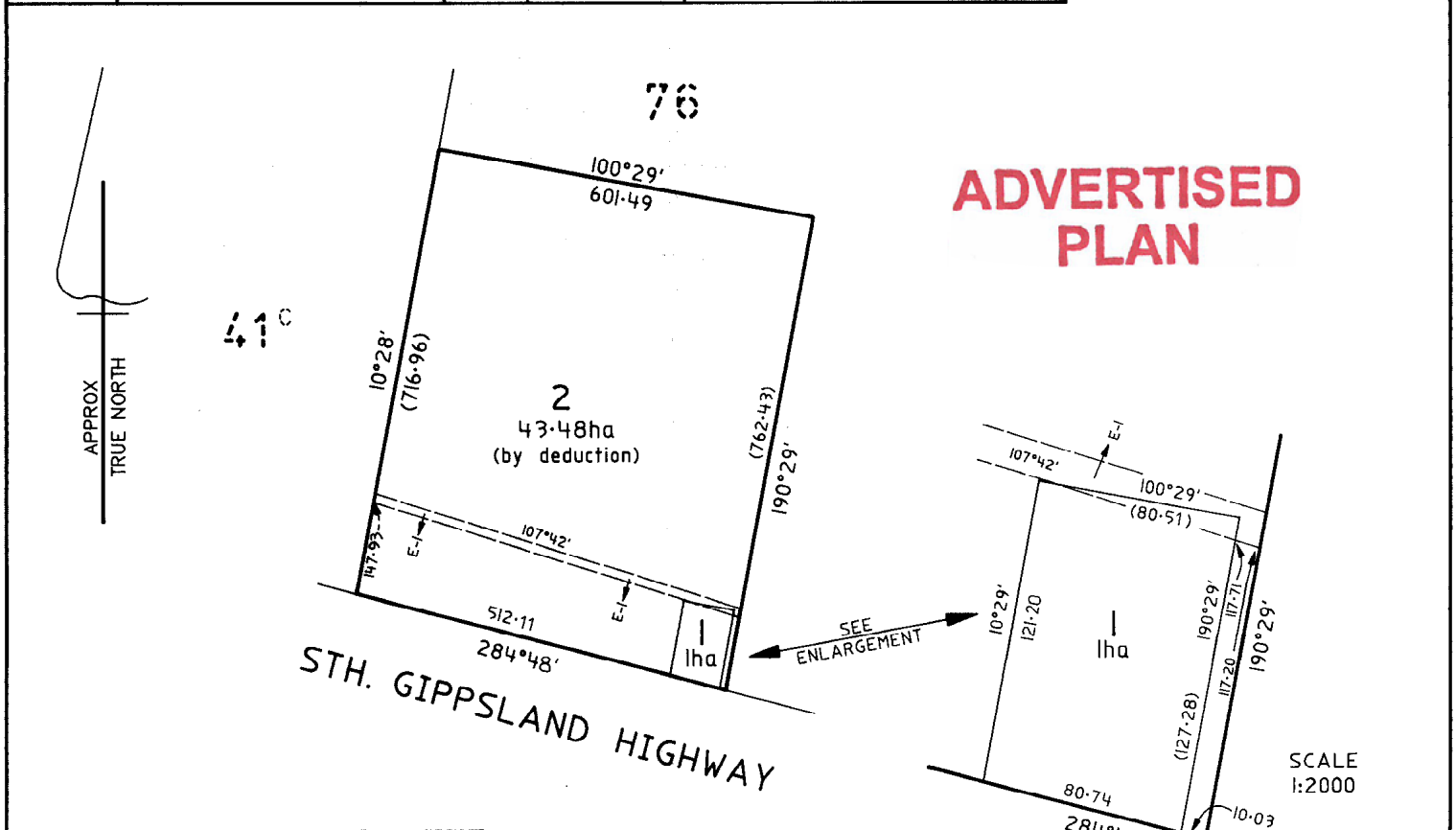
**Staging** This is not a staged  
 Subdivision. Planning Permit No.910390

**Easement Information**

**Legend:** A - Appurtenant Easement E - Encumbering Easement R - Encumbering Easement (Road)

Easement Reference	Purpose	Width (metres)	Origin	Land benefited/in favour of
E-1	ELECTRICITY SUPPLY	14.08	THIS PLAN	S.E.C.V.

**Depth Limitation**  
 15.24 METRES BELOW THE SURFACE  
 LOT 2 IS NOT THE RESULT  
 OF SURVEY



**Nilsson, Noel & Holmes Pty Ltd.**  
 Surveyors, Engineers & Town Planners.  
 146A High Street, Cranbourne 3977  
 phone 059 964 133

ORIGINAL	SCALE	
SCALE 1:8000	SHEET SIZE A3	 LENGTHS ARE IN METRES

LICENSED SURVEYOR (PRINT) **STANLEY G. JEFFREYS**

SIGNATURE ..... DATE 1 / 10 / 91

REF **802195** VERSION **02** DISK No. 380

Sheet 1 of 1 sheets

.....

DATE / /

COUNCIL DELEGATE SIGNATURE

From [www.planning.vic.gov.au](http://www.planning.vic.gov.au) at 20 May 2020 05:43 PM

## PROPERTY DETAILS

Address: **5575 SOUTH GIPPSLAND HIGHWAY LANG LANG 3984**

Lot and Plan Number: **More than one parcel - see link below**

Standard Parcel Identifier (SPI): **More than one parcel - see link below**

Local Government Area (Council): **CARDINIA**

Council Property Number: **4784803500**

Planning Scheme: **Cardinia**

Directory Reference: **Vicroads 96 B7**

[www.cardinia.vic.gov.au](http://www.cardinia.vic.gov.au)

[Planning Scheme - Cardinia](#)

This property has 4 parcels. For full parcel details get the free Property report at [Property Reports](#)

## UTILITIES

Rural Water Corporation: **Southern Rural Water**

Melbourne Water Retailer: **South East Water**

Melbourne Water: **Inside drainage boundary**

Power Distributor: **AUSNET**

[View location in VicPlan](#)

## STATE ELECTORATES

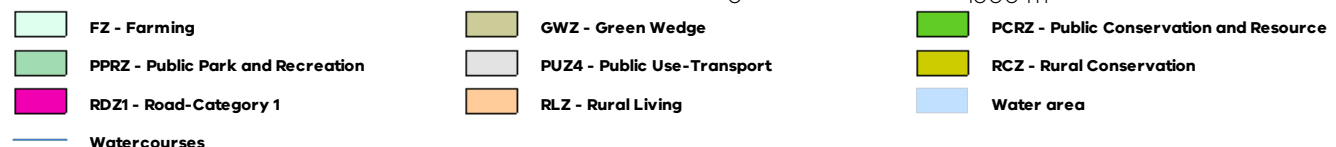
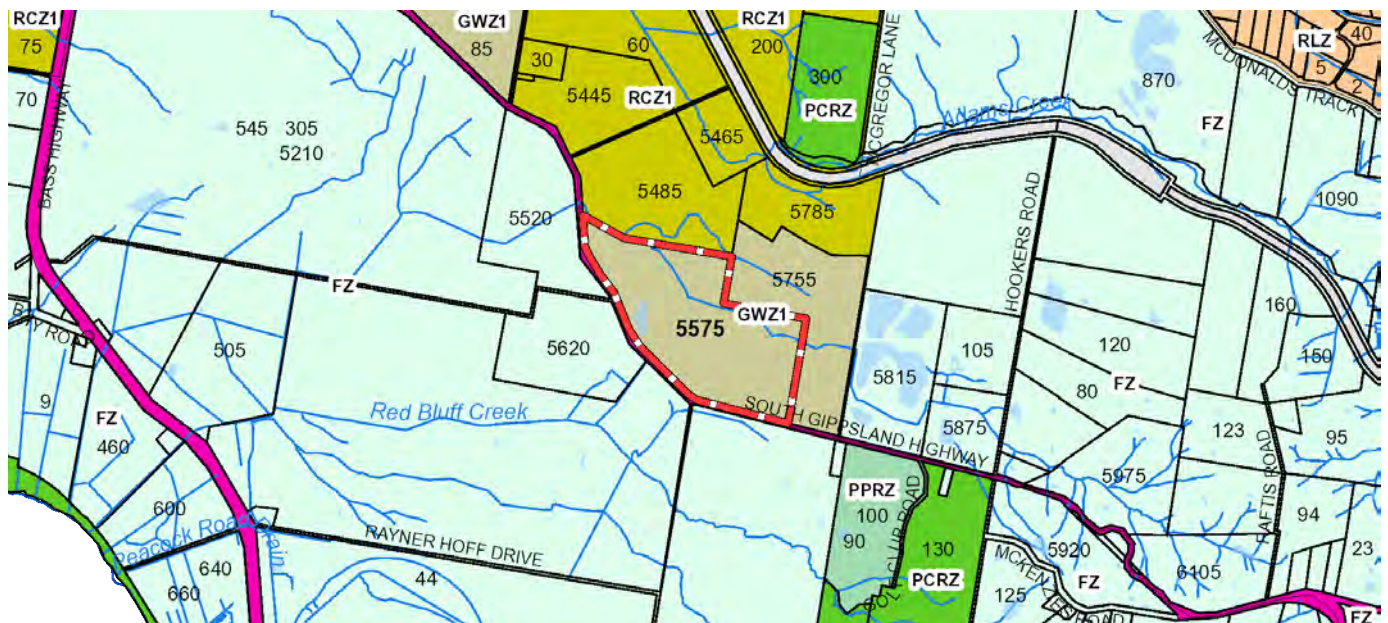
Legislative Council: **EASTERN VICTORIA**

Legislative Assembly: **BASS**

## Planning Zones

[GREEN WEDGE ZONE \(GWZ\)](#)

[GREEN WEDGE ZONE - SCHEDULE 1 \(GWZ1\)](#)



Note: labels for zones may appear outside the actual zone - please compare the labels with the legend.

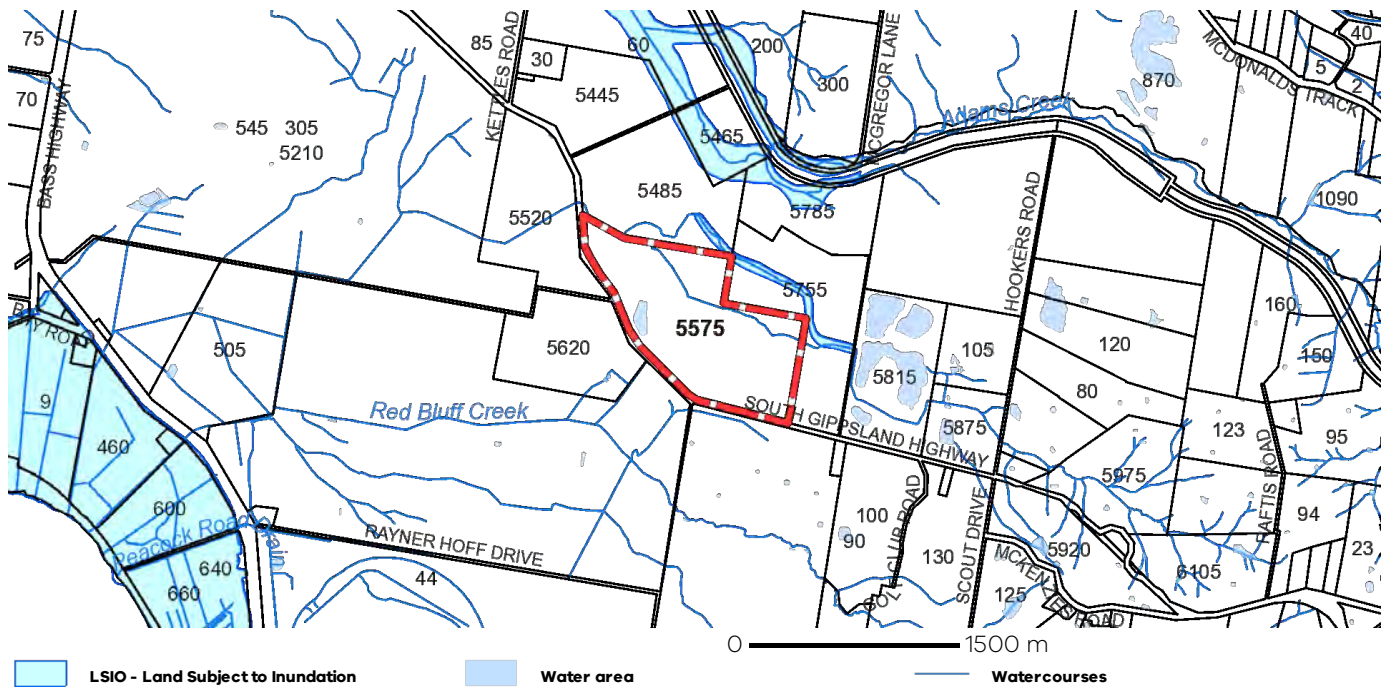
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## Planning Overlays

[LAND SUBJECT TO INUNDATION OVERLAY \(LSIO\)](#)

[LAND SUBJECT TO INUNDATION OVERLAY SCHEDULE \(LSIO\)](#)



LSIO - Land Subject to Inundation      Water area      Watercourses

Note: due to overlaps, some overlays may not be visible, and some colours may not match those in the legend

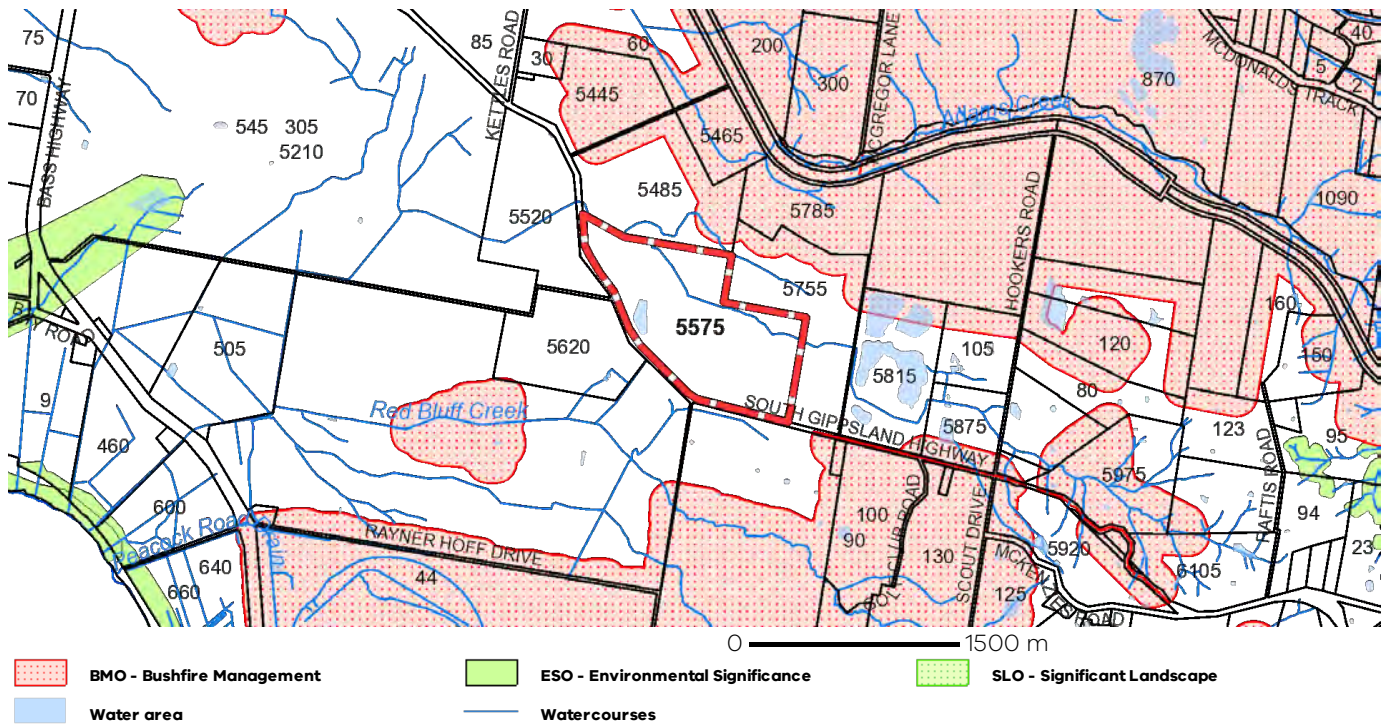
### OTHER OVERLAYS

Other overlays in the vicinity not directly affecting this land

[BUSHFIRE MANAGEMENT OVERLAY \(BMO\)](#)

[ENVIRONMENTAL SIGNIFICANCE OVERLAY \(ESO\)](#)

[SIGNIFICANT LANDSCAPE OVERLAY \(SLO\)](#)



BMO - Bushfire Management      ESO - Environmental Significance      SLO - Significant Landscape  
Water area      Watercourses

Note: due to overlaps, some overlays may not be visible, and some colours may not match those in the legend

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## Areas of Aboriginal Cultural Heritage Sensitivity

All or part of this property is an 'area of cultural heritage sensitivity'.

'Areas of cultural heritage sensitivity' are defined under the Aboriginal Heritage Regulations 2018, and include registered Aboriginal cultural heritage places and land form types that are generally regarded as more likely to contain Aboriginal cultural heritage.

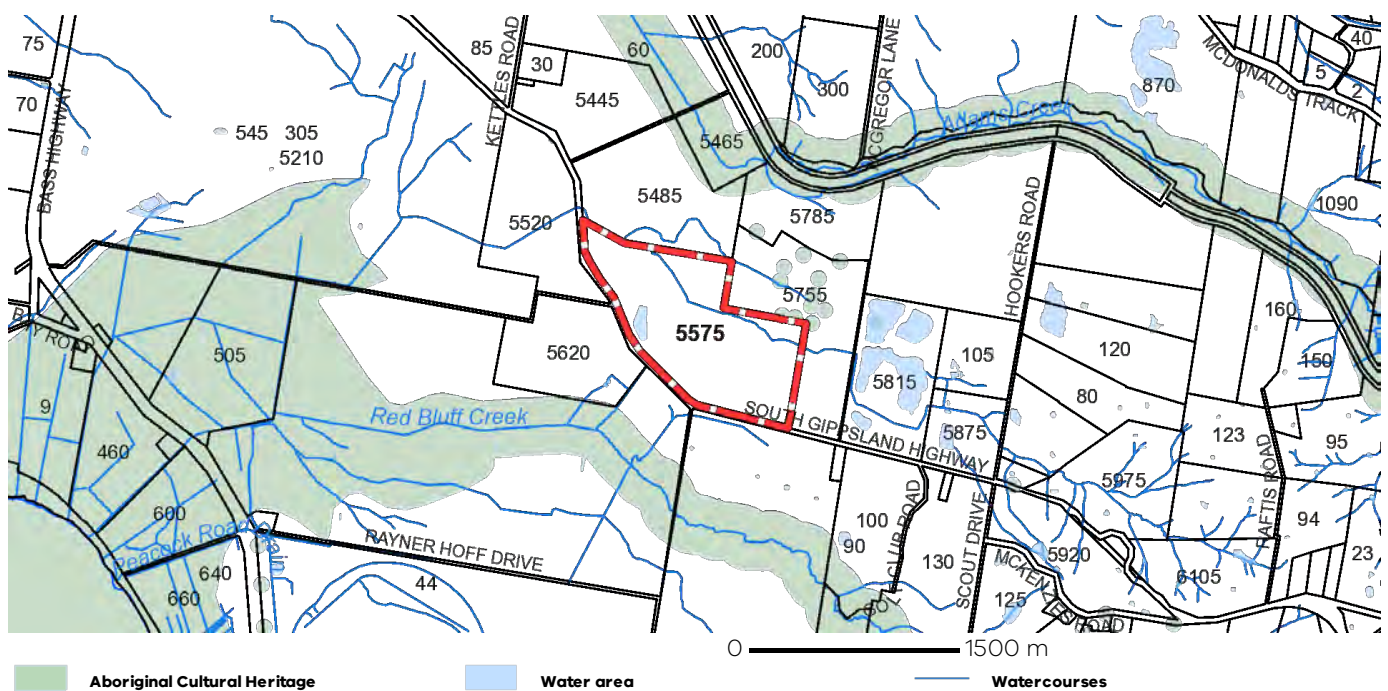
Under the Aboriginal Heritage Regulations 2018, 'areas of cultural heritage sensitivity' are one part of a two part trigger which require a 'cultural heritage management plan' be prepared where a listed 'high impact activity' is proposed.

If a significant land use change is proposed (for example, a subdivision into 3 or more lots), a cultural heritage management plan may be triggered. One or two dwellings, works ancillary to a dwelling, services to a dwelling, alteration of buildings and minor works are examples of works exempt from this requirement.

Under the Aboriginal Heritage Act 2006, where a cultural heritage management plan is required, planning permits, licences and work authorities cannot be issued unless the cultural heritage management plan has been approved for the activity.

For further information about whether a Cultural Heritage Management Plan is required go to <http://www.aav.nrms.net.au/aavQuestion1.aspx>

More information, including links to both the Aboriginal Heritage Act 2006 and the Aboriginal Heritage Regulations 2018, can also be found here - <https://www.aboriginalvictoria.vic.gov.au/aboriginal-heritage-legislation>



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## Further Planning Information

Planning scheme data last updated on 18 May 2020.

A **planning scheme** sets out policies and requirements for the use, development and protection of land. This report provides information about the zone and overlay provisions that apply to the selected land. Information about the State and local policy, particular, general and operational provisions of the local planning scheme that may affect the use of this land can be obtained by contacting the local council or by visiting <https://www.planning.vic.gov.au>

This report is NOT a **Planning Certificate** issued pursuant to Section 199 of the **Planning and Environment Act 1987**. It does not include information about exhibited planning scheme amendments, or zonings that may affect the land. To obtain a Planning Certificate go to Titles and Property Certificates at Landata - <https://www.landata.vic.gov.au>

For details of surrounding properties, use this service to get the Reports for properties of interest.

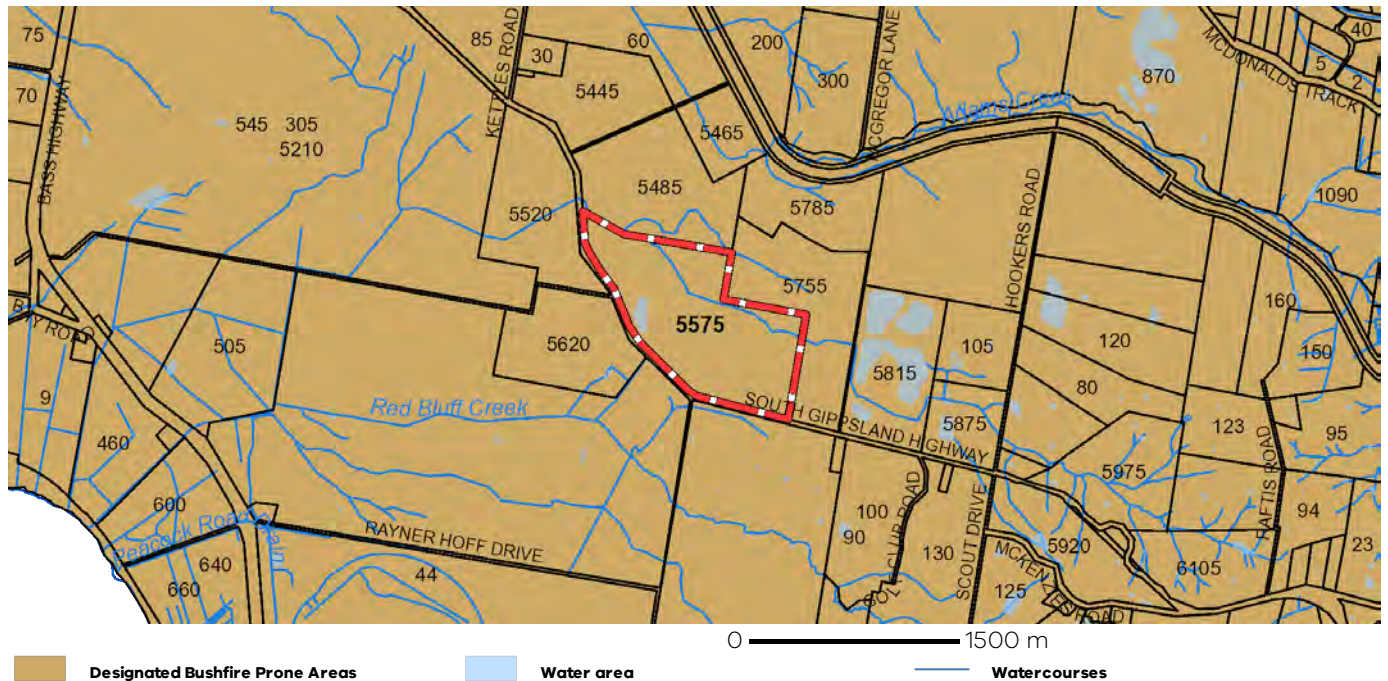
To view planning zones, overlay and heritage information in an interactive format visit <https://mapshare.maps.vic.gov.au/vicplan>

For other information about planning in Victoria visit <https://www.planning.vic.gov.au>

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## Designated Bushfire Prone Areas

**This property is in a designated bushfire prone area.**  
**Special bushfire construction requirements apply. Planning provisions may apply.**



Designated bushfire prone areas as determined by the Minister for Planning are in effect from 8 September 2011 and amended from time to time.

The Building Regulations 2018 through application of the Building Code of Australia, apply bushfire protection standards for building works in designated bushfire prone areas.

Designated bushfire prone areas maps can be viewed on VicPlan at <https://mapshare.maps.vic.gov.au/vicplan> or at the relevant local council.

Note: prior to 8 September 2011, the whole of Victoria was designated as bushfire prone area for the purposes of the building control system.

Further information about the building control system and building in bushfire prone areas can be found on the Victorian Building Authority website <https://www.vba.vic.gov.au>

Copies of the Building Act and Building Regulations are available from <http://www.legislation.vic.gov.au>

For Planning Scheme Provisions in bushfire areas visit <https://www.planning.vic.gov.au>

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Department of Jobs, Precincts and Regions

## DECLARATION OF CULTURAL HERITAGE MANAGEMENT PLAN REQUIREMENT

**WA007541 - Lang Lang Sand Resources – PLN001536**

It is the responsibility of the applicant, as the proponent of the activity requiring approval, to determine if a Cultural Heritage Management Plan is required under the *Aboriginal Heritage Act 2006*.

For further information please contact Aboriginal Victoria on 1800 762 003 or at [Aboriginalaffairs@dpc.vic.gov.au](mailto:Aboriginalaffairs@dpc.vic.gov.au)

This form, including the printable process list from the self-assessment conducted in Step1 must be completed, signed and submitted with the work plan.

### Step 1

Complete a self-assessment using the Aboriginal Heritage Planning Tool available from the Aboriginal Victoria website.

<https://www.vic.gov.au/aboriginalvictoria/heritage/planning-and-heritage-management-processes/cultural-heritage-management-plans.html>

### Step 2

Please advise which is applicable to your proposed work plan and include the:

A Cultural Heritage Management Plan is **NOT** required:

An **approved** Cultural Heritage Management Plan is attached:

An approved Cultural Heritage Management Plan **will be provided with the work plan** for approval:

### Step 3

Sign\* this form and submit it with the work plan.

I declare that the above information is true and correct and the tenement holder / applicant (if not myself) has been advised.

Name (print) KELVIN A. SARGENT

I am the: Tenement Holder  Tenement Applicant  Agent

Signature [Handwritten Signature]

Date 16/3/2022

\* Please be advised that it is against the law to provide false or misleading information.

## Process List

Project Name: WA7541 ACM Lang Lang

Project Location: Lang Lang

Date: 04-Jun-2021

	QUESTION	ANSWER
<b>Question 1</b>	Is the proposed activity , or all the proposed activities, exempt?	No
<b>Question 2</b>	Are you undertaking a High Impact Activity as listed in the Aboriginal Heritage Regulations?	Yes
<b>Question 3</b>	Does your activity include significant ground disturbance?	Yes
<b>Question 4</b>	Does your activity area include areas of a registered cultural heritage place (regardless of significant ground disturbance) or cultural heritage sensitivity that have not previously been subject to significant ground disturbance?	No
<b>Answer:</b>	<p><u>ON THE BASIS OF THE ANSWERS YOU HAVE ENTERED</u></p> <p>YOU ARE NOT REQUIRED BY THE REGULATIONS TO PREPARE A CULTURAL HERITAGE MANAGEMENT PLAN FOR THIS PROJECT</p>	
	<p>This process list is for information purposes only; the result must not be relied upon by a statutory authority in deciding whether a cultural heritage management plan is required for a proposed activity.</p>	

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# **Imported Materials Management Plan**

## **Lang Lang Sand Pit – WA007541**

### **Lang Lang Sand Resources Pty Ltd**

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**Lang Lang Sand Resources Pty Ltd**  
5575 Sth Gippsland Highway  
Lang Lang 3984

**Kelvin Sargent**  
**GM Strategy & Development**  
Ph: (03) 9408 0666 Mob: 0402 534 467  
kelvins@acm.com.au

**30 December 2022**

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## Revision History

Document Date	Version	Description	Issued By	Reviewed By	Approved By
12 Sep 2022	1	1 <sup>st</sup> draft of IMMP	BCA Consulting	KS	KS
30 Dec 2022	2	2 <sup>nd</sup> draft of IMMP	BCA Consulting	KS	KS

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## 1. Background

This Imported Materials Management Plan (IMPP) has been prepared to meet the requirements of the *Imported Materials Management Guidelines for Mines and Quarry Operations*, published by Earth Resources Regulation (ERR), and provides the framework to manage 'clean fill' materials (uncontaminated soil, including gravel and rock), recycled aggregates (processed solid inert waste), mulch or sand that are imported to the Lang Lang Sand Pit site.

Clean fill (or 'Fill Material' as defined by the EPA) must meet the contaminant thresholds set out in EPA Publication 1828.2 *Waste Disposal Categories – Characteristics and Thresholds*. These materials, and any other solid inert wastes, brought to the site for reuse would need to meet a classification of 'industrial waste (non-priority)', as per EPA Publication 1968.1 *Guide to Classifying Industrial Waste*. Other processed or extracted raw sand may also be brought to the site for blending with sand extracted onsite to achieve product specifications, but such imported sand is not classified as 'waste' under EPA legislation.

This IMMP documents and formalises the process of receiving any clean fill materials, as well as any recycled aggregates (solid inert waste), that are brought onto the Work Authority (the site) for the purposes of constructing hardstand areas, roadways and other works or for rehabilitation work. If necessary, there may be short-term stockpiling of material for site rehabilitation until rehabilitation opportunities arise. The site has the capacity to receive these materials, at relatively low volumes, along with the imported sand that may also be brought to the site for blending with extracted sand.

Some imported uncontaminated soil and other clean fill materials, along with mulch, may be used to supplement site rehabilitation, if necessary, by aiding the establishment of vegetation on the upper terminal batters, the screening bund or the northern waterway diversion. Such use of imported materials will always be consistent with the site's Rehabilitation Plan.

It is not intended for any unprocessed solid inert waste to be accepted onto the site for reprocessing into engineered fill / structural fill. There is also no intention to dispose of any imported waste materials within the backfill deposited in the pit.

## 2. Objectives

The objectives of this IMMP are to:

- Define the types of material that may be imported to the site during the extractive industry operation
- Document the procedures to be implemented for a new source of imported material to confirm the classification of the imported material prior to importation
- Document the procedures to be implemented at the site to check that only the material that the site is authorised to receive is imported to the site

## 3. Waste Classification

The *Environment Protection Act 2017* defines 'Industrial waste' as all "waste arising from commercial, industrial or trade activities or from laboratories" or as prescribed. Waste being defined as any "matter that is discarded, rejected, abandoned, unwanted or surplus, irrespective of any potential use or value" and includes matter "intended for, or is undergoing, resource recovery". Under this broad definition 'industrial waste' includes 'clean fill' (or 'Fill Material' as defined by the EPA) that may be brought to the site for construction of hardstands, etc. or for rehabilitation purposes. This definition does not include processed sand or extracted raw sand that may be brought to the site for blending with product produced on site.

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The *Environment Protection Act 2017* requires that any producer of industrial waste, or those in management or control of industrial waste, must classify the waste in accordance with the Act and the *Environment Protection Regulations 2021*.

**The industrial waste must be classified before it is received at the site or if it is to be transported offsite.** However, if it is soil from contaminated land sourced onsite (i.e. would classify as a 'priority waste'), then it must be classified as soon as practicable after sourcing the soil. Classification enables you to identify whether the waste is a 'priority waste' or 'reportable priority waste', and if additional waste duties or regulatory controls apply.

The *Environment Protection Act 2017* requires that anyone who is transporting industrial waste, must before relinquishing management or control of that waste, take all reasonable steps to ensure that it will be delivered to a site that is authorised to receive that waste. This requirement ensures that relevant information is passed on through the waste supply chain, so it can be determined where the waste can be lawfully taken for resource recovery, reuse or disposal, and those receiving the waste can manage any associated risks.

Waste classification involves:

- **determining the relevant waste code or codes** (Schedule 5 of the *Environment Protection Regulations 2021*)
- **determining the waste type** – 'industrial waste (non-priority)', 'priority waste' or 'reportable waste', and if any additional waste duties or regulatory controls apply
- for soil that is 'priority waste' or for priority waste consigned for disposal to landfill, **determining which priority waste category or disposal category applies (Category A, B, C or D).**

Materials that may typically be accepted at quarry sites, such as 'clean fill', solid inert wastes or mulches, are all classified as 'industrial waste (non-priority)'. However, the particular waste code must also be determined.

It is an offence under the *Environment Protection Act 2017* for a person who has the management or control of industrial waste to provide false or misleading information or documents in connection with the type, properties and classification of the industrial waste, or to conceal such information or documents.

Waste classified as 'priority waste' must not be blended, mixed or diluted to change the waste classification without first obtaining an EPA designation in relation to that particular blending, mixing or diluting process.

Having classified the industrial waste, the *Environment Protection Act 2017* requires that it be taken to a 'lawful place', being a place or premises 'authorised to receive industrial waste' (for that type of industrial waste). Refer to the Definitions section for a detailed explanation of 'authorised to receive industrial waste' and related terms. Further information is provided in EPA Publication 1946.1 *How to Establish Lawful Place*.

## 4. Receiving Waste and EPA Permissions

Transporting and receiving industrial wastes must be in accordance with the *Environment Protection Regulations 2021*. Whether a site is authorised to receive waste and whether any EPA permission is required, and the level of such permission (Registration, Permit or Licence), will depend on the type of waste materials involved and the scale of the operation.

**EPA Determinations:** Some waste materials (e.g. clean fill / fill material) are considered innocuous enough for a site to be automatically authorised to receive that waste, subject to an EPA Determination published in the Government Gazette, as long as they do not require an EPA permission otherwise. A 'Declaration of Use' form (see below) is not required for such waste materials when received and used in accordance with the specifications and conditions set out in the relevant EPA Determination.

**Declaration of Use:** If waste materials received at the site meet certain criteria then a self-assessed declaration may be all that is required to be 'authorised to receive industrial waste'. This declaration is prepared by the producer/supplier of the waste materials and co-signed by the site operator/receiver. The Definitions section provides the full set of requirements for a declaration of use but can be summarised as follows:

- the waste materials must be for immediate use on the site, e.g. in backfill, site rehabilitation, or blending with quarry products.
- a declaration of use can apply if an EPA permission is not otherwise required, e.g. imported engineered fill that is not being stockpiled and processed on site.
- the declaration of use must be in the form approved by the EPA, but does not need to be formally approved by the EPA, however the EPA can impose conditions or cancel the declaration of use
- a declaration of use may have effect for a specific consignment or for a period of up to 12 months
- both the producer/supplier and site operator/receiver must retain copies for 2 years.

*Importation of clean fill:* the importation of clean fill (i.e. 'fill material') for use in site rehabilitation or blending with quarry product does not require a Declaration of Use to be completed. Clean fill is not a 'priority waste', the importation of clean fill for use on site does not require an EPA permission (as it does not meet the definition of resource recovery – see below) and there is an EPA Determination in place automatically authorising sites to receive such waste.

A Declaration of Use form is attached, partially completed for a case of importing excavated material or engineered fill for use in site rehabilitation. This form is available from the EPA website ([www.epa.vic.gov.au/about-epa/publications/f1022](http://www.epa.vic.gov.au/about-epa/publications/f1022)) and includes detailed explanatory notes.

**Waste and Resource Recovery Permissions:** Receiving, storing or processing waste generated at another site for the purposes of resource recovery, or off-site transfer or disposal, may be a 'prescribed permission activity' under Schedule 1 of the *Environment Protection Regulations 2021*, and therefore require an EPA permission (Registration, Permit or Licence). However, the Regulations do authorise a site to receive, store and process waste of not more than 5m<sup>3</sup> at any one time without an EPA permission, as long as it does not classify as 'priority waste'.

Note: the importation of clean fill (i.e. 'fill material') for use in site rehabilitation or blending with quarry product does not meet the definition of 'resource recovery' under the *Environment Protection Act 2017*, and is not for off-site transfer or disposal, therefore the following would not apply.

Additionally, receiving, storing and processing of greater volumes of materials for waste and resource recovery may also require separate planning permission. The EPA permission requirements for 'waste and resource recovery' activities, excluding 'reportable priority waste (transport)' that requires transport permission, are summarised in Figure 1.

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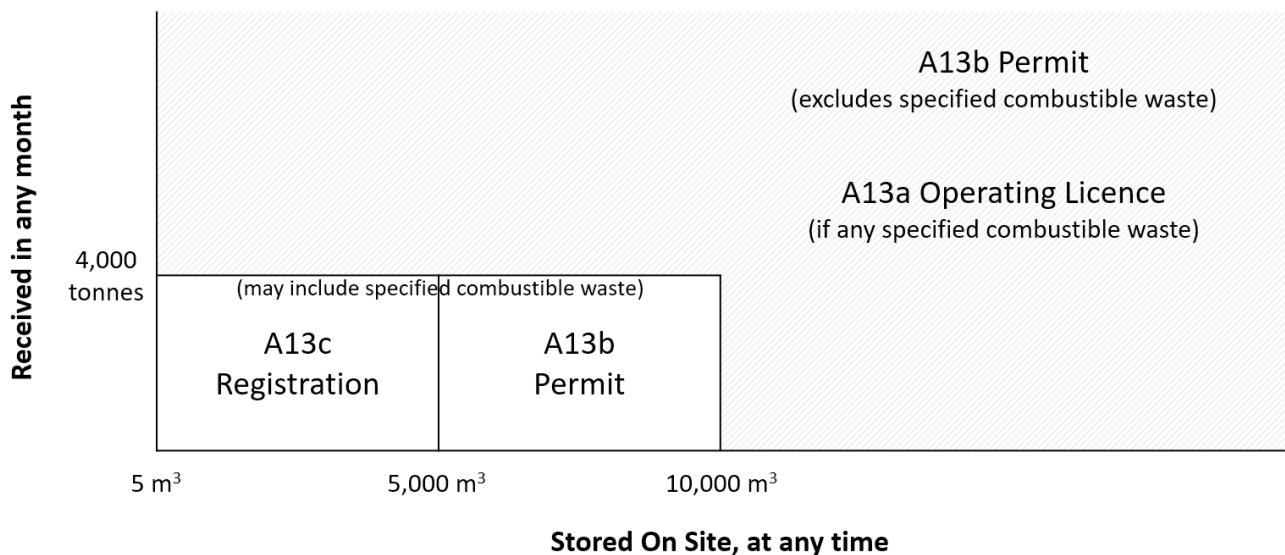


Figure 1: Required A13 permissions for waste and resource recovery activities.

**Registrations:** Smaller scale resource recovery activities at a quarry site may require an A13c Registration (see Figure 1). Registrations are automatically granted upon application but may include standard conditions or a requirement to notify or report to EPA in certain circumstances. A Registration may be revoked if EPA is not satisfied with the site operator’s compliance. Registrations must be renewed after 5 years.

Having an A13c Registration means the site is unambiguously ‘authorised to receive industrial waste’, which means that producers and transporters of waste can easily meet their duty to take waste to a ‘lawful place’.

## 5. Types of Imported Material

Types of imported material that could potentially be accepted by the quarry include the following categories.

### 5.1. Clean Fill Material

Consists of uncontaminated waste soil, being any combination of clay, silt, sand, gravel and/or rock of naturally occurring materials (except asbestos). The waste soil material is classified as ‘Fill Material’ where it is free from other industrial wastes, such as masonry materials (e.g. bricks), and has contaminant levels below those specified in the EPA Publication 1828.2 *Waste Disposal Categories – Characteristics and Thresholds*.

Classification: ‘waste code’ – N122, being “Excavated material or engineered fill including fill material” under Schedule 5 (Waste Classification) of the *Environment Protection Regulations 2021*, but this excludes any such material that exceeds the specified contaminant levels or qualifies as actual or potential acid sulfate soil.

**Excavated material or engineered fill including fill material are pre-classified as ‘industrial waste (non-priority)’.**

Clean fill is accepted at this site.

**Note:** In accordance with *EPA Determination – Specifications acceptable to the Authority for receiving fill material* (gazetted 18 June 2021), **sites are automatically authorised to receive ‘Fill Material’ (as defined by the EPA)**. Provided that it is not contaminated, every consignment is inspected and recorded, and if the material is from a contaminated land site then it is accompanied by evidence for the classification.

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As clarified in section 4, a Declaration of Use or an EPA permission is not required to import clean fill when received and used in accordance with the specifications and conditions set out in the EPA Determination for 'Fill Material', being uncontaminated waste soil.

In addition to uncontaminated waste soil, imported clean fill may include engineered fill (or structural fill), which is material that has been processed to a particular engineering specification, e.g. those produced by VicRoads, or to a specification that is performance-based and can be assessed against an engineering standard. This activity may require a Declaration of Use form to be completed by the producer/supplier of the material and the site operator – see partially completed form attached for importing excavated material or engineered fill for use in site rehabilitation.

## 5.2. Solid Inert Waste

Solid inert waste includes, but is not limited to, concrete, bricks, asphalt or ceramics. For this type of material to be accepted on to the site, it must meet the classification as 'industrial waste (non-priority)', refer to EPA Publication 1968.1 *Guide to Classifying Industrial Waste*. The solid inert waste must be fit for purpose and either suitable for reprocessing and recycling into engineered fill / structural fill for use on the site, or suitable for recycling into saleable products where it can be demonstrated that a market exists for those products.

Classification: "Masonry materials" brought to the site are subdivided (with 'waste codes') into bricks (Y100), concrete (Y110), rubble (Y120), plaster board & cement sheeting (Y130), and asphalt (Y140), in Schedule 5 (Waste Classification) of the *Environment Protection Regulations 2021*.

**Masonry materials are all pre-classified as 'industrial waste (non-priority)'.**

**Notes:** Additionally, in accordance with *EPA Determination – Specifications acceptable to the Authority for receiving recycled aggregates* (gazetted 18 June 2021), **sites are automatically authorised to receive recycled aggregates, being a mix of industrial wastes that comprise of concrete, brick, glass, asphalt, natural rock or ceramics.** Under the *Environment Protection Regulations 2021* a site can also have up to 5m<sup>3</sup> of industrial waste on the site at any time that has been brought to the site for processing and disposal offsite, as long as it does not classify as priority waste.

Recycled aggregates of solid inert waste are accepted at this site.

Recycled aggregates imported to the site, without requiring further processing, can be used directly for construction of hardstands, etc. or in site rehabilitation. This activity may require a Declaration of Use form to be completed by the producer/supplier of the material and the site operator.

Solid inert waste that has not been recycled into aggregates is NOT accepted at this site.

Receiving, storing and processing solid inert wastes at quarry sites, for use in site rehabilitation, will likely be considered a waste and resource recovery activity by the EPA. As such, this activity may require an EPA permission (refer to Figure 1).

## 5.3. Organic Waste

Organic waste (putrescible/green waste or mulches) consists of organic material derived from domestic or commercial gardens (not containing any food waste), landscaping works, timber (including sawdust), forestry residuals, or other natural organic fibrous wastes. Organic waste brought to the site must be fit for purpose and free from contamination, and either suitable for use on the site (e.g. as mulch or processed organic waste) or suitable for recycling into a saleable product, where it can be demonstrated that a market exists for that product. If the recycling of organic waste were to be undertaken onsite for resale then separate planning permission will likely be required.

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Classification: Uncontaminated organic wastes brought to the site would be either 'waste code' K300, being "Commercial garden & landscaping organics that does not contain any physical or chemical contamination", or 'waste code' K310-NH, being "Untreated timber, including sawdust", under Schedule 5 (Waste Classification) of the *Environment Protection Regulations 2021*.

**Such materials are pre-classified as 'industrial waste (non-priority)'.**

Uncontaminated organic waste for mulch, or processed organic waste (i.e. pasteurised material), may be accepted at this site.

**Notes:** There is no restriction on processing organic waste that is generated onsite and retained onsite. Under the *Environment Protection Regulations 2021* a site can also have up to 5m<sup>3</sup> of organic waste stored on the site at any time that has been brought to the site for processing and disposal offsite. In accordance with *EPA Determination – Specifications acceptable to the Authority for receiving processed organics* (gazetted 16 December 2021), **sites are automatically authorised to receive processed organics (pasteurised material).**

While processed organic waste (i.e. pasteurised material) can be imported to the site and used directly in site rehabilitation, importing organic waste for mulches to the site would require a Declaration of Use form to be completed by the producer/supplier of the material and the site operator.

Organic waste is NOT accepted at this site for aerobic or anaerobic biological conversion and offsite disposal.

Processing of greater volumes of organic waste brought to the site for aerobic or anaerobic biological conversion and to be disposed of offsite, in addition to likely requiring separate planning permission, may be a 'prescribed permission activity'.

## 5.4. Excess Wet Concrete

Returned concrete, plastic concrete free from excessive liquid.

Classification: Excess wet concrete brought to the site will set and qualify under "Masonry materials", which includes concrete (waste code: Y110), in Schedule 5 (Waste Classification) of the *Environment Protection Regulations 2021*.

**Such materials are pre-classified as 'industrial waste (non-priority)'.**

**Note:** Under the *Environment Protection Regulations 2021* a site can have up to 5m<sup>3</sup> of industrial waste on the site at any time that has been brought to the site for processing and disposal offsite, as long as it does not classify as priority waste.

Excess wet concrete and concrete truck washout is NOT accepted at this site.

Receiving, storing and processing excess wet concrete at quarry sites for processing will likely be considered a waste and resource recovery activity by the EPA. As such, this activity may require an EPA permission (refer to Figure 1).

## 5.5. Other

Processed sand or extracted raw sand brought to the site for blending with sand extracted onsite to achieve product specifications.

Classification: Processed or extracted raw sand brought to the site does not meet the definition of 'waste' under *Environment Protection Act 2017* and is therefore not an industrial waste.

Processed sand and extracted raw sand is accepted at this site.

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## 6. Markets and End Use

Imported materials required for rehabilitation works, if any is required at all, will likely be limited to soil material for topdressing and possibly mulch material (or processed organics). The imported material for rehabilitation may be placed directly into rehabilitation areas or in short-term stockpiles while awaiting use in rehabilitation.

Imported clean fill materials, as well as any recycled aggregates (solid inert waste), that are brought onto the site for the purposes of constructing hardstand areas, roadways and other works will be used directly in the constructed works or placed in short-term stockpiles while awaiting use.

If unsuitable imported materials are delivered to the site or an authorisation is not in place to accept the materials, then the materials must be removed and instead deposited at a site that is authorised to accept those materials.

Depositing, dumping, discarding or abandoning industrial waste or permitting industrial waste to be dumped, deposited, discarded or abandoned at a site that is not a 'lawful place', or at a 'lawful place' without the knowledge or consent of the person in management or control of that place or premises, is an offence under the *Environment Protection Act 2017*. Where non-compliance is detected, the EPA can issue a clean-up notice requiring the removal of the material or undertake further enforcement action as necessary.

## 7. Quantities of Imported Material

Imported materials will be used directly in construction of hardstand areas, etc., and in site rehabilitation works where possible, but if short-term stockpiling is required then the stockpiles will be located within the approved disturbance area for the quarry. Any such imported material stockpiles may also be graded (sorted, blended, etc.). The quantity of imported material required for construction of hardstand areas, etc., and rehabilitation works on this site will be relatively low.

The maximum volume of imported materials classifying as 'waste' that may be stockpiled by the site is set at maximum 5,000 cubic metres at any point in time. Less than 4,000 tonnes of waste is received in any given month and there will be no 'specified combustible recyclable and waste material' included in the stockpiled material. The designated stockpile areas could adequately handle approximately 5,000 cubic metres of imported waste material (i.e. there is no need to increase the disturbance area).

Acceptance of imported clean fill, recycled aggregates or organic waste materials will be continually monitored to ensure that the quantity required for construction works and effective rehabilitation is not exceeded.

Processed sand or extracted raw sand brought to the site for blending with sand extracted onsite will be stockpiled, if necessary, within the approved disturbance areas of the site, but will be quickly utilised in the ongoing production of quarry products.

## 8. Validation of Imported Materials

The validation of imported materials includes:

- 1) Classification of the imported materials at the Source Site, see EPA *Declaration of Use form or Clean Fill Declaration* form attached (as relevant).

# ADVERTISED PLAN

- 2) Tracking of the imported materials from the Source Site to this Site, see *Delivery Driver Checklist* form attached
- 3) Checking of imported materials as they enter this Site to ensure it is consistent with the stated classification for the imported materials, see *Acceptance Checklist for Site Personnel* form attached

These steps are described in further detail below.

## 8.1. Classification of Imported Materials at the Proposed Source Site

Any location/company that will potentially produce/supply waste materials (clean fill, recycled aggregates or uncontaminated organic waste) for importation to this site will be assessed for its suitability. The producer/supplier of the materials is responsible for classifying the waste in accordance with EPA Publication 1968.1 *Guide to Classifying Industrial Waste* and the *Environment Protection Regulations 2021*. Classification requires a determination of both the EPA 'waste code' and the waste type (i.e. 'industrial waste (non-priority)').

Where an EPA *Declaration of Use* form is required, this document will formally capture the declaration of the producer/supplier regarding the nature of the waste and the site operator's acceptance of that class of waste. The attached copy of this form is partially completed for a typical case of importing excavated material or engineered fill for use in site rehabilitation. An EPA *Declaration of Use* form can only be valid for either one consignment or for a period of up to 12 months.

For longer term arrangements with producers/suppliers of imported materials, or where the EPA *Declaration of Use* form is not required, the attached *Clean Fill Declaration* form can be used. A new declaration is required for each source site.

Ideally the information in the following sections will be collected on a checklist, but given the low frequency of deliveries, it may be just a diary note / work book.

## 8.2. Materials Tracking from the Proposed Source Site

All clean fill, recycled aggregates or organic wastes imported to this site must be accompanied by a *Delivery Driver Checklist*, or similar docket, that contains at least the following information:

- Date of delivery
- Truck/vehicle registration
- Driver's name
- Transport company name (if different to the sourcing company)
- Company they are making the delivery for
- Type of material
- EPA waste classification (as per EPA guidelines and regulations)
- Quantity in current load
- Total estimated quantity or number of additional loads expected
- Source of material

## 8.3. Checking of Imported Materials as they Enter the Site

All imported materials must be checked upon arrival at the site to ensure it is consistent with the stated classification for the materials, and the attached *Acceptance Checklist for Site Personnel* can be used for this purpose.

### 8.3.1. Primary Check

All imported materials are inspected on site and prior to tipping. Additionally, on arrival at the site, the following information is collected by the site personnel.

- Type of material



- EPA waste classification (as per EPA guidelines and regulations)  
*(not applicable to processed or extracted raw sand)*
- Authorisation for site to receive the materials  
*(not applicable to processed or extracted raw sand)*
- Delivery driver checklist filled out adequately  
*(not applicable to processed or extracted raw sand)*
- Are records available to confirm origin of material and contamination status (if required)?
- Visual inspection of the imported material conducted
- Confirm details provided by the driver
- Check for any contamination in load (e.g. plastic, metal, ceramics)
- Check for any priority or reportable waste visible (e.g. asbestos) or other unacceptable waste (e.g. putrescible waste)
- Based on assessment, are materials in load suitable to accept on site?

Any load observed to contain materials that do not fall within the scope of this Imported Materials Management Plan will be rejected. Rejected loads are refused access to the tipping area and the driver/truck instructed to leave.

### **8.3.2. Secondary Check**

A secondary check is conducted by site personnel at the tip point to ensure no unauthorised materials potentially hidden in the load are left on the site. This inspection is conducted as the load is tipped and when the tipped material is pushed up.

If any unauthorised materials are suspected or observed the entire load will be removed from the stockpile and spread out on the ground surface to a thickness of approximately 300mm, through the use of a front-end loader or excavator, to enable thorough inspection of the load contents. If any unauthorised materials are observed, they will be removed and stockpiled separately, and the delivery truck driver/company contacted to organise removal.

### **8.3.3. Incidental Waste**

Incidental waste (steel, wood, ceramic, plastic, etc) that might be contained in the imported materials is separated at the processing stage, sorted into common classes, and the delivery truck driver/company contacted to organise removal, or if suitable, incorporated into the site's general waste strategy.

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## 9. Definitions

The following definitions are included to avoid confusion as to the type of material accepted at the site and the type of operation conducted.

**‘Authorised to Receive Industrial Waste’**, in relation to a person or a place or premises, as defined in the *Environment Protection Act 2017*, means any of the following—

- (a) authorised by a permission to receive that type of industrial waste;
- (b) exempt from a requirement to obtain a permission to receive that type of industrial waste;
- (c) emergency authorisation for storage / use by EPA to receive that type of industrial waste;
- (d) specified by a determination published in the Government Gazette as not required to obtain a permission to receive that type of industrial waste;
- (e) authorised by the regulations, or in accordance with a process prescribed by the regulations, to receive that type of industrial waste;

Further, the *Environment Protection Regulations 2021* prescribe the following (amongst others) for the purposes of (e) above—

- (a) if there is a ‘declaration of use’ in effect for that type of waste that applies to the place or premises (see definition below); or
- (b) if the industrial waste is received and used in accordance with specifications acceptable to the EPA set out in a determination (published in the Government Gazette) made in relation to receiving industrial waste; or
- (c) in relation to not more than 5m<sup>3</sup> of industrial waste that is not priority waste, where receipt of that waste at the place or premises is not a permission activity and not for application of the waste to land; or
- (d) in relation to not more than 5m<sup>3</sup> of the following types of priority waste, where receipt of that waste at the place or premises is not a permission activity—
  - (i) timber treated with hazardous substances, including sawdust;
  - (ii) tyres, including tyre pieces greater than 250mm in size measured in any dimension;
  - (iii) e-waste, excluding batteries; or
- (e) in relation to waste tyres, for use in accordance with specifications acceptable to the EPA set out in a determination (published in the Government Gazette) in relation to the use of waste tyres; or
- (f) for receipt at a laboratory for the purposes of analysis.

**‘Clean Fill’** means waste material that consists of soil (being clay, silt and/or sand), gravel and rock of naturally occurring materials (except asbestos), which must not exceed EPA specified contaminant levels. This is an industry term that is equivalent to the EPA term ‘Fill Material’ (see below).

**‘Composting’** means the process whereby organic materials are microbiologically transformed under controlled aerobic conditions to achieve pasteurisation and a specified level of maturity.

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**'Declaration of Use'** means a self-assessed declaration made, in relation to a place or premises at which industrial waste is to be received, by both a person in management or control of industrial waste and a person in management or control of that place or premises to receive the waste, for any of the following purposes—

- (a) the immediate use of—
  - (i) the waste for resource recovery, other than application of the waste to land; or
  - (ii) the waste (other than soil) for use as a substitute for an input or raw material in a commercial, industrial, trade or laboratory activity, other than for application of the waste to land;
- (b) the application of waste to land—
  - (i) commercial garden and landscaping organics that does not contain any physical or chemical contamination;
  - (ii) untreated timber, including sawdust;
  - (iii) natural organic fibrous waste.

A 'declaration of use' is not necessary to receive Fill Material, or any other industrial waste that is in accordance with the specifications acceptable to the EPA set out in a determination (published in the Government Gazette) in relation to receiving industrial waste.

A 'declaration of use' must not be made in relation to the receipt of 'reportable priority waste (transport)' at the place or premises, or if receipt of the waste at the place or premises would require an EPA permission.

A 'declaration of use' must be in the form approved by the EPA and include the specified information (forms available on the EPA website). The EPA does not need to approve the 'declaration of use' but may at any time impose conditions on a 'declaration of use' or cancel the 'declaration of use'.

A 'declaration of use' may have effect for a specific consignment of industrial waste, or for a period of time specified in the declaration up to a maximum of 12 months. A copy of any 'declaration of use' must be retained for 2 years from the date it was made.

**'Fill Material'**, as defined in the *Environment Protection Regulations 2021*, is industrial waste that is soil —

- (a) with contaminant concentrations not exceeding the upper limit for fill material contaminant concentrations specified in the *Waste Disposal Categories – Characteristics and Thresholds* (EPA Publication 1828.2); and
- (b) that does not contain asbestos.

**'Industrial Waste'** as defined in the *Environment Protection Act 2017*, means—

- (a) waste arising from commercial, industrial or trade activities or from laboratories; or
- (b) waste prescribed to be industrial waste for the purposes of this definition;

Further, the *Environment Protection Regulations 2021* prescribe the following for the purposes of (b) above—

- (a) waste from any source received at a place or premises which stores or handles waste generated at another site for the purpose of resource recovery or off-site transfer or disposal;
- (b) waste transported for fee or reward, other than the collection of kerbside waste by or on behalf of a council or a Waste and Resource Recovery Group.

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**‘Material’** is anything that serves as crude or raw matter to be used or developed

**‘Materials Recycling Facility’** means land used to collect, dismantle, treat, process, store, recycle, or sell used or surplus materials

**‘Priority Waste’** is any waste, including municipal waste and industrial waste, that is prescribed to be priority waste by the Regulations for the purposes of eliminating or reducing risks of harm to human health or the environment, ensuring the priority waste is managed in accordance with the Regulations, and facilitating waste reduction, resource recovery and resource efficiency. Materials typically accepted at quarry sites, such as ‘clean fill’, solid inert wastes or mulches, are not priority wastes.

**‘Recycling’** is a term used to cover a range of activities, including collection, sorting, reprocessing and manufacturing into new products

**‘Reportable Priority Waste (Transport)’** is priority waste (see above) transported for fee or reward that is prescribed in Schedule 5 of the Regulations as ‘reportable priority waste (transport)’, which requires transport permission. This does not generally apply to materials received at, or transported from, quarry sites.

**‘Resource’** means a material or waste that can be reprocessed or remanufactured into a new product

**‘Resource Recovery’**, in relation to waste, as defined in the *Environment Protection Act 2017*, means—

- (a) preparation for reuse of the waste;
- (b) recycling the waste;
- (c) reprocessing the waste;
- (d) recovering energy or other resources from the waste;
- (e) anything prescribed to be resource recovery in relation to waste—  
but does not include anything prescribed not to be resource recovery in relation to waste.

**‘Solid inert waste’** is classified as hard waste that has a negligible activity or effect on the environment, such as concrete, brick, glass, asphalt, natural rock or ceramics.

**‘Specified combustible recyclable and waste material’** is paper, cardboard, wood, plastic, rubber, tyres, tyre-derived waste, textiles, e-waste, metal and other materials with combustible contaminants, combustible by-products of metal processing activities and refuse-derived fuel.

**‘Transfer station’** is land used to collect, consolidate, temporarily store, sort or recover, refuse or used materials from offsite before transfer for disposal or use elsewhere. It does not include processing or recycling.

**‘Waste’**, as defined in the *Environment Protection Act 2017*, includes any of the following—

- (a) matter, including solid, liquid, gaseous or radioactive matter, that is deposited, discharged, emitted or disposed of into the environment in a manner that alters the environment;
- (b) a greenhouse gas substance emitted or discharged into the environment;
- (c) matter that is discarded, rejected, abandoned, unwanted or surplus, irrespective of any potential use or value;
- (d) matter prescribed to be waste;
- (e) matter or a greenhouse gas substance referred to in paragraph (a), (b), (c) or (d) that is intended for, or is undergoing, resource recovery.

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## WA007541 – CLEAN FILL DECLARATION

To ensure compliance with our obligations under the *Environment Protection Act 2017* and the *Environment Protection Regulations 2021*, in relation to the acceptance of clean fill material to our site, could you please complete and sign this declaration before delivery to acknowledge that the material you are delivering complies with current EPA requirements and guidelines. A new form is required for each source site of clean fill.

The declarations can be returned to: Kelvin Sargent  
Lang Lang Sands Pty Ltd  
kelvins@acm.com.au

I \_\_\_\_\_  
(Insert name)  
of

\_\_\_\_\_  
\_\_\_\_\_  
(Insert company or address)

*declare that the site from which this material originates is*

\_\_\_\_\_  
\_\_\_\_\_  
(Insert address of site)

*and meets the following criteria:*

- a) the originating site has not been previously used for any of the activities listed on page 2, and is not known, or could not be reasonably expected to be known, to be contaminated;
- b) the material is soil, being any combination of clay, silt, sand, gravel and/or rock of naturally occurring materials (except asbestos);
- c) the material has a waste classification of 'industrial waste (non-priority)', as per EPA guidelines;

OR

Clean fill certification has been forwarded to:

\_\_\_\_\_

*I declare that the clean fill material is not contaminated, in accordance with EPA guidelines*

Signature: . \_\_\_\_\_

Date: . \_\_\_\_\_

**High Risk Sites**

Abattoirs  
 Abrasive blasting  
 Airports  
 Asbestos production / disposal  
 Asphalt manufacturing  
 Automotive repair / engine works  
 Battery manufacturing / recycling  
 Bitumen manufacturing  
 Boatbuilding / distilleries  
 Brickworks  
 Chemical manufacturing / storage / blending  
 Cement manufacturing  
 Ceramic works  
 Coke works  
 Compost manufacturing  
 Concrete batching  
 Council works depot  
 Defence works  
 Drum reconditioning facility  
 Dry cleaning  
 Electrical component manufacturing  
 Electricity generation / power station  
 Electroplating  
 Explosive industry  
 Fibreglass-reinforced plastic manufacturing  
 Foundry  
 Fuel storage depot  
 Gasworks  
 Glass manufacture  
 Iron and steelworks  
 Landfill sites / waste disposal  
 Lime works  
 Metal coating  
 Metal finishing and treatment  
 Mining and extractive industries  
 Oil or gas production / refining  
 Pest control depots  
 Printing shops  
 Pulp or paper works  
 Railway Yards  
 Shooting or gun clubs  
 Scrap metal recovery  
 Service station / fuel storage  
 Sewage treatment plants  
 Shipbuilding / breaking yards  
 Stock dipping sites  
 Spray painting  
 Tanneries (and associated trades)  
 Textile operations  
 Timber preserving / treatment  
 Tyre manufacturing  
 Underground storage tanks  
 Utility depots  
 Waste treatment / incineration / disposal  
 Woollscouring

**Medium Risk Site**

Land used for the following purposes, some of which may be incidental to the site's primary activity, has a medium potential for contamination.

Chemical storage  
 Fuel storage  
 Underground storage tank (if recently installed and no evidence of leaks)  
 Market gardens  
 Waste disposal  
 Filling (imported soil)  
 Other industrial activities (such as warehousing of chemicals that may be split during loading or unloading)

**Low Risk Sites**

Land not used for the purposes listed above is likely to have low potential for contamination.

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# WA007541 – IMPORTED MATERIALS

## Delivery Driver Checklist

#	Requirement	Details	Information supplied Y/N/NA
1	Date of Delivery		
2	Truck / vehicle registration number		
3	Driver's name		
4	Transport company name <i>(if different to the sourcing company)</i>		
5	Company they are making the delivery for		
6	Is the delivered material Clean Fill? <i>(any uncontaminated combination of clay, silt, sand, gravel and/or rock of naturally occurring materials; not including asbestos)</i>		
7	Description of material being delivered (including EPA Waste Code)		
8	EPA waste classification <i>(e.g. 'industrial waste (non-priority)')</i>		
9	Quantity in current load		
10	Number of additional loads expected		
11	Source site description including address		
12	Any sampling / analysis results attached		

**Note:** it is an offence under the *Environment Protection Act 2017* for a person who has the management or control of industrial waste, including those transporting the waste, to provide false or misleading information or documents in connection with the type, properties and classification of the industrial waste, or to conceal such information or documents.

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## WA007541 – IMPORTED MATERIALS Acceptance Checklist for Site Personnel

Checklist Aspect	Details
Delivery / Docket No.: .....	Date: ..... Company: .....
Type of material  <i>Clean Fill being any uncontaminated combination of clay, silt, sand, gravel and/or rock of naturally occurring materials (not including asbestos).</i>	<input type="checkbox"/> Clean Fill <input type="checkbox"/> Mulch organics or Processed organic waste <input type="checkbox"/> Recycled aggregates (solid inert wastes) <input type="checkbox"/> Concrete <input type="checkbox"/> Bricks or Ceramics <input type="checkbox"/> Other (please specify) .....
EPA waste classification	<input type="checkbox"/> Industrial waste (non-priority) <input type="checkbox"/> Other (priority waste) .....
Is the site authorised to receive this type of material?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Is the delivery driver checklist filled out adequately?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are the records available to confirm origin of material and contaminated status (if required)?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Has a visual inspection of the imported material been conducted?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Confirm details provided by the driver	Material Type: ..... EPA Waste Code: ..... Quantity: ..... Sample result (if required): .....
Can you observe any contamination in the load (e.g. plastic, metal, ceramics, etc.)?	<input type="checkbox"/> No <input type="checkbox"/> Yes If Yes, what type is the contamination: ..... Estimated % of contamination: .....
Any prescribed waste visible (e.g. asbestos) or other unacceptable waste (e.g. putrescible waste)?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Based on assessment, is the load suitable to accept on site?	<input type="checkbox"/> Yes <input type="checkbox"/> No

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# Declaration of Use form

Environment Protection Act 2017  
Environment Protection Regulations 2021, regulation 64(4)

Publication F1022 June 2021

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This is a declaration by a waste producer and waste receiver for [lawful receipt](http://epa.vic.gov.au/for-business/new-laws-and-your-business/manage-waste/lawful-place) (epa.vic.gov.au/for-business/new-laws-and-your-business/manage-waste/lawful-place) of a specific industrial waste. The waste producer completes this form and both producer and receiver must sign it. You cannot use this form if your waste is a [reportable priority waste \(transport\)](http://epa.vic.gov.au/about-epa/publications/1967) (publication 1967) (epa.vic.gov.au/about-epa/publications/1967) or the activity is a [permitted activity](http://epa.vic.gov.au/determinations) (epa.vic.gov.au/determinations). Please refer to explanatory notes from page 4.

Part A – Applicability to make a DoU					
1.	Is your waste a <a href="#">reportable priority waste that requires a transport permission?</a>	Yes <input type="checkbox"/>	<b>You cannot use a DoU.</b> <a href="#">How to establish lawful place.</a>	No <input checked="" type="checkbox"/>	Go to step 2
2.	Is your receiving activity a <a href="#">permitted activity?</a>	Yes <input type="checkbox"/>		No <input checked="" type="checkbox"/>	Go to step 3
3.	Does your waste and activity meet the specifications of a <a href="#">determination?</a>	Yes <input type="checkbox"/>	You don't need a DoU.	No <input checked="" type="checkbox"/>	Go to step 4
4.	What is the intended use of the waste?	<input checked="" type="checkbox"/> immediate use for:  <input type="checkbox"/> application to land for:  <input type="checkbox"/> other	<input type="checkbox"/> resource recovery	Excavated material or engineered fill imported for use in construction of hardstands, roadways, etc., or in site rehabilitation	
			<input checked="" type="checkbox"/> use as a substitute for an input or raw material in a commercial, industrial, trade or laboratory activity, other than soil		
			<input type="checkbox"/> commercial garden and landscaping organics that does not contain any physical or chemical contamination		
			<input type="checkbox"/> untreated timber, including sawdust		
			<input type="checkbox"/> natural organic fibrous waste		
5.	Have you completed a <a href="#">Commodity Vendor Declaration</a> for the waste and activity?	Yes <input type="checkbox"/>			Complete Part C, and Parts E - H of this form only.
		No <input checked="" type="checkbox"/>			Complete all parts of this form

Part B – Producer details			
Business name		ABN	
Contact name		Business address	
Telephone		Email	

Part C – Receiver details			
Business name		ABN	
Contact name		Business address	
Telephone		Email	

Declaration of Use form

Part D – Waste details			
Waste description	Excavated material or engineered fill	Waste code	N122
Detailed description	Uncontaminated inert materials that have been excavated and/or processed to a specification (a performance-based specification and/or assessable against an engineering standard)		
Producing address	Address where waste was generated/produced		
Receiving address	Address where waste will be received/deposited		

Part E – Consignment details (i.e. movement and volume of the waste)			
Consignment period?	<input type="checkbox"/> One-off consignment		<input type="checkbox"/> From dd/mm/yyyy to dd/mm/yyyy <up to a maximum of 12 months
Volume, when known?	Estimated amount	Units	Choose an item. <input type="checkbox"/> Per load <input type="checkbox"/> Total

Part F: Potential risks of harm		Where relevant, please include details in attachment e.g. safety data sheet
Any risks to human health from using the waste?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Any risks to the environment from using the waste?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Low risk of undetected contaminants in imported fill materials impacting on the environment

Part G: Risk mitigation		Details
Are there any control measures required for addressing any risks of harm?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	- Producer/supplier of imported material vetted for reputability - All deliveries of imported materials accompanied by a delivery driver checklist, docket or similar - Confirm the EPA waste classification on delivery of the imported materials - Visual inspection of inbound deliveries prior to accepting on site, and again at point of dumping - Incidental waste that may later be discovered in imported materials are separated, sorted and removed from site
Are there any supporting documents for managing any risks of harm?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Imported Materials Management Plan Delivery driver checklists, dockets or similar

Part H: Signed declaration	
The DoU is not valid until both the waste producer and receiver have signed the form	
Waste producer	Waste receiver
I [insert name] declare that...	I [insert name] declare that...
<ul style="list-style-type: none"> <li>I am the person in management or control of the industrial waste.</li> <li>All information related to the risks of harm to human health and the environment from the industrial waste and how to minimise those risks, so far as reasonably practicable, has been provided.</li> <li>The waste is not reportable priority waste (transport).</li> <li>The receipt of the waste at the place or premises is not a permissioned activity.</li> </ul>	<ul style="list-style-type: none"> <li>I am the person in management or control of the place or premises at which the industrial waste is to be received.</li> <li>The place or premises at which the waste is to be received is suitable to use the waste, as specified in this form.</li> <li>The waste is not reportable priority waste (transport).</li> <li>The receipt of the waste at the place or premises is not a permissioned activity.</li> </ul>
Signed	Signed
Date	Date

### Explanatory notes

#### What a Declaration of Use is

A [Declaration of Use](http://epa.vic.gov.au/for-business/new-laws-and-your-business/manage-waste/declaration-of-use) (epa.vic.gov.au/for-business/new-laws-and-your-business/manage-waste/declaration-of-use) (DoU) is a tool to allow a producer to lawfully transfer or sell on specific types of industrial waste to a receiver, in accordance with the *Environment Protection Act 2017* (the Act) and regulation 64(4) of the Environment Protection Regulations 2021 (the Regulations). It supports the safe use, storage and recovery of materials from low-risk waste.

#### How to make a DoU

There are two options for making a DoU:

1. Complete this form.
2. Develop your own DoU form that includes all the mandatory manner and form criteria, which is set out on the [DoU webpage](http://epa.vic.gov.au/for-business/new-laws-and-your-business/manage-waste/declaration-of-use) (epa.vic.gov.au/for-business/new-laws-and-your-business/manage-waste/declaration-of-use).

#### What this form is for

This form is used to make a DoU. It is a self-assessed declaration by a producer and receiver. It requires no tracking, notification, assessment or approval from EPA.

#### When to use this form

You must comply with the Act and Regulations, including the [general environmental duty \(GED\)](http://epa.vic.gov.au/for-business/new-laws-and-your-business/general-environmental-duty) (epa.vic.gov.au/for-business/new-laws-and-your-business/general-environmental-duty).

All industrial waste must go to a [lawful place](http://epa.vic.gov.au/for-business/new-laws-and-your-business/manage-waste/lawful-place) (epa.vic.gov.au/for-business/new-laws-and-your-business/manage-waste/lawful-place). One pathway to [establish lawful place](http://epa.vic.gov.au/about-epa/publications/1946-1) (epa.vic.gov.au/about-epa/publications/1946-1) is by making a DoU. You can use this form in specific scenarios, for (regulation 64(1)):

- immediate use of:
  - waste for resource recovery
  - waste other than soil to substitute for raw material; a commercial, industrial, trade or laboratory activity.
- application to land for:
  - commercial garden and landscaping organics that do not contain any physical or chemical contamination
  - untreated timber, including sawdust
  - natural organic fibrous waste.

#### When not to use this form

You **MUST NOT** complete this form if your receiving activity is a [permissioned activity](http://epa.vic.gov.au/for-business/new-laws-and-your-business/permissions) (epa.vic.gov.au/for-business/new-laws-and-your-business/permissions). You must instead apply for the appropriate permission. You also **MUST NOT** complete this form if the waste is a [reportable priority waste](http://epa.vic.gov.au/for-business/new-laws-and-your-business/manage-waste/reportable-priority-waste) (epa.vic.gov.au/for-business/new-laws-and-your-business/manage-waste/reportable-priority-waste) that requires a transport permission.

If a [determination](http://epa.vic.gov.au/determinations) (epa.vic.gov.au/determinations) applies, then a DoU is not required. A DoU may be used where a determination is not applicable if the intention of use is within the confines listed in regulation 64(1).

#### Who needs to fill in this form

You should only complete this form if you are the person in the management or control of the waste (i.e. a producer or [accredited consigner](http://epa.vic.gov.au/for-business/new-laws-and-your-business/manage-waste/accredited-consigners) (epa.vic.gov.au/for-business/new-laws-and-your-business/manage-waste/accredited-consigners). Ensure that you answer all questions accurately and that you understand all elements of the declaration and these explanatory notes.

#### Who needs to sign this form

The producer (or accredited consigner) and the receiver must sign this form.

#### Record keeping requirements

Both the producer and receiver must retain a copy of the completed and signed form for 2 years from the date on which it was made. Penalties apply for non-compliance.

#### When circumstances change

If after signing the form you become aware of any change in circumstance that makes the DoU inaccurate, then you must as soon as practicable notify the other signed party of the change. You will need to complete a new DoU form. Penalties apply for non-compliance.

## Declaration of Use form

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### If EPA provides written notice

EPA may cancel a DoU or impose conditions on it by providing written notice to each person who made the declaration. A DoU has no effect from the time EPA provides written notice of the cancellation in accordance with regulation 64(9).

### Part A - Applicability to make a DoU

Follow the checklist to determine if you are able to use a DoU for your circumstance. If you tick 'Yes' for questions 1-3, or 'other' for question 4 than you cannot use this form. Please refer to [How to establish lawful place](#) (publication 1946.1) ([epa.vic.gov.au/about-epa/publications/1946-1](http://epa.vic.gov.au/about-epa/publications/1946-1)) for options on meeting your lawful place requirements.

Tick what the intended use of the waste material is, as per the regulation 64(1). If your intended use is not listed, you cannot use this form. Please refer to [How to establish lawful place](#) (publication 1946.1) ([epa.vic.gov.au/about-epa/publications/1946-1](http://epa.vic.gov.au/about-epa/publications/1946-1)) for options on how to establish lawful place. Provide further information on the details of the use. For example, untreated timber being processed into bark chips. Where relevant, explain what the waste material cannot be used for.

If you have a [Commodity Vendor Declaration](#) ([www.mla.com.au/globalassets/mla-corporate/meat-safety-and-traceability/documents/commodity-vendor-declaration.pdf](http://www.mla.com.au/globalassets/mla-corporate/meat-safety-and-traceability/documents/commodity-vendor-declaration.pdf)) for your waste and activity then you only need to complete Part C, and Parts E - H of this form.

### Part B – Producer details

Provide the producer's business name, ABN, contact details and address.

### Part C – Receiver details

Provide the receiver's business name, ABN, contact details and address (if different to receiving location).

### Part D – Waste details

Provide the Waste Description and Waste Code as per [Waste code transition to Environment Protection Regulations 2021](#) (publication 1967.2) ([epa.vic.gov.au/about-epa/publications/1967-2](http://epa.vic.gov.au/about-epa/publications/1967-2)). Provide the addresses of where the waste is being produced and received.

Provide a detailed description of the waste, which includes information on (where relevant):

- waste type (e.g. sawdust, grass, leaves, coffee grounds etc.)
- physical form (i.e. liquid, solid, sludge or powder etc.) and appearance (e.g. colour, viscosity etc.)
- any odour characteristics
- solubility and chemical stability
- mobility
- burning characteristics.

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### Part E – Consignment details

Specify whether the consignment of the waste is a one-off consignment or over a period of time. Specify the estimated amount of waste being consigned. If it is for a period of time, specify the date range. The maximum consignment period is 12 months. After 12 months, you will need to review and sign a new form.

### Part F: Risks of harm

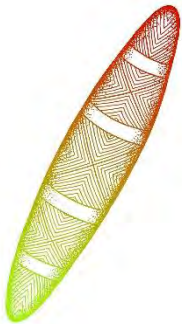
List any risks of harm to human health and the environment associated with the use of the waste material. Refer to [Assessing and controlling risk: A guide for business](#) (publication 1695.1) ([epa.vic.gov.au/about-epa/publications/1695-1](http://epa.vic.gov.au/about-epa/publications/1695-1)) for guidance on identifying and assessing risks.

### Part G: Risk mitigation

Tick where appropriate, any control measures for mitigating the risks of harm. Refer to [Assessing and controlling risk: A guide for business](#) (publication 1695.1) ([epa.vic.gov.au/about-epa/publications/1695-1](http://epa.vic.gov.au/about-epa/publications/1695-1)) for guidance on implementing control measures. Also tick and provide details on any supporting documentation.

### Part H: Signed Declaration

Both the waste producer (or accredited consigner) and the waste receiver must sign this form. Signing this declaration has legal significance. Penalties apply for non-compliance and the other signed party may seek damages if information is incorrect. Before signing you must be absolutely satisfied you understand all elements of the document and these explanatory notes.



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EPA acknowledges Aboriginal people as the first peoples and Traditional custodians of the land and water on which we live, work and depend.

We pay respect to Aboriginal Elders, past and present.

As Victoria's environmental regulator, we pay respect to how Country has been protected and cared for by Aboriginal people over many tens of thousands of years.

We acknowledge the unique spiritual and cultural significance of land, water and all that is in the environment to Traditional Owners, and recognise their continuing connection to, and aspirations for Country.

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For languages other than English, please call **131 450**.

Visit [epa.vic.gov.au/language-help](https://epa.vic.gov.au/language-help) for next steps.

If you need assistance because of a hearing or speech impairment, please visit [relayservice.gov.au](https://relayservice.gov.au)

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