

Hartley Rubble Pit

Mining Lease 6564

**Program for Environment Protection  
and Rehabilitation**

**Futuretop Developments Pty Ltd**

November 2025



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## REVISION HISTORY

Version	Prepared By	Completion Date	Description
1	Macro Environmental Solutions	4 September 2025	Initial draft prepared for client review.
2	Macro Environmental Solutions	25 October 2025	Updated following a request for further information from DEM dated 21 October 2025.
3	Macro Environmental Solutions	14 November 2025	Updated with reduced period for completing upgrades to the access intersection.



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## SITE SUMMARY

<b>Operation name</b>	<b>Hartley Rubble Pit</b>
Tenement number	Mining Lease (ML) 6564
Tenement holder	Futuretop Developments Pty Ltd
Tenement holder contact	Ashley Gibson, ash@goolwaquarries.com.au
Tenement operators	Futuretop Developments Pty Ltd

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## **Attachments**

**Attachment 1** – Certificate of Title for CT 5896/647

**Attachment 2** – Blast Management Plan

**Attachment 3** – Dust Trigger and Response Plan (TARP)

**Attachment 4** – Aboriginal Heritage Discovery Protocol

**Attachment 5** – Soil Borne Pathogens Treatment and Management Plan (**Confidential**)

**Attachment 6** – Compliance summary and monitoring plan.

## **Abbreviations**

*ADP – Approved Development Program*

*AHD – Australian Height Datum*

*dB(A) – Decibels (A-weighted)*

*ELVIS – Elevation and depth – Foundation spatial data platform*

*ha – hectare*

*km – Kilometre(s)*

*L/s – Litres per second*

*mm/m – millimetre(s)/metre(s)*

*m<sup>2</sup>/m<sup>3</sup> – metres squared/cubed*

*MP – Mining Proposal*

*NVHA – Native Vegetation Heritage Agreement*

*PEPR – Program for Environment Protection and Rehabilitation*

*RSWL – Reduced Standing Water Level.*

### Declaration of Accuracy

This declaration is made pursuant to Regulation 84 (c) of the *Mining Regulations 2020*.

I, Ashley Gibson, an authorised representative of Futuretop Developments Pty Ltd (ABN 83 082 988 396), the holder of ML 6564, have taken the following steps to review the information and to ensure its accuracy:

- Engaged Macro Environmental Solutions to prepare the document and discussed the required content in detail.
- Undertook a detailed review of the contents prepared by Macro Environmental Solutions.
- Reviewed and signed off all Figures provided within the document prepared by Macro Environmental Solutions.

Name: Ashley Gibson

Position: General Manager, Futuretop Developments Pty Ltd

Signature:



Date:

14/11/25

## 1 INTRODUCTION

This Program for Environment Protection and Rehabilitation (PEPR) has been prepared in accordance with Terms of Reference 002 for Extractive mineral quarry PEPRs prepared by the Department for Energy and Mining (DEM). The TOR 002 version followed was gazetted on 11 December 2020.

This PEPR has also been produced in alignment with the guidance provided in the following documents:

- MG6: Quarry programs for environment protection and rehabilitation (December 2021),
- MG30: Development of environmental outcomes for quarrying and mining (December 2020), and
- MG38: New quarry applications (November 2021).

### 1.1 Operational background

The Hartley Rubble Pit (the Site) consists of Mining Lease (ML) 6564 (**PEPR Drawing 1 – Site location map**). Details for each tenement is provided in **Table 1**.

**Table 1 – Hartley Rubble Pit tenement details**

Tenement	Area	Grant date	Expiry date	Property parcel	Property owner
ML 6564	97.15	5 August 2025	9 August 2035	CT 5986/647	Ross Thomas and Jennifer Ann Thomas

ML 6564 provides an extension to the existing Hartley Rubble Pit comprising Extractives Minerals Leases (EML) 6271 and 6497 (**PEPR Drawing 1 – Site location map**), establishing contiguous tenure over the quarry operation with EML 6271.

Details for the existing tenements are provided in **Table 2**.

**Table 2 – Hartley Rubble Pit existing tenement details**

Tenement	Area	Grant date	Expiry date	Property parcel	Property owner
EML 6271	120.9 hectares	10/08/2007	09/08/2035	CT 5986/647 CT 5896/646	Ross Thomas and Jennifer Ann Thomas
EML 6497	63.65 hectares	13/05/2019	12/05/2040	CT 5896/646	Ross Thomas and Jennifer Ann Thomas

This PEPR deals only with the area of the land contained within ML 6564 and does not propose to affect the existing EML 6271 or EML 6497.

The primary product produced from the Site is extractive limestone for use as road base. Material from the Site may also be sold for other extractives purposes such as fill, and fine material produced as a by-product of crushing and screening will be sold as agricultural lime.

Quarrying will be carried out on an ongoing basis and comprise a shallow open cut quarry.

No native vegetation clearance is proposed.

The nearest conservation area is the Ferries-McDonald Conservation Park (CP), located approximately 7km to the east of the Site and Monarto CP located approximately 7.6km north-east of the Site.

Native Vegetation Heritage Agreement (HA) 702, registered on 20 October 1992, is in place over approximately 49.42ha of native vegetation adjacent to the north of the Site and west of EML 6271, as well as areas of approximately 26ha, 17ha, 9ha and 40ha to the north, north-west and west.

No operations are proposed within 150m of a remnant vegetation area until a native vegetation survey for orchids is completed in the area.

## 1.2 Site location

The Site is located approximately 11 kilometres (km) south of Callington, which is approximately 54km south-east of Adelaide (**PEPR Drawing 1 – Site location map**).

Land use in the local area generally comprises of grazing, agriculture and native vegetation areas that are the subject of Heritage Agreements.

The adjacent EML 6271 was registered on 10 August 2007 for the purpose of a surface scrape calccrete and limestone quarry and has been operating since that time as the Hartley Rubble Pit.

Sensitive receptors located within 1km of the Site include:

- House (landowner) near the ML 6564 northern boundary.
- House approximately 700m south of the southern MC boundary. This house was confirmed to be uninhabited and not fit for use as a dwelling during an inspection on 8 August 2024.

With the exception of the landowner's dwelling, no sensitive receptor locations have sightlines of the proposed operations.

Sensitive receptor locations are displayed in **PEPR Drawing 2 – Local housing and infrastructure map**.

## 1.3 Land ownership

The Site covers a portion (97.1ha) of CT 5986/647 (420 Chaunceys Line Road, Hartley SA), which is owned by Ross Thomas and Jennifer Ann Thomas (**Attachment 1 – Certificate of Title for CT 5896/647**).

The Hartley Rubble Pit is operated in accordance with a land access agreement between the landowners and Futuretop Developments Pty Ltd.

## **2 DESCRIPTION OF THE ENVIRONMENT**

A Description of the Environment has been provided in the *Mining Proposal to support a Mining Lease Application over Mineral Claim (MC) 4577*, Version 1 dated 30 September 2024.

No new baseline environmental data relevant to the control strategies or criteria has been identified since the previous description of the environment was provided in the Mining Proposal.

An updated description of the environment has therefore not been provided in this PEPR in accordance with Clause 1 of TOR 002.

### 3 DESCRIPTION OF MINING OPERATIONS

#### 3.1 General description and maps/plans of operations

Quarrying within ML 6564 will be carried out on an ongoing basis and comprise a shallow open cut quarry.

ML 6564 will be accessed through the northern boundary via EML 6271, and the operations on ML 6564 will be integrated into the existing operations through the continued use of the weighbridge, access track, offices, maintenance sheds, phytophthora treatment plant and any other required ancillary operations. The layout of the ancillary mining area on EML 6271 is shown in **PEPR Drawing 3 – Stage 1 site layout map**.

The quarry is proposed to be extracted in 11 stages with progressive rehabilitation to be undertaken using soil from the current mining stage.

Soil will be stripped ahead of mining and stockpiled in low windrows around the periphery of the mining areas or used for direct replacement over rehabilitation areas.

Extraction will occur using drill and blast methods, or conventional mining equipment (excavators, loaders and potentially bulldozers) to produce raw material stockpiles ready for crushing and screening. After the limestone has been raised, material will be loaded into a mobile crushing/screening plant, and product stockpiles will be formed on the pit floor below the stackers.

Product will be loaded into road trucks within the pit and transported directly to customers via the weighbridge on EML 6271.

The disturbed areas will be progressively respread with topsoil and seeded with grass in accordance with the mining and rehabilitation plans to prepare a cropping and/or grazing paddock as the final landform.

No native vegetation clearance is proposed.

All areas within 150m of a remnant native vegetation area will be surveyed for orchid species by an accredited native vegetation assessor prior to the commencement of operations in these areas.

A 200m distance has been allowed for around the landowners residence as agreed with the landowners.

A gate is proposed to be installed near the southern end of the Site near the bore to connect Stage 2 and Stage 10. An additional gate may be required along the same fence line further north, and if required will be installed in consultation with the landowners.

A total mining area of approximately 76ha is proposed at an average depth of 2m (maximum 3m), supplying approximately 2.45 million tonnes of limestone resource.

The following Drawings have been provided to support the description of mining operations:

- **PEPR Drawing 3 – Stage 1 site layout map**
- **PEPR Drawing 4 – Stage 1 mining and rehabilitation plan**
- **PEPR Drawing 5 – Stage 2 mining and rehabilitation plan**
- **PEPR Drawing 6 – Stage 3 mining and rehabilitation plan**
- **PEPR Drawing 7 – Stage 6 mining and rehabilitation plan**
- **PEPR Drawing 8 – Stage 10 mining and rehabilitation plan**
- **PEPR Drawing 9 – Stage 11 mining and rehabilitation plan**
- **PEPR Drawing 10 – Final landform design plan**

- PEPR Drawing 11 – Final landform cross-sections
- PEPR Drawing 12 – Product transport route.

## 3.2 Resources and products

### 3.2.1 Resource

The target limestone is described as Pleistocene calcrete.

#### 3.2.1.1 Statement of current estimated resource

The limestone resource is expected to cover the entirety of the ML 6564 area.

Resource exploration drilling has not been undertaken across the ML 6564 area. The calcrete layer is known to be present through the construction of bores, mineral exploration holes and fences on the property. The hard caprock layer was also reached within 0.3m of the surface at all soil sampling locations.

The estimation of the resource at the Site has been calculated based on the expectation that the calcrete (hard limestone) caprock layer will be an average depth of 2m across the mining area. The mining areas shown in **Table 3** exclude a 5m buffer area around the drip line of 83 Pink Gums scattered across the Site.

The resource estimate for each stage of mining is provided in **Table 3**.

The estimated remaining resource in the proposed 11 mining stages is approximately 1,469,020m<sup>3</sup> or 2,350,432 tonnes when calculated using an in-situ bulk density of 1.6.

**Table 3 – Estimated resources within the proposed mining plans**

Mining Stage	Mining area (m <sup>2</sup> )	Estimated resource volume (m <sup>3</sup> )	Estimated resource (tonnes)	Estimated time to completion (years)
Stage 1	48,921	97,842	156,547	0.5
Stage 2	69,293	138,586	221,738	0.7
Stage 3	69,046	138,093	220,949	0.7
Stage 4	70,710	141,420	226,272	0.8
Stage 5	68,670	137,339	219,743	0.7
Stage 6	76,358	152,716	244,346	0.8
Stage 7	68,038	136,077	217,722	0.7
Stage 8	67,316	134,632	215,411	0.7
Stage 9	65,579	131,158	209,853	0.7
Stage 10	64,578	129,155	206,648	0.7
Stage 11	66,001	132,002	211,203	0.7
<b>All stages</b>	<b>734,510</b>	<b>1,469,020</b>	<b>2,350,432</b>	<b>7.8</b>

### 3.2.2 Production rate and products

The primary product produced on/from the Site is extractive limestone for use as road base. Material from the Site may also be sold for other extractives purposes such as fill, and fine material produced as a by-product of crushing and screening will be sold as agricultural lime.

Annual production rate (product and overburden) is estimated at a maximum 300,000 tonnes per annum of product; no overburden is anticipated as the target limestone resource sits directly below the topsoil.

The quarry is proposed to be extracted in 11 stages and the life of the quarry is estimated at approximately 8 - 9 years based on the projected maximum production rate (**Table 3**).

No overburden is anticipated to be present across the ML 6564 area and product will be stockpiled within the active mining areas and transported to customers via the EML 6271 weighbridge.

## 3.3 Quarrying activities

### 3.3.1 Type or types of quarry operation to be carried out

A summary of mining methods at the Site are as follows:

- Soil is stripped and stockpiled separately for rehabilitation or directly replaced over the previous mining stage where practicable.
- Limestone will be extracted through the use of drill and blast methods, unless soft enough to extract using heavy machinery (e.g. excavators).
- Blasted/extracted material will be crushed and screened on the pit floor within the active mining stage.
- Processed product will be stockpiled on the quarry floor within the active mining stage.
- Product material is loaded into haul trucks by a front-end loader and transported from the Site via the weighbridge on EML 6271.
- The Site will be progressively rehabilitated through the life-of-mine in stages of approximately 7.1 hectares.

#### 3.3.1.1 Rehabilitation

Achievement of the final landform is expected to be completed using the materials currently available at the Site.

The proposed final landform design is to return the Site to a safe and stable landform with one (1) vertical (V) to four (4) horizontal (H) (1V:4H) batters and a level floor that conforms with the wider landscape suitable for use for grazing or agriculture.

Scattered Pink Gums within the staged mining area will have a minimum 5-metre buffer between the disturbance area and the dripline, and the batters from the natural surface level to the pit floor will be on an angle of 1v:4h or less.

Soil will be stockpiled adjacent to the mining areas or directly replaced over the previous mining stage.

Soil respreading and grass seeding will be undertaken in late autumn/early winter where possible to limit dust emissions and to align with the optimal growing conditions for pasture grasses and/or cropping commodities.

Progressive rehabilitation will be monitored annually and learning from previous rehabilitation campaigns will be incorporated into future rehabilitation.

No additional rehabilitation material is needed to complete the proposed rehabilitation.

No waste-derived fill will be received at the Site.

Rehabilitation activities will be undertaken using heavy machinery and equipment already in use at the Site.

*3.3.1.1.1 Rehabilitation material balance*

All soil stripped ahead of mining will be utilised in the rehabilitation of the Site. Therefore, the final landform will have similar soil depths and productivity to the pre-mining landform.

Agricultural activities on the property occur over soil depths as low as 0.1m prior to the commencement of mining. The proposed rehabilitation therefore aims to ensure that the minimum soil depth in the rehabilitation area is 0.1m or greater.

Soil depths across the Site range from 0.1m – 0.3m and the average depth is approximately 0.15m.

A detail material balance is provided in **Table 4**.

**Table 4 – Rehabilitation material balance**

<b>Mining Stage</b>	<b>Mining area (m<sup>2</sup>)</b>	<b>Estimated soil stripped (m<sup>3</sup>)</b>	<b>Soil destination</b>	<b>Rehabilitation material volume (m<sup>3</sup>)</b>	<b>Rehabilitation material average depth (m)</b>
Stage 1	51,144	7,672	Stage 1	7,672	0.15
Stage 2	72,442	10,866	Stage 9	10,828	0.15
Stage 3	72,184	10,828	Stage 2	11,088	0.15
Stage 4	73,923	11,088	Stage 3	10,769	0.15
Stage 5	71,790	10,769	Stage 4	11,974	0.17
Stage 6	79,828	11,974	Stage 5	10,670	0.13
Stage 7	71,130	10,670	Stage 6	10,556	0.15
Stage 8	70,375	10,556	Stage 7	10,284	0.15
Stage 9	68,559	10,284	Stage 8	10,866	0.16
Stage 10	67,512	10,127	Stage 10	10,127	0.15
Stage 11	69,000	10,350	Stage 11	10,350	0.15
<b>All stages</b>	<b>767,887</b>	<b>115,183</b>	<b>All</b>	<b>115,183</b>	<b>0.15</b>

### 3.3.1.2 *Equipment to be used in mining and rehabilitation*

An overview of the type of equipment anticipated to be used to perform mining operations at the Site include:

- Conveyors
- Drill Rigs
- Excavator
- Front End Loader
- Grader
- Haul Trucks
- Mobile Crushing and Screening Plant
- Mobile Generator Units
- Mobile Mixing Unit
- Rock Breakers
- Skid Steers
- Trailer Mounted Mobile “Chem Loo”
- Trommel
- Tungsten-Tipped Mobile Saws
- Water Truck
- Weighbridge.

### 3.3.2 *Sequence of quarrying and progressive rehabilitation*

The sequence of mining and progressive rehabilitation is provided in the following drawings:

- **PEPR Drawing 4 – Stage 1 mining and rehabilitation plan**
- **PEPR Drawing 5 – Stage 2 mining and rehabilitation plan**
- **PEPR Drawing 6 – Stage 3 mining and rehabilitation plan**
- **PEPR Drawing 7 – Stage 6 mining and rehabilitation plan**
- **PEPR Drawing 8 – Stage 10 mining and rehabilitation plan**
- **PEPR Drawing 9 – Stage 11 mining and rehabilitation plan.**

#### 3.3.2.1 *Stage 1 operations*

##### 3.3.2.1.1 *Limestone extraction*

The proposed Stage 1 mining will see mining commence at the northern ML 6564 boundary and progress from north to south towards the Stage 1 southern boundary.

Limestone is proposed to be extracted at an average depth of 2m (maximum 3m), maintaining a 5m buffer between any disturbance and the dripline around the existing established trees.

Soil will be stockpiled at the Stage 1 boundary and used in the rehabilitation of Stage 1 at the completion of mining activities.

Limestone will be extracted using drill and blast methods, crushed and screened within the pit, stockpiled on the pit floor and transported from the Site via the weighbridge and current access track on EML 6271.

##### 3.3.2.1.2 *Progressive rehabilitation*

Progressive rehabilitation of Stage 1 mining operations on ML 6564 will focus on the EML 6271.

#### 3.3.2.2 *Stage 2 operations*

##### 3.3.2.2.1 *Limestone extraction*

The proposed Stage 2 mining operations see mining move to the southern side of the Stage 2 area.

Access to Stage 2 will be via the central property access track or via a new internal access track formed along the eastern ML 6564 boundary. If a new access road is required, soil will be stripped from the road area and

stockpiled in low windrows adjacent to the road ready for rehabilitation of the access road at the completion of mining at the Site.

A gate will then be installed between Stage 10 and Stage 2 to provide access through the current existing central fence line.

Topsoil will be progressively stripped from south to north and the soil will be deposited in low (2m) windrows (stockpiles) around the Stage 9 mining area.

The pit will progress into the hill from south to north so that the 1m – 3m high operating face acts as a visual screen and noise barrier for the operations at the landowner residence.

Signage will be placed around the active mining areas to ensure that non-mining vehicles do not enter the area near the pit face.

The primary rock extraction method will be regular drill and blast, with the average blast size being for 6,000 tonnes of rock.

Blasted limestone will be crushed and screened to create the required aggregate sizes and stockpiled within the active mining area ready for transportation from the Site.

#### *3.3.2.2 Progressive rehabilitation*

Progressive rehabilitation activities during Stage 2 include the following:

- Contouring and soil respreading over the Stage 1 mining area.
- Weed control in the rehabilitated Stage 1 mining area.
- Grass seeding over the area, pasture grasses do not regenerate from the existing seed bank in the first growing season.
- Monitoring of vegetation cover in previously rehabilitated areas on EML 6271.

**Rehabilitation milestone 2A** – Stage 1 rehabilitation earthworks and topsoil replacement is completed within 1 year of the completion of mining in Stage 1.

**Rehabilitation milestone 2B** – An annual revegetation monitoring program analysing and reporting on the success of the initial rehabilitation program, so that any learnings can be applied to future rehabilitation activities, commences within 2 years of the completion of rehabilitation on Stage 1.

#### *3.3.2.3 Stage 3 operations*

##### *3.3.2.3.1 Limestone extraction*

The proposed Stage 3 mining operations see active mining move westwards from Stage 2.

Topsoil will be progressively stripped from south to north and the soil will be directly replaced over the Stage 2 mining area.

The pit will progress into the hill from south to north so that the 1m – 3m high operating face acts as a visual screen and noise barrier for the operations at the landowner residence.

Signage will be placed around the active mining areas to ensure that non-mining vehicles do not enter the area near the pit face.

The primary rock extraction method will be regular drill and blast, with the average blast size being for 6,000 tonnes of rock.

Blasted limestone will be crushed and screened to create the required aggregate sizes and stockpiled within the active mining area ready for transportation from the Site.

#### 3.3.2.3.2 *Progressive rehabilitation*

Progressive rehabilitation activities during Stage 3 include the following:

- Final contouring and direct soil respreading over the Stage 2 mining area.
- Weed control over the previously rehabilitated areas.
- Monitoring of vegetation cover in previously rehabilitated areas and intervention activities completed as required based on the results of the monitoring (e.g. infill grass seeding).

**Rehabilitation milestone 3A** – Stage 2 rehabilitation earthworks and topsoil replacement is completed within 1 year of the completion of mining in Stage 2.

**Rehabilitation milestone 3B** – Evidence that the annual revegetation monitoring program has continued analysing and reporting on the success of the completed rehabilitation programs, so that any learnings can be applied to future rehabilitation activities.

#### 3.3.2.4 *Stage 4 operations*

##### 3.3.2.4.1 *Limestone extraction*

The proposed Stage 4 mining operations see active mining move northwards from Stage 3.

Topsoil will be progressively stripped from south to north, and the soil will be directly replaced over the Stage 3 mining area.

The pit will progress into the hill from south to north so that the 1m – 3m high operating face acts as a visual screen and noise barrier for the operations at the landowner residence.

Signage will be placed around the active mining areas to ensure that non-mining vehicles do not enter the area near the pit face.

The primary rock extraction method will be regular drill and blast, with the average blast size being for 6,000 tonnes of rock.

Blasted limestone will be crushed and screened to create the required aggregate sizes and stockpiled within the active mining area ready for transportation from the Site.

##### 3.3.2.4.2 *Progressive rehabilitation*

Progressive rehabilitation activities during Stage 4 include the following:

- Final contouring and direct soil respreading over the Stage 3 mining area.
- Weed control over the previously rehabilitated areas.
- Monitoring of vegetation cover in previously rehabilitated areas and intervention activities completed as required based on the results of the monitoring (e.g. infill grass seeding).

**Rehabilitation milestone 4A** – Stage 3 rehabilitation earthworks and topsoil replacement is completed within 1 year of the completion of mining in Stage 3.

**Rehabilitation milestone 4B** – Evidence that the annual revegetation monitoring program has continued analysing and reporting on the success of the completed rehabilitation programs, so that any learnings can be applied to future rehabilitation activities.

### **3.3.2.5 Stage 5 operations**

#### *3.3.2.5.1 Limestone extraction*

The proposed Stage 5 mining operations see active mining move northwards from Stage 4.

Topsoil will be progressively stripped from south to north and the soil will be directly replaced over the Stage 4 mining area.

The pit will progress into the hill from south to north so that the 1m – 3m high operating face acts as a visual screen and noise barrier for the operations at the landowner residence.

Signage will be placed around the active mining areas to ensure that non-mining vehicles do not enter the area near the pit face.

The primary rock extraction method will be regular drill and blast, with the average blast size being for 6,000 tonnes of rock.

Blasted limestone will be crushed and screened to create the required aggregate sizes and stockpiled within the active mining area ready for transportation from the Site.

#### *3.3.2.5.2 Progressive rehabilitation*

Progressive rehabilitation activities during Stage 5 include the following:

- Final contouring and direct soil resspreading over the Stage 4 mining area.
- Weed control over the previously rehabilitated areas.
- Monitoring of vegetation cover in previously rehabilitated areas and intervention activities completed as required based on the results of the monitoring (e.g. infill grass seeding).

**Rehabilitation milestone 5A** – Stage 4 rehabilitation earthworks and topsoil replacement is completed within 1 year of the completion of mining in Stage 4.

**Rehabilitation milestone 5B** – Evidence that the annual revegetation monitoring program has continued analysing and reporting on the success of the completed rehabilitation programs, so that any learnings can be applied to future rehabilitation activities.

### **3.3.2.6 Stage 6 operations**

#### *3.3.2.6.1 Limestone extraction*

The proposed Stage 6 mining operations see active mining move northwards from Stage 5.

Topsoil will be progressively stripped from south to north and the soil will be directly replaced over the Stage 5 mining area.

The pit will progress into the hill from south to north so that the 1m – 3m high operating face on the eastern side of the pit acts as a visual screen and noise barrier for the operations at the landowner residence.

Stage 6 will be the terminal stage on the north-western side of ML 6564.

Signage will be placed around the active mining areas to ensure that non-mining vehicles do not enter the area near the pit face.

The primary rock extraction method will be regular drill and blast, with the average blast size being for 6,000 tonnes of rock.

Blasted limestone will be crushed and screened to create the required aggregate sizes and stockpiled within the active mining area ready for transportation from the Site.

#### *3.3.2.6.2 Progressive rehabilitation*

Progressive rehabilitation activities during Stage 6 include the following:

- Final contouring and direct soil respreading over the Stage 5 mining area.
- Weed control over the previously rehabilitated areas.
- Monitoring of vegetation cover in previously rehabilitated areas and intervention activities completed as required based on the results of the monitoring (e.g. infill grass seeding).

**Rehabilitation milestone 6A** – Stage 5 rehabilitation earthworks and topsoil replacement is completed within 1 year of the completion of mining in Stage 5.

**Rehabilitation milestone 6B** – Evidence that the annual revegetation monitoring program has continued analysing and reporting on the success of the completed rehabilitation programs, so that any learnings can be applied to future rehabilitation activities.

#### *3.3.2.7 Stage 7 operations*

##### *3.3.2.7.1 Limestone extraction*

The proposed Stage 7 mining operations see active mining move to the southern side of the Stage 7 area to commence a new pit running from south to north.

Topsoil will be progressively stripped from south to north and the soil will be transported via truck and will be directly replaced over the Stage 6 mining area.

The pit will progress into the hill from south to north so that the 1m – 3m high operating face acts as a visual screen and noise barrier for the operations at the landowner residence.

Signage will be placed around the active mining areas to ensure that non-mining vehicles do not enter the area near the pit face.

The primary rock extraction method will be regular drill and blast, with the average blast size being for 6,000 tonnes of rock.

Blasted limestone will be crushed and screened to create the required aggregate sizes and stockpiled within the active mining area ready for transportation from the Site.

##### *3.3.2.7.2 Progressive rehabilitation*

Progressive rehabilitation activities during Stage 7 include the following:

- Final contouring and direct soil respreading over the Stage 6 mining area.
- Weed control over the previously rehabilitated areas.

- Monitoring of vegetation cover in previously rehabilitated areas and intervention activities completed as required based on the results of the monitoring (e.g. infill grass seeding).

**Rehabilitation milestone 7A** – Stage 6 rehabilitation earthworks and topsoil replacement is completed within 1 year of the completion of mining in Stage 6.

**Rehabilitation milestone 7B** – Evidence that the annual revegetation monitoring program has continued analysing and reporting on the success of the completed rehabilitation programs, so that any learnings can be applied to future rehabilitation activities.

### *3.3.2.8 Stage 8 operations*

#### *3.3.2.8.1 Limestone extraction*

The proposed Stage 8 mining operations see active mining move northwards from Stage 7.

Topsoil will be progressively stripped from south to north and the soil will be directly replaced over the Stage 7 mining area.

The pit will progress into the hill from south to north so that the 1m – 3m high operating face acts as a visual screen and noise barrier for the operations at the landowner residence.

Signage will be placed around the active mining areas to ensure that non-mining vehicles do not enter the area near the pit face.

The primary rock extraction method will be regular drill and blast, with the average blast size being for 6,000 tonnes of rock.

Blasted limestone will be crushed and screened to create the required aggregate sizes and stockpiled within the active mining area ready for transportation from the Site.

#### *3.3.2.8.2 Progressive rehabilitation*

Progressive rehabilitation activities during Stage 8 include the following:

- Final contouring and direct soil respreading over the Stage 7 mining area.
- Weed control over the previously rehabilitated areas.
- Monitoring of vegetation cover in previously rehabilitated areas and intervention activities completed as required based on the results of the monitoring (e.g. infill grass seeding).

**Rehabilitation milestone 8A** – Stage 7 rehabilitation earthworks and topsoil replacement is completed within 1 year of the completion of mining in Stage 7.

**Rehabilitation milestone 8B** – Evidence that the annual revegetation monitoring program has continued analysing and reporting on the success of the completed rehabilitation programs, so that any learnings can be applied to future rehabilitation activities.

### *3.3.2.9 Stage 9 operations*

#### *3.3.2.9.1 Limestone extraction*

The proposed Stage 9 mining operations see active mining move northwards from Stage 8.

Topsoil will be progressively stripped from south to north and the soil will be directly replaced over the Stage 8 mining area.

The pit will progress into the hill from south to north so that the 1m – 3m high operating face acts as a visual screen and noise barrier for the operations at the landowner residence.

Stage 9 will be the terminal stage for all mining west of the central access track within ML 6564.

Signage will be placed around the active mining areas to ensure that non-mining vehicles do not enter the area near the pit face.

The primary rock extraction method will be regular drill and blast, with the average blast size being for 6,000 tonnes of rock.

Blasted limestone will be crushed and screened to create the required aggregate sizes and stockpiled within the active mining area ready for transportation from the Site.

#### *3.3.2.9.2 Progressive rehabilitation*

Progressive rehabilitation activities during Stage 9 include the following:

- Final contouring and direct soil respreading over the Stage 8 mining area.
- Weed control over the previously rehabilitated areas.
- Monitoring of vegetation cover in previously rehabilitated areas and intervention activities completed as required based on the results of the monitoring (e.g. infill grass seeding).

**Rehabilitation milestone 9A** – Stage 8 rehabilitation earthworks and topsoil replacement is completed within 1 year of the completion of mining in Stage 8.

**Rehabilitation milestone 9B** – Evidence that the annual revegetation monitoring program has continued analysing and reporting on the success of the completed rehabilitation programs, so that any learnings can be applied to future rehabilitation activities.

#### *3.3.2.10 Stage 10 operations*

##### *3.3.2.10.1 Limestone extraction*

The proposed Stage 10 mining operations see active mining move to the southern side of the Stage 10 area.

Topsoil will be progressively stripped from south to north and will be stockpiled in windrows at the Stage 10 boundary ready for rehabilitation.

The pit will progress into the hill from south to north so that the 1m – 3m high operating face acts as a visual screen and noise barrier for the operations at the landowner residence.

Signage will be placed around the active mining areas to ensure that non-mining vehicles do not enter the area near the pit face.

The primary rock extraction method will be regular drill and blast, with the average blast size being for 6,000 tonnes of rock.

Blasted limestone will be crushed and screened to create the required aggregate sizes and stockpiled within the active mining area ready for transportation from the Site.

##### *3.3.2.10.2 Progressive rehabilitation*

Progressive rehabilitation activities during Stage 10 include the following:

- Final contouring and soil respreading over the Stage 9 mining area using the soil stockpiled from Stage 2.
- Weed control over the previously rehabilitated areas.
- Monitoring of vegetation cover in previously rehabilitated areas and intervention activities completed as required based on the results of the monitoring (e.g. infill grass seeding).

**Rehabilitation milestone 10A** – Stage 9 rehabilitation earthworks and topsoil replacement is completed within 1 year of the completion of mining in Stage 9.

**Rehabilitation milestone 10B** – Evidence that the annual revegetation monitoring program has continued analysing and reporting on the success of the completed rehabilitation programs, so that any learnings can be applied to future rehabilitation activities.

### *3.3.2.11 Stage 11 operations*

#### *3.3.2.11.1 Limestone extraction*

The proposed Stage 11 mining operations see active mining move northwards from Stage 10.

Topsoil will be progressively stripped from south to north and will be stockpiled in windrows at the Stage 11 boundary ready for rehabilitation.

The pit will progress into the hill from south to north so that the 1m – 3m high operating face acts as a visual screen and noise barrier for the operations at the landowner residence.

This will be the terminal mining stage for ML 6564.

Signage will be placed around the active mining areas to ensure that non-mining vehicles do not enter the area near the pit face.

The primary rock extraction method will be regular drill and blast, with the average blast size being for 6,000 tonnes of rock.

Blasted limestone will be crushed and screened to create the required aggregate sizes and stockpiled within the active mining area ready for transportation from the Site.

#### *3.3.2.11.2 Progressive rehabilitation*

Progressive rehabilitation activities during Stage 11 include the following:

- Final contouring and soil respreading over the Stage 10 mining area.
- Weed control over the previously rehabilitated areas.
- Monitoring of vegetation cover in previously rehabilitated areas and intervention activities completed as required based on the results of the monitoring (e.g. infill grass seeding).

**Rehabilitation milestone 11A** – Stage 10 rehabilitation earthworks and topsoil replacement is completed within 1 year of the completion of mining in Stage 10.

**Rehabilitation milestone 11B** – Evidence that the annual revegetation monitoring program has continued analysing and reporting on the success of the completed rehabilitation programs, so that any learnings can be applied to future rehabilitation activities.

### 3.3.2.12 Final rehabilitation

The final rehabilitation will include the following activities to achieve the proposed final landform presented in **PEPR Drawing 10** and **PEPR Drawing 11**:

- Sale or removal of all remaining product at the Site.
- Removal of all mining equipment and waste from the Site.
- Final contouring and soil respreading over the Stage 11 area.
- Light ripping of any remaining access roads to a depth of approximately 100mm and soil respreading over the access roads.
- Final weed control and rehabilitation monitoring to assess the entire Site against the closure outcomes and measurement criteria.

### 3.3.2.13 Operational disturbance area summary

A summary of the disturbance and rehabilitation areas at the commencement and completion of each stage is provided in **Table 5**.

**Table 5 – Operational disturbance and rehabilitation summary for ML 6564**

Stage	Active mining area (ha)	Progressive rehabilitation area (ha)	Completed rehabilitation area (ha)	Maximum disturbance area during stage (ha)*
Stage 1	5.1	0.0	0.0	5.1
Stage 2	7.2	5.1	0.0	12.4
Stage 3	7.2	7.2	5.1	14.5
Stage 4	7.4	7.2	12.4	14.6
Stage 5	7.2	7.4	19.6	14.6
Stage 6	8.0	7.2	27.0	15.2
Stage 7	7.1	8.0	34.1	15.1
Stage 8	7.0	7.1	42.1	14.2
Stage 9	6.9	7.0	49.2	13.9
Stage 10	6.8	6.9	56.3	13.6
Stage 11	6.9	6.8	63.1	13.7

\*Maximum disturbance calculated as the active mining area plus the progressive rehabilitation area.

## 3.3.3 Stockpiles

### 3.3.3.1 Topsoil and subsoil stockpiles

Soil will be directly replaced onto prepared rehabilitation areas where practicable.

Where direct replacement is not possible, soil will be stockpiled adjacent to a mining area in windrows with a maximum height of 2m and with outer batters with slope angles of 1v:2h or less ready for rehabilitation.

Mining stages have been planned with similar areas to ensure that where direct replacement occurs, the volume of soil is similar to the original amount of the pre-mining landform.

Soil stockpiles will be controlled for weed and monitored for erosion annually.

With the exception of the Stage 2 soil stockpile, which is not proposed to be respread until the completion of Stage 9 mining, all soil stockpiles are anticipated to be in place for less than 2-years before being respread.

#### *3.3.3.2 Product Stockpile*

Product stockpiles will be located within the active mining areas and migrate across the ML 6564 as mining progresses.

The product stockpiles will be a maximum height of 10m and may be treated for Phytophthora if required to achieve local government requirements.

#### *3.3.3.3 Overburden stockpiles*

No overburden has been identified between the soil and calcrete resource. A thin layer of sandy soil is expected to be present and will be stripped and used in rehabilitation consistently with the overlying soils.

#### *3.3.4 Use of explosives*

All blasting is undertaken by qualified staff and/or contractors in accordance with Australian Standard 2187.2-2006 – Part 2: Use of Explosives.

Blasting occurs regularly (approximately one blast per week) at approximately 4pm. This is after the end of the day shift to reduce the number of employees onsite during the blast.

As the resource is shallow at 2 – 3m deep, blasts are relatively small in size and generally loosen approximately 6,000 tonnes of material per blast.

Blasting is sequentially fused to minimise noise and vibration.

Ammonium Nitrate Fuel Oil Mix (ANFO) is the explosive to be used. The emulsion mix is not stored onsite and only ordered and used as required and supplied by third party providers.

Explosives are stored on the neighbouring EML 6271.

All neighbouring property owners are contacted and informed about each future blasting dates and times on the morning of the blast firstly by phone with a voice message left if not available. A text is also sent to those who could not be contacted by phone.

Blast Guards are situated at any access point where a neighbour could enter the exclusion zone.

A copy of the blast management methods and control strategies are provided as **Attachment 2 – Blast Management Plan**.

#### *3.3.5 Modes and hours of operation*

Mining operations at the Site will be undertaken continuously throughout the year.

The quarry may operate (extraction, processing, stockpiling, soil stripping and rehabilitation) from 6:00am to 6:00pm Monday to Friday; 7:00am to 3:00pm Saturday, Sunday and public holidays.

Sales and transport may operate from 6:00am to 6:00pm Monday to Friday but will not be undertaken on weekends and public holidays.

Machinery and general property maintenance may be undertaken anytime.

### **3.4 Crushing, processing, and product transport**

#### **3.4.1 Fixed plant**

No fixed crushing or screening plant is proposed to be established at the Site.

A fixed weighbridge and phytosphora treatment plant is located on EML 6271 and will service operations on ML 6564.

#### **3.4.2 Hours of operation**

Refer Section 3.3.5 – Modes and hours of operation.

#### **3.4.3 Processing wastes**

No chemical additives are proposed to be used in the processing of the products from the Site and therefore processing wastes will not be created by mining operations on the EML area.

The Phytosphora treatment would be considered a chemical additive. This treatment will occur on the existing EML 6271 but is not required on ML 6564 as no Phytosphora has been identified on the lease.

#### **3.4.4 Industrial and domestic wastes**

Any general wastes produced during operations are temporarily stored in bins with lids to prevent vermin from accessing the waste and regularly collected by the Council.

Oil wastes are kept in Intermediate Bulk Containers (IBCs) within a bunded area and when full, pumped into a waste oil removalist truck for recycling.

Workshop wastes, drums, oil filters, brake pads, and scrap steel are stored in a bunded area and are collected by a third party or sent back to the quarries Engineering Shop at Melrose Park for recycling.

Sewage from the site is controlled by the use of septic tanks and the tanks are regularly inspected and emptied.

While the majority of waste tyres are removed from Site by the supplier of replacement tyres, a number of earthmoving tyre carcasses are retained for the purposes of delineation within the quarry operation.

Where required, EPA waste tracking slips or contractor receipts will be retained on file for the life of the operations as per legislative requirements.

#### **3.4.5 Waste-derived fill**

No waste-derived fill will be received at the Site.

### 3.5 Supporting surface infrastructure

The site supporting surface infrastructure is shown in **PEPR Drawing 3 – Stage 1 layout map**.

#### 3.5.1 Access and roads

The Site access point is shown in **PEPR Drawing 12 – Product transport route map**.

The Site is accessible through a lockable gate at the property entry point from the southern side of Chaunceys Line Road.

Haul trucks will exit through the existing EML 6271 haul road to the sealed two-way Chaunceys Line Road (**Plate 1**), generally turning left and using approved commodity transport routes within the surrounding road network (**PEPR Drawing 12 – Product transport route map**).

No additional truck movements above those already made in association of EML 6271 will occur as a result of the proposed operations.



***Plate 1 – The sealed entrance from Chaunceys Line Road***

#### 3.5.2 Accommodation and offices

No accommodation or offices are proposed within the ML 6564.

Operations on ML 6564 will be serviced by the offices and facilities already present on EML 6271.

#### 3.5.3 Public services and utilities used by the operation

Power to the mobile processing plant will be provided by a mobile generator.

Water will be sourced from an existing pump shed on the adjoining EML 6271.

### 3.5.4 Visual screening

Blocks of vegetation are located along the western and northern ML 6564 boundary, with smaller vegetation blocks along sections of the ML 6564 eastern boundary.

The Site is located in a rural area. Views into the Site are only expected from the road to the south but there are no sensitive receptors in this area (the dwelling south of the MC (SR1) is not used as a dwelling) (**Plate 2**).

The Site is therefore not considered to cause a visual amenity impact at any location, and therefore no additional visual screening is planned.

The landowners of the existing dwelling on the Site have requested that no visual screening bund be constructed between their dwelling and the proposed pit. An operational buffer of 200m around the dwelling was requested and has been incorporated in the design.

Mining has also been planned to use the topography to screen views into the operating areas from the landowner's dwelling.



***Plate 2 – The screened view of the Site from Harvey Road to the south of ML 6564***

### 3.5.5 Fuel and chemical storage

No fuel or chemicals are proposed to be stored on the Site.

Fuel will be stored on the adjoining EML 6271. Machinery will be refuelled outside of the ML 6564 area.

Mobile plant will be diesel powered and will be filled using jerry cans or with a light mobile refueling tank.

Spill kits and fire extinguishers will be kept at the generator location.

### 3.5.6 Site security

The Site is located in a rural area with low levels of public traffic or nearby locations visited by the public.

The Site is surrounded by stock fencing, and the main entrance gate is kept locked when the Site is not operational (**Plate 3**).

Appropriate security/public safety signage is present at the Site access point (**Plate 3**).

Security is enhanced by the landowners being on Site for the majority of the time.



***Plate 3 – The lockable gate and public safety signage at the Site access point***

### 3.5.7 Erosion, sediment, and silt control

The proposed operations are internally draining and no runoff from the surface area will be discharged.

As the surface water drainage is all internal, the only erosion risks may be related to stockpiles, internal roads and rehabilitation areas.

No drainage lines are located within the surrounding area.

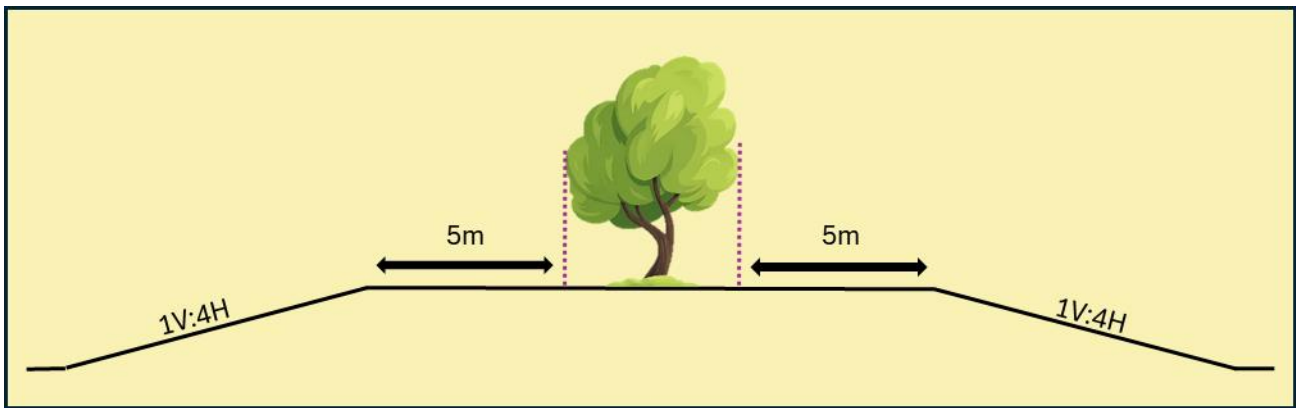
Pre-mining surface water flows under heavy rainfall are expected to follow the topography from north to south. The mining areas will lower the pit floor by 1m – 3m creating a basin which will effectively prevent surface water from being able to flow out of the disturbance area.

## 3.6 Vegetation clearance

No clearance of native vegetation is proposed.

As shown in **Figure 1**, a 5m buffer to the scattered Pink Gum drip lines and 1v:4h batters away from these trees is proposed, and a 10m buffer from the Native Vegetation Heritage Areas is also proposed.

All areas within 150m of a remnant native vegetation area will be surveyed for orchid species by an accredited native vegetation assessor prior to the commencement of operations in these areas.



*Figure 1 – 5m buffers from the dripline of each gum tree to the extraction area*

### 3.7 Site Water Management

#### 3.7.1 Water supply

Water is anticipated to be required during operations for dust suppression and phytophthora treatment.

Approximately 90,000L/day is to be used, sourced from water well 6727-3954 and 6727-1406 and stored in holding tanks and a bore water treatment shed located on the adjoining EML 6271.

No process water ponds are proposed.

As the Site is not located within a prescribed wells or prescribed water resources area, a water allocation is not required.

#### 3.7.2 Pit water management

As the Site is internally draining, surface water runoff collects at the base of each quarry pit.

Water will sit above a clayey layer at the base of the pit, and will infiltrate slowly into the ground, will be taken up by grasses in the rehabilitated landform, or will evaporate.

The southern side of the pits will be at a lower elevation, and any temporary pools of water will occur at the southern end of the active mining area, while the operating face will be on the northern side. Therefore, no pit water management will be required.

### 3.8 Description of quarry site at completion

A final landform design plan is provided in **PEPR Drawing 10**, with associated surface cross-section drawings in **PEPR Drawing 11**.

The proposed concept final landform has been designed to be safe and stable, conform to the wider landscape, provide aesthetic value, retain the scattered Pink Gums that provide perching and nesting opportunities for native avian fauna and be suitable for use for grazing or agriculture.

All mining related equipment and waste materials will be removed from the Site ahead of closure.

All internal roads and hardstands not required for the final land use will be ripped to reduce compaction and rehabilitated.

### **3.9 Description of workforce and local procurement**

Fifteen (15) full-time equivalent employee positions would be expected to be directly created by the proposal immediately following approval of the proposal.

It is anticipated that 100% of the workforce would reside within the local community.

Futuretop Developments Pty Ltd policy is to target local employment at the quarry where possible.

Full on-site and off-site training is provided to employees and potential employees either in-house or using suitably qualified external training providers.

Futuretop Developments Pty Ltd policy is to support local business participation, and procurement of local goods and services where possible.

## 4 CONSULTATION

The process undertaken to identify stakeholders likely to be directly affected by the quarry operations is discussed below.

Stakeholders were considered to be potentially directly affected by quarry operations if they:

- had a property or mining tenement that shared a boundary with the mining tenement,
- had a residence within 1,000 metres of the proposed operating areas,
- had a residence along the proposed access route currently not used by quarry trucks, and/or
- had a direct interest in the end land use of the Site.

Potential stakeholders were initially identified through consideration of the description of the existing environment, and a review of aerial imagery to determine shared boundaries and distance of residences from the Site.

The following stakeholders were identified to be included in the consultation:

- The landowners of 420 Chaunceys Line Road, Hartley (CT 5896/647) being the property that the Site is located on.
- The landowners of 442 Chaunceys Line Road, Hartley (CT 5896/643) being a residence located approximately 1.1km north-east of the Site, adjacent to the existing haul road associated with EML 6271.
- Alexandrina Council in respect of the proposed operations.
- Ngarrindjeri Aboriginal Corporation RNTBC.

The following methods for the delivery of information and gathering feedback were used in the consultation:

- Relevant stakeholders were contacted via face-to-face meetings, email and/or telephone. Stakeholders were advised that an MP was being prepared for the Site, and a description of the proposed future operations were provided.
- Stakeholders that responded were invited to state any queries or concerns relating to the operations at MC 4457.
- Stakeholders who requested additional information were provided with follow-up correspondence on 9 September 2024 which included a map of the Site and proposed operations contained within the MP. Each stakeholder was provided with Futuretop Developments Pty Ltd contact details and encouraged to make contact should any concerns be held in the future.

### 4.1 Landowners of 420 Chaunceys Line Road, Hartley (CT 5896/647)

A meeting was held with the owners of CT 5896/647 at their property on 8 August 2024.

#### 4.1.1 Concerns raised

The landowners requested the following:

- that access to the southern part of the property be maintained
- that the existing water pipe running parallel to the existing fence line be maintained
- that no bund be constructed in front of the existing residence.

#### 4.1.2 Proposed steps to address concerns raised

The tenement holder has agreed to implement the landowner's requests.

Futuretop Developments Pty Ltd have prepared a range of control and management strategies that are discussed in **Section 5** to proactively mitigate potential impacts to the neighbouring landowners to maintain the current status where the landowners are not concerned with operations of the Site.

#### 4.1.3 Ongoing engagement preference

A follow up meeting was held with the landowners on 9 September 2024 to discuss the proposed mining stages, process and anticipated timeframes.

The landowner raised no concerns.

The landowner was satisfied to continue to make face-to-face contact direct with Futuretop Developments Pty Ltd on an as needs basis should concerns and/or queries arise in the future.

### 4.2 Owner of 442 Chaunceys Line Road, Hartley (CT 5896/643)

As the landowner is generally on site only on weekends, contact was made by telephone on 27 August 2024.

#### 4.2.1 Concerns raised

No concerns were raised during the discussion.

#### 4.2.2 Proposed steps to address concerns raised

As no concerns were raised, no proposed additional steps to address concerns are required.

Futuretop Developments Pty Ltd have prepared a range of control and management strategies that are discussed in Section 5 to proactively mitigate potential impacts to the neighbouring landowners to maintain the current status where nearby landowners are not concerned with the Site.

#### 4.2.3 Ongoing engagement preference

The landowner is satisfied to contact Futuretop Developments Pty Ltd on an as needs basis should concerns and/or queries arise in the future.

### 4.3 Alexandrina Council

Contact was made with the Manager of Strategic Development via telephone on 27 August 2024. Council requested that additional information be provided via email. An email was sent to Council on 3 September 2024.

#### 4.3.1 Concerns raised

Council advised that there is no fundamental objection to the MP.

Site access was the only concern raised.

Council has requested that:

- the Site access be widened and sealed on the western side to enable trucks to turn left when exiting more safely

- Futuretop Developments Pty Ltd contribute to asphaltting the segment of the road where trucks turn into the Site.

#### 4.3.2 Proposed steps to address concerns raised

Futuretop Developments Pty Ltd has agreed to upgrade the intersection and to commence budgeting for the works for a completion timeframe of 6 months from the approval date of a Program for Environment Protection and Rehabilitation (PEPR) over ML 6564.

It is noted that Futuretop Developments Pty Ltd previously financially contributed to the sealing of Chaunceys Line Road to the EML 6271 Site access point. This investment will continue to benefit the local community by reducing dust emissions and improving traffic safety along the road throughout the proposed operations on ML 6564.

#### 4.3.3 Ongoing engagement preference

As a major customer for the Hartley Rubble Pit, Council representatives are in regular communications with the Site, and any concerns can be raised on an as needed basis.

Futuretop Developments is committed to contributing to road upgrades as required during the life of the proposed quarry.

### 4.4 Ngarrindjeri Aboriginal Corporation RNTBC

An attempt to contact with the Ngarrindjeri Aboriginal Corporation RNTBC (NAC) contact officer was made via mobile phone and email on 29 August 2025 by Macro Environmental Solutions on behalf of Futuretop Developments.

A meeting occurred with the NAC contact officer and archaeologist for 19 September 2025.

The proposed engagement approach is for a summary of the proposed operations and the landscape characteristics to be provided so that NAC can provide comments on any relevant local knowledge of the area, specific risks and additional control measures for consideration.

Engagement with the NAC will continue into the future in relation the Cultural Heritage Management at the Site.

## 5 ENVIRONMENTAL OUTCOMES, STRATEGIES, CRITERIA AND MONITORING

### 5.1 Air quality

#### 5.1.1 Applicable Legislation and Standards

- *Environment Protection Act, 1993*
- Environment Protection (Air Quality) Policy 2016.

#### 5.1.2 Potential impact events

The operational phase potential impact event, as presented in the MC 4577 MP, is *nuisance dust impacts on nearby residences*.

The residual risk rating was ‘Very low’ (very unlikely with trivial consequences).

#### 5.1.3 Control and management strategies

The control and management strategies to mitigate potential impacts or to reduce impacts to acceptable levels are listed in **Table 6**.

**Table 6 – Control and management strategies for air quality**

Control and management strategy	Impact phase	Uncertainty and assumptions
Minimise the disturbance footprint to what is required for current mining.	Operational.	High certainty to reduce wind erosion surface.
All site personnel will be instructed to immediately report situations resulting in elevated dust emissions to the Site manager.	Operational.	High certainty to reduce wind erosion surface.
Stripping topsoil conducted in suitable wind and weather conditions to minimise generation of fugitive dust (i.e. where wind speed and direction will not impact on adjacent residential dwelling).	Operational.	High certainty to reduce dust emissions during topsoil stripping.
Undertake progressive rehabilitation in accordance with the staged mining and rehabilitation plans.	Operational, closure.	High certainty to reduce wind erosion surface.
A water cart to be available when operating under dry and/or windy conditions.	Operational.	High certainty to reduce operational dust emissions.
Dust generating activities will be modified or ceased under windy conditions (>40kmh) on dry days, or where dust is observed to be leaving the Site with the potential to cause an offsite impact.	Operational.	Modifying or ceasing activities to reduce dust generation is a proven control measure.
Internal roads to be well maintained to reduce a build-up of bulldust at the surface.	Operational.	High certainty to reduce dust emissions from transport.
Product in Haul trucks is covered or wetted prior to transportation.	Operational.	High certainty to reduce dust emissions from transport.
Vehicle movement around the site will comply with Site speed limits (50 km/h).	Operational.	Moderate certainty to reduce wheel generated dust.
Site dust management to follow the Trigger and Response Plan (TARP) featured in <b>Attachment 3</b> .	Operational.	High certainty to improve Site dust management.

### 5.1.4 Outcome and measurement criteria

The operational environmental outcome and measurement criteria for Air quality is provided in **Table 7**.

**Table 7 – Operational air quality environmental outcome and measurement criteria**

Environmental outcome		Measurement criteria (outcome achievement)		
The Tenement Holder must, during construction and operation, ensure that there are no public health and/or nuisance impacts from air emissions and dust generated by mining operations.		<p>Site records will demonstrate that any air quality related complaints are acknowledged within 48 hours and investigated within seven days.</p> <p>In response to a complaint, control and management strategies will be reviewed and updated as required and Site records will show the updates were provided to the complainant and/or the Regulator.</p> <p>Should an ongoing complaint not be resolved to the satisfaction of the Regulator, air quality monitoring is to occur at locations, and using methods, as agreed with the relevant regulating agency, to demonstrate:</p> <ul style="list-style-type: none"> <li>that mining operations do not cause dust deposition (ash content) to exceed 4g/m<sup>2</sup>/month (rolling annual average), when monitored in accordance with Australian Standard AS 3580.10.1 Methods for sampling and analysis of ambient air – Determination of particulates – Deposited matter – Gravimetric method, and/or</li> <li>that mining operations do not cause ground level concentrations of PM<sub>10</sub>* to exceed 50µg/m<sup>3</sup> over a 24-hour period at locations and using methods as agreed with the lead regulating agency.</li> </ul> <p><i>*PM<sub>10</sub> – Particulate matter with an aerodynamic diameter of 10 micrometres or less.</i></p> <ul style="list-style-type: none"> <li>Air quality monitoring will be undertaken until such time that the regulating agency provides a formal notification that the monitoring is no longer required due to a sustained period of compliance.</li> </ul>		
Phase	Measurement type and form	Locations	Frequency	Control or baseline data
Operational.	Complaint records.	Electronically filed.	Ongoing.	Not applicable.
	Air quality monitoring (dust deposition and/or continuous PM <sub>10</sub> monitoring).	At location agreed by the lead regulating agency, which is considered to be the best available representation of the dust complainant location.	Dust deposition: Monthly sampling (+/- 2 days); Continuous monitoring for PM <sub>10</sub> for a period as agreed with the lead regulating agency.	Background dust deposition and PM <sub>10</sub> levels.

## 5.2 Blasting

### 5.2.1 Applicable Legislation and Standards

- *Work Health and Safety Act 2012*
- Australian Standard 2187.2-2006 – Part 2: Use of Explosives.

### 5.2.2 Potential impact events

The operational phase potential impact event, as presented in the MC 4577 MP, is *unacceptable vibrational, airblast overpressure and flyrock impacts to a receptor from blasting undertaken on the Site.*

The residual risk ratings were:

- Vibration: ‘Very low’ (possible with trivial consequence)
- Airblast overpressure: ‘Low’ (possible with minor consequence)
- Flyrock: ‘Medium’ (very unlikely with severe consequence).

### 5.2.3 Control and management strategies

The control and management strategies to mitigate potential impacts or to reduce impacts to acceptable levels are listed in **Table 8**.

**Table 8 – Control and management strategies for blasting**

Control and management strategy	Impact phase	Uncertainty and assumptions
Blasting activities will be undertaken in accordance with the Blasting Management Plan ( <b>Attachment 2</b> ).	Operational.	This control has a high certainty of reducing potential blast impacts.
All blasting to be undertaken by licenced staff and/or contractors and in accordance with Australian Standard (AS 2187.2).	Operational.	This control has a high certainty of effectively ensuring blasts are undertaken to a high standard.
All blasts are to be recorded in Site records, detailing timing, size, number of blast holes, quantity and type of explosives used.	Operational.	This control has a high certainty of enabling an effective investigation of the cause of any blasting related impacts.
All blasting will be undertaken on weekdays with blasts initiated within normal working hours (8:00am to 5:00pm), and usually at approximately 4:00pm.	Operational.	It is assumed that blasting during business hours would reduce the likelihood of potential impacts.
Neighbouring property owners are notified approximately 24 hours before the scheduled day and time of blasts that may potentially be heard or felt outside of the Site boundary.	Operational.	High certainty to reduce the likelihood of complaints and ensure the Public are aware of the exclusion zone.
No explosives are stored within the ML area.	Operational.	This control has a high certainty of being effective as there is no risk of explosives being taken from the lease area.
Safety protocols are in place to ensure that the pit area and exclusion zone is vacant ahead of any blasts.	Operational.	This control has a high certainty of being effective.
Blasts are relatively small in size (~6,000 tonnes) which reduces vibration and airblast overpressure.	Operational.	This control has a high certainty of being effective.
Monitoring for vibration and overpressure will be undertaken near the closest residents should a complaint be received.	Operational.	It is assumed that the monitoring locations are representative of receptor locations.
Efficient, effective, and safe blasting technology will be used in accordance with AS 2187.2.	Operational.	This control has a high certainty of being effective.

### 5.2.4 Outcome and measurement criteria

The environmental outcome and measurement criteria for Blasting is provided in **Table 9**.

**Table 9 – Blasting environmental outcome and measurement criteria**

Environmental outcome		Measurement criteria (outcome achievement)		
The Tenement Holder must, during construction and operation, ensure that there are no public health and/or nuisance impacts from airblast, flyrock and vibration caused by blasting.		(1) Site records will demonstrate that any blasting related complaints regarding vibration and/or airblast overpressure are acknowledged within 48 hours with the complaint investigated within seven days. (2) In response to the complaint, control and management strategies will be reviewed and updated as required and Site records will show the updates were provided to the complainant and/or monitoring for vibration and airblast overpressure will be undertaken at or near the complainants location to demonstrate that peak sound pressure (overpressure) is less than 115 dB(A) for 95% of blasts and less than 120dB(A) for 100% of blasts, and ground vibration is less than 5mm/s for 95% of blasts and less than 10mm/s for 100% of blasts. (3) No evidence of flyrock observed outside of the Site area during post-blasting inspections.		
Phase	Measurement type and form	Locations	Frequency	Control or baseline data
Operational.	Complaint records.	Electronically filed.	Ongoing.	Not applicable.
	Records from vibration and airblast overpressure monitoring.	At or near the complainant's location (as agreed with the Mining Regulator).	Up to 3 blasts following a complaint.	AS 2187.2 human comfort standards.
Operational.	Records from post-blast inspections of the Site boundary near the blast area.	Outside of the Site boundary.	Following each blast.	Not applicable.

## 5.3 Caves

### 5.3.1 Applicable Legislation and Standards

- *South Australian Mining Act, 1971*
- *Heritage Places Act 1993*.

### 5.3.2 Potential impact events

The operational phase potential impact event, as presented in the MC 4577 MP, is *damage to a cave caused by mining operations*.

The residual risk rating was 'Very low' (unlikely with trivial consequence).

### 5.3.3 Control and management strategies

The control and management strategies to mitigate potential impacts or to reduce impacts to acceptable levels are listed in **Table 10**.

**Table 10 – Control and management strategies for caves**

Control and management strategy	Impact phase	Uncertainty and assumptions
Operators are aware of the requirements to stop work and report any observations of a cave opening encountered during mining operations.	Operational.	High certainty to ensure caves within the tenement are reported and protected prior to assessment.
Annual inspections are undertaken of the pit area for potential cave openings.	Operational.	High certainty to ensure caves within the tenement are reported and protected prior to assessment.

### 5.3.4 Outcome and measurement criteria

The operational environmental outcome and measurement criteria for Caves is provided in **Table 11**.

**Table 11 – Operational caves environmental outcome and measurement criteria**

Environmental outcome		Measurement criteria (outcome achievement)		
The Tenement Holder must, during construction and operation, ensure no unauthorised damage to caves of significance as a result of mining operations. <i>Note: for the purpose of this outcome the term "caves" includes any underground opening or cavity with a cross-sectional area greater than 0.25m<sup>2</sup>, and a minor axis measuring greater than 0.4 metres.</i>		Records demonstrate that annual inspections for caves are conducted. Records demonstrate that following an observation of a cave, work ceased in the area of the cave until such time that the cave is assessed by a suitably qualified expert endorsed by the Mining Regulator. Records demonstrate that work only recommenced in the area of the cave following written authority provided by the Mining Regulator.		
Phase	Measurement type and form	Locations	Frequency	Control or baseline data
Operational.	Records from inspections of the pit area for caves.	Pit area.	Annually.	Not applicable.
	Records relating to communications and actions taken following the discovery of a cave at the Site.	Electronically filed.	Following discovery of a cave.	Not applicable.

## 5.4 Drag out

### 5.4.1 Applicable Legislation and Standards

- *South Australian Mining Act, 1971*
- *South Australian Road Safety Act, 1961.*

#### 5.4.2 Potential impact events

The operational phase potential impact event, as presented in the MC 4577 MP, is *dragout impacts on public road users*.

The residual risk rating was ‘Very low’ (unlikely with moderate consequence).

#### 5.4.3 Control and management strategies

The control and management strategies to mitigate potential impacts or to reduce impacts to acceptable levels are listed in **Table 12**.

**Table 12 – Control and management strategies for drag out**

Control and management strategy	Impact phase	Uncertainty and assumptions
Haul trucks and light vehicles use well defined access tracks when on the Site.	Operational.	High certainty to prevent mud from sticking on tyres.
All vehicles travel along a 1.5km internal access road before entering the public road.	Operational.	It is assumed that clods of mud present will be dislodged during the journey along the access track.
Site staff will monitor drag out levels on a daily basis.	Operational.	High certainty to identify and proactively address drag out issues.
In the event that an unreasonable build-up of drag out does occur (e.g. where drag out causes poor visibility or slippery conditions), a street sweeper will be engaged to remove the drag out from Chaunceys Line Road.	Operational.	High certainty to address short-term drag out issues.
Annual monitoring of the Site access point will be undertaken to ensure no excessive build-up of drag out on the road or evidence of sediment build-up on road verges as a result of drag out is present.	Operational.	Moderate certainty to identify and address drag out issues.

#### 5.4.4 Outcome and measurement criteria

The operational environmental outcome and measurement criteria for Traffic is provided in **Table 13**.

**Table 13 – Drag out environmental outcome and measurement criteria**

Environmental outcome		Measurement criteria (outcome achievement)		
The Tenement Holder must, during construction and operation, ensure there are no public safety or nuisance impacts off the land that are caused by drag out of dirt, mud or other material onto roads associated with quarry related traffic.		<p>Site records will demonstrate that any drag out related complaints are acknowledged within 48 hours and investigated within seven days.</p> <p>In response to the complaint, control and management strategies will be reviewed and updated as required and Site records will show the updates were provided to the complainant and/or the Mining Regulator.</p> <p>Site records demonstrate that all traffic accidents involving the public that are allegedly caused by drag out from the Site are recorded.</p> <p>An investigation of each incident is undertaken by a suitably qualified independent third-party within 30 days (or other time as agreed with the lead regulating agency) and demonstrates that the incident was not caused as a result of drag out from the Site.</p>		
Phase	Measurement type and form	Locations	Frequency	Control or baseline data
Operational.	Complaint records.	Electronically filed.	Ongoing.	Not applicable.
Operational.	Site records (incident register) and investigation reports.	Electronically filed, Site access point and section of the road within 50m.	Within 30 days of a traffic incident.	Not applicable.

## 5.5 Groundwater

### 5.5.1 Applicable Legislation and Standards

- South Australian Environment Protection (Water Quality) Policy 2015
- *Water Act, 2007*
- *Landscape South Australia Act, 2019*
- South Australian Environment Protection Authority Liquid Storage Guidelines: Bunding & Spill Management (EPA, 2016).

### 5.5.2 Potential impact events

The operational phase potential impact event, as presented in the MC 4577 MP, is *a loss of groundwater quality or quantity as a result of mining operations*.

The residual risk rating was ‘Very low’ (very unlikely with moderate consequence).

### 5.5.3 Control and management strategies

The control and management strategies to mitigate potential impacts or to reduce impacts to acceptable levels are listed in **Table 14**.

**Table 14 – Control and management strategies for groundwater**

Control and management strategy	Impact phase	Uncertainty and assumptions
Conduct mining operations consistently with the proposed pit depths in the mining and rehabilitation plans.	Operational.	High certainty to prevent any risk of groundwater impacts.
Undertake regular monitoring of the pit floor levels to ensure the 20m – 30m buffer to groundwater is maintained.	Operational.	High certainty to prevent any risk of groundwater impacts
Ensure all hydrocarbon management is done in accordance with EPA guidelines, including cleaning all hydrocarbon spills immediately and disposing in accordance with EPA guidelines.	Operational.	High certainty to prevent any risk of groundwater impacts.

#### 5.5.4 Outcome and measurement criteria

The environmental outcome and measurement criteria for Groundwater quality is provided in **Table 15**.

**Table 15 – Groundwater environmental outcome and measurement criteria**

Environmental outcome		Measurement criteria (outcome achievement)		
The Tenement Holder must, during construction and operation, ensure there is no adverse impact to the quality or quantity of groundwater available to existing users and groundwater dependent ecosystems as a result of mining operations.		Quantity and quality – Site records will demonstrate that annual surveying confirms mining has occurred as proposed in the mining plans and a buffer to groundwater greater than 2-metres has been maintained.  Quality – Records from annual surveys demonstrate that no evidence of hydrocarbons spills is present in the operating areas.		
Phase	Measurement type and form	Locations	Frequency	Control or baseline data
Operational (Quantity and quality).	Annual surface survey for pit floor level.	Pit floor.	Annual.	Previous groundwater measurements.
Operational (Quality).	Annual inspection of the operating area for discolouration and odour suggesting a hydrocarbon spill.	Operating areas.	Annual.	Not applicable.

## 5.6 Heritage

### 5.6.1 Applicable Legislation and Standards

- *South Australian Aboriginal Heritage Act 1988*
- *Heritage Places Act 1993*
- *Mining Act, 1971.*

### 5.6.2 Potential impact events

The operational phase potential impact event, as presented in the MC 4577 MP, is *Aboriginal heritage sites or objects are damaged by mining operations*.

The residual risk rating was ‘Very low’ (unlikely with trivial consequence).

### 5.6.3 Control and management strategies

The control and management strategies to mitigate potential impacts or to reduce impacts to acceptable levels are listed in **Table 16**.

**Table 16 – Control and management strategies for heritage**

Control and management strategy	Impact phase	Uncertainty and assumptions
All employees and contractors working at the Site are advised of the significance of Aboriginal heritage and culture and are to take due care to preserve all Aboriginal Sites and Objects as defined by the <i>Aboriginal Heritage Act, 1988</i> .	Operational.	High certainty to ensure appropriate management of identified Aboriginal heritage Sites and Objects.
An Aboriginal Heritage Discovery Protocol has been developed for the Site to assist operators should potential human remains, objects or sites be encountered ( <b>Attachment 4</b> ).	Operational.	High certainty to ensure compliance with the requirements of the <i>Aboriginal Heritage Act, 1988</i> .
Engagement with NAC to ensure the strategies implemented are commensurate with the level of risk.	Operational	High certainty to ensure that appropriate control strategies are in place.

### 5.6.4 Outcome and measurement criteria

The operational environmental outcome and measurement criteria for Heritage are provided in **Table 17**.

**Table 17 – Operational Heritage (cultural) environmental outcome and measurement criteria**

Environmental outcome	Measurement criteria (outcome achievement)			
The Tenement Holder must, during construction and operation, ensure that there is no disturbance to Aboriginal or Non-Aboriginal heritage sites, objects or remains unless prior approval under the relevant legislation is obtained.	Site records will show that upon discovery within the lease of any possible: <ul style="list-style-type: none"> <li>• Aboriginal sites</li> <li>• Objects</li> <li>• Remains</li> <li>• European sites of significance</li> </ul> that work is ceased until the relevant authorities were notified and work recommenced only once authorisation was received.			
Phase	Measurement type and form	Locations	Frequency	Control or baseline data
Operational.	Records of actions and communications following the discovery of a cultural heritage Site/Object/Remains.	Investigation on the Site. Electronically filed.	Following discovery.	Not applicable.

## 5.7 Land use and third-party property

### 5.7.1 Applicable Legislation and Standards

- *Fire and Emergency Services Act 2005*
- *Planning, Development and Infrastructure Act 2016*
- *South Australian Mining Act, 1971*
- South Australian Planning and Design Code.

### 5.7.2 Potential impact events

The operational phase potential impact event, as presented in the MC 4577 MP, is *damage to third-party property caused by mining operations*.

The residual risk rating was ‘Very low’ (very unlikely with moderate consequence).

### 5.7.3 Control and management strategies

The control and management strategies to mitigate potential impacts or to reduce impacts to acceptable levels are listed in **Table 18**.

**Table 18 – Control and management strategies for Land use and third-party property**

Control and management strategy	Impact phase	Uncertainty and assumptions
Conduct mining operations in accordance with the proposed Staged mining and rehabilitation plans.	Operational.	It is assumed that mining within the proposed areas will prevent LTPP impacts.
Annual visual inspections of the mining areas, local infrastructure, and third-party property to be undertaken.	Operational.	High certainty to identify potential LTPP impacts so they may be proactively addressed.
Vehicles to use well defined internal access tracks and operators and contractors are aware of the location of local infrastructure.	Operational.	High certainty of preventing collision with third-party property.
Rehabilitation vegetation species are sown/planted in late autumn or early winter.	Operational.	High certainty to improve vegetation establishment on the rehabilitated landform.
Progressive rehabilitation areas are inspected annually for erosion, instability, vegetation establishment and conformance to the surrounding landscape and drainage system.	Operational, closure.	High certainty to identify and address rehabilitation issues.
Weed control and monitoring to be undertaken during and following final rehabilitation.	Closure.	High certainty to control any weed presence that has occurred as a result of quarrying.
Machinery operation and any hot works are not undertaken near vegetated areas.	Operational.	High certainty to prevent accidental fires from spreading.

Control and management strategy	Impact phase	Uncertainty and assumptions
No standalone fuel tanks are present at the Site and plant with fuel tanks are located away from vegetated areas.	Operational.	High certainty to prevent accidental fires occurring from collisions with flammable liquids.
Machinery is well maintained and fitted with fire extinguishers.	Operational.	High certainty to prevent accidental fires from spreading.
Operations follow the warning and advice issued by the Country Fire Service (CFS).	Operational.	High certainty to ensure Site activities are undertaken in consideration of fire dangers.

#### 5.7.4 Outcome and measurement criteria

The environmental outcome and measurement criteria for Land use and third-party property is provided in **Table 19** and **Table 20**.

**Table 19 – Protection of third-party property environmental outcome and measurement criteria**

Environmental outcome	Measurement criteria (outcome achievement)			
The Tenement Holder must during construction and operation, ensure that there is no unauthorised damage (including that caused by fire) to adjacent public or private property and infrastructure.	<p>Annual inspections of the Site will confirm that mining operations have not caused damage to third-party land uses or property.</p> <p>Site records will demonstrate that any land use and third-party property related complaints are acknowledged within 48 hours.</p> <p>An investigation by a suitably qualified person into a complaint relating to impacts from mining on third-party land use and/or property is completed within 30 days and demonstrates that the tenement holder could not have reasonably prevented the impacts from occurring.</p> <p>An investigation by a suitably qualified person into a fire that starts on the tenement that result in public injuries and or deaths, adverse impacts to adjacent land use, or unauthorised damage to public or third-party private property and infrastructure demonstrates that the tenement holder could not have reasonably prevented the incident from occurring.</p>			
Phase	Measurement type and form	Locations	Frequency	Control or baseline data
Operational.	Records from annual inspections and post-complaint investigation reports.	The Site and surrounding areas.	Annual and following a complaint.	Not applicable.
Operational.	All fires ignited within the tenement boundaries are recorded. Any fire that ignited within the mining area that spreads outside of the mining area will be notifiable as an incident and will be investigated by a suitably qualified person to determine if the fire could have been reasonably prevented by the tenement holder.	Fire ignition location on the Site and surrounding areas.	Following a fire. An investigation report is to be provided to the lead regulating agency within 30 days of the incident (unless otherwise agreed with the lead regulating agency).	Not applicable.

**Table 20 – Closure Land use and third-party property environmental outcome and measurement criteria**

Environmental outcome	Measurement criteria (outcome achievement)			
The Tenement Holder must ensure the land is progressively and finally rehabilitated to support the future land use agreed by the Director of Mines or another authorised officer.	Annual inspections will confirm that progressively rehabilitated areas are: <ul style="list-style-type: none"> <li>free from erosion and scouring</li> <li>do not show visible signs of instability (e.g. cracking at the crest)</li> <li>achieving batter angles no greater than 1V:4H (14°).</li> <li>establishing a vegetation cover that is consistent with nearby properties</li> <li>weed abundance is equal to or less than the surrounding land</li> <li>conforming to the surrounding landscape.</li> </ul> An inspection of the final landform by a suitably qualified third-party will confirm that the final landform will successfully support the proposed final land use.			
Phase	Measurement type and form	Locations	Frequency	Control or baseline data
Operational and Closure.	Records from annual inspections of the rehabilitated areas for erosion, signs of instability, batter slope assessment, weed inspection and vegetation establishment. Record from an inspection of the final landform and assessment of achievement of the final land uses by a suitably qualified third-party.	Whole Site.	Annually and prior to surrender.	<b>PEPR Drawing 4 - 9.</b>

## 5.8 Native fauna

### 5.8.1 Applicable Legislation and Standards

- Landscape South Australia Act, 2019*
- South Australian National Parks and Wildlife Act 1972*
- Commonwealth Environment Protection and Biodiversity Conservation Act 1999.*

### 5.8.2 Potential impact events

The operational phase potential impact event, as presented in the MC 4577 MP, is *injury or fatality of wildlife due to vehicle collision*.

The residual risk rating was ‘Very low’ (very unlikely with moderate consequence).

### 5.8.3 Control and management strategies

The control and management strategies to mitigate potential impacts or to reduce impacts to acceptable levels are listed in **Table 21**.

**Table 21 – Control and management strategies for Native Fauna**

Control and management strategy	Impact phase	Uncertainty and assumptions
Mining equipment and vehicles to use well defined access tracks.	Operational.	High certainty to avoid fauna collision.
Mining equipment and vehicles will not be used in close proximity of any native fauna species observed on the Site during operations.	Operational.	High certainty to eliminate risk of fauna collision.
Quarry pit to always maintain a ramp to allow egress to any fauna that enter the pit.	Operational.	High certainty to reduce fauna entrapment risk.
Vehicles to adhere to Site speed limits.	Operational.	High certainty to avoid fauna collision.
Annual surveys to be undertaken to ensure that no fauna traps exist, and that no unauthorised habitat disturbance has occurred as a result of mining operations.	Operational.	High certainty to prevent unauthorised habitat interference.

#### 5.8.4 Outcome and measurement criteria

The environmental outcome and measurement criteria for Fauna is provided in **Table 22**.

**Table 22 – Native fauna environmental outcome and measurement criteria**

Environmental outcome		Measurement criteria (outcome achievement)		
The Tenement Holder must, during construction and operation, ensure there are no native fauna injuries or deaths due to mining operations that could have been reasonably prevented.		Site records will demonstrate that annual site inspections were undertaken and found that there is no potential fauna traps present at the Site or that unauthorised habitat disturbance occurred as a result of mining operations. Site records will demonstrate that any native fauna injuries, deaths, or unauthorised habitat destruction caused by mining operations were recorded and investigated to determine if the incident was reasonably preventable.		
Phase	Measurement type and form	Locations	Frequency	Control or baseline data
Operational.	Records from annual inspections and post-incident investigation reports.	Disturbed areas within the Site.	Annual and following a fauna incident.	Not applicable.

## 5.9 Native vegetation

### 5.9.1 Context

83 Pink Gums (*Eucalyptus fasciculata*) are scattered throughout the MC 4577 area and not proposed to be disturbed by mining operations. All trees within the MC 4577 will be protected by a minimum 5-metre buffer between any disturbance and the dripline.

Patches of *Melaleuca lanceolata* shrubland >1m, (*Melaleuca acuminata* ssp. *acuminata* mid shrubland) and native pines (*Callitris gracilis*) woodlands are located around the MC 4577 boundary, and a 10 m disturbance buffer will be maintained around these areas.

A detailed description of the native vegetation context is provided in section 2.8.

An inspection of the MC 4577 area was undertaken on 8 August 2024 and did not identify any of the key Threatened Ecological Community (TEC) species.

As no native vegetation clearance is proposed, no impacts to a TEC will occur.

A minimum buffer of 5.0 m will be maintained between the disturbance area and the driplines of native trees.

The target resource is shallow and therefore the extraction areas and crushing and processing areas will be transient across the property. Therefore, no single tree or patch of trees will be exposed to operational dust for extended periods.

### 5.9.2 Applicable Legislation and Standards

- *South Australian Native Vegetation Act 1991*
- *Commonwealth Environment Protection and Biodiversity Conservation Act 1999.*

### 5.9.3 Potential impact events

**Table 23 – Native vegetation source, pathway, and receptor identification during operations**

<b>Potential Impact Event – Native vegetation operational 1 (NV01): Unauthorised clearance of native vegetation</b>				
<b>Source</b>	<b>Pathway</b>	<b>Receptor</b>	<b>Confirmation of SPR</b>	<b>Pre-control Risk Assessment</b>
Clearance of native vegetation without authorisation.	Physical disturbance by heavy machinery.	Native vegetation.	Yes.	L = 3 C = 3 Risk = Medium
Clearance of vegetation creating edge effects.	Physical disturbance with heavy machinery.	Native vegetation patches.	No.	N/A
<b>Uncertainty and Assumptions</b>		The location of the approved mining area is well defined in this MP, and no assumptions or uncertainty remain regarding where approval is required for vegetation clearance.		
<b>Sensitivity to Change</b>		As Site-based observations were used for the assessment, sensitivity to change is not anticipated.		
<b>Justification for the SPR confirmation/ non-confirmation</b>		The source, pathway and receptor have been confirmed following an inspection of the Site and a review of aerial imagery.		

<b>Potential Impact Event – Native vegetation operational 1 (NV02): Indirect impacts to native vegetation</b>				
<b>Source</b>	<b>Pathway</b>	<b>Receptor</b>	<b>Confirmation of SPR</b>	<b>Pre-control Risk Assessment</b>
Root disturbance.	Physical disturbance by heavy machinery.	Native vegetation.	Yes.	L = 3 C = 2 Risk = Low
Changes to hydrology.	Excavations.		Yes.	L = 2 C = 2 Risk = Very low
Dust deposition.	Atmosphere.		Yes.	L = 3 C = 2 Risk = Low
<b>Uncertainty and Assumptions</b>		It is assumed that near surface root mass will extend to the dripline of a tree. Tree health on EML 6271 is generally good where less than a 5m buffer has been maintained to the dripline. Therefore, by leaving the greater 5m buffer on MC 4577 trees will remain in good health.		
<b>Sensitivity to Change</b>		As Site-based observations were used for the assessment, sensitivity to change is not anticipated.		
<b>Justification for the SPR confirmation/ non-confirmation</b>		The source, pathway and receptor have been confirmed following an inspection of the Site and a review of aerial imagery.		

#### 5.9.4 Control and management strategies

The control and management strategies to mitigate potential impacts or to reduce impacts to acceptable levels are listed in **Table 24**.

**Table 24 – Control and management strategies for Native vegetation**

<b>Control and management strategy</b>	<b>Impact phase</b>	<b>Uncertainty and assumptions</b>
Conduct mining operations in accordance with the proposed staged mining and rehabilitation plans.	Operational.	High certainty to prevent vegetation clearance outside of the approved mining area.
5-metre buffer boundary to Pink Gums and 10-metre buffer to the vegetation within the NVHA area will be marked with stakes, bunting and/or tyres when mining is occurring within the vicinity.	Operational.	High certainty to avoid accidental damage to native vegetation at the Site.
All areas within 150m of a remnant native vegetation area will be surveyed for orchid species by an accredited native vegetation assessor prior to the commencement of operations in these areas.	Operational.	High certainty to confirm that no threatened orchid species are present within the proposed operating area.
6-monthly visual inspections of the disturbance area will be undertaken to confirm that:	Operational.	High certainty to demonstrate that vegetation buffers have been adhered to.

Control and management strategy	Impact phase	Uncertainty and assumptions
<ul style="list-style-type: none"> <li>a minimum 5-metre dripline buffer has been maintained around scattered Pink Gums,</li> <li>1v:4h batters have been prepared, and</li> <li>the condition of trees near the disturbance area is comparable to other trees on the property.</li> </ul>		
Vehicles to use well defined internal access tracks and operators and contractors are aware of the location of the approved disturbance boundary.	Operational.	High certainty to prevent vegetation clearance outside of the approved mining area.
Crushing and screening will not be conducted within 20m of a native tree.	Operational.	High certainty to avoid vegetation impacts.

### 5.9.5 Outcome and measurement criteria

The environmental outcome and measurement criteria for Native vegetation is provided in **Table 25**.

**Table 25 – Native vegetation environmental outcome and measurement criteria**

Environmental outcome		Measurement criteria (outcome achievement)		
The Tenement Holder must, during construction and operation, ensure that there is no loss of abundance and/or diversity of native vegetation on or off the Land unless a significant environmental benefit has been approved in accordance with the relevant legislation.		Records from site visual survey and photographic evidence will demonstrate that no direct clearance of native vegetation, or loss of native vegetation due to indirect impacts, has occurred as a result of mining operations.		
Phase	Measurement type and form	Locations	Frequency	Control or baseline data
Operational.	Records of native vegetation conditions from visual inspections.	Native vegetation areas at the Site.	6-monthly.	PEPR Drawings 4 – 9. Imagery from the previous survey.

## 5.10 Noise

### 5.10.1 Applicable Legislation and Standards

- South Australian Environment Protection Act, 1993
- South Australian Environment Protection (Commercial and Industrial) Policy, 2023.

### 5.10.2 Potential impact events

The operational phase potential impact event, as presented in the MC 4577 MP, is *nuisance noise impacts from mining operations on nearby sensitive receptors*.

The residual risk rating was ‘Very low’ (very unlikely with minor consequence).

### 5.10.3 Control and management strategies

The control and management strategies to mitigate potential impacts or to reduce impacts to acceptable levels are listed in **Table 26**.

**Table 26 – Control and management strategies for noise**

Control and management strategy	Impact phase	Uncertainty and assumptions
All plant and equipment on Site will be regularly serviced to ensure optimal performance.	Operational.	High certainty to reduce noise generation.
Roads will be designed to an acceptable gradient to minimise engine noise and well maintained to minimise vehicle noises from bumps and corrugations.	Operational.	High certainty to reduce noise generation.
Operators to stay in regular communication with the landowner to ensure noise impacts are not occurring.	Operational.	High certainty to address nuisance noise impacts and reduce the likelihood of complaints.
Regular noise observations to be made near the landowner’s residence to ensure no annoying sounds are emanating from the operations.	Operational.	High certainty to address noise impacts before complaints are made.
Drivers advised to avoid the use of air brakes.	Operational.	High certainty to address nuisance noise impacts and reduce the likelihood of complaints.
Vehicle speed limit of 50 km per hour on internal access roads.	Operational.	High certainty to maintain status of no nuisance noise impacts.

5.10.4 Outcome and measurement criteria

The environmental outcome and measurement criteria for Noise is provided in **Table 27**.

**Table 27 – Noise environmental outcome and measurement criteria**

Environmental outcome		Measurement criteria (outcome achievement)		
The Tenement Holder must, during construction and operation, ensure that there are no public nuisance impacts from noise emanating from the Land.		<p>Site records will demonstrate that any noise related complaints are acknowledged within 48 hours and investigated within seven days.</p> <p>In response to the complaint, control and management strategies will be reviewed and updated as required and Site records will show the updates were provided to the complainant and/or the Mining Regulator.</p> <p>Should complaints continue, monitoring will be undertaken by a suitably qualified person near the receptor location to demonstrate that noise levels do not exceed the Indicative Noise Levels described in the EPA Noise Policy (57dB(A) for day and 50dB(A) for night).</p>		
Phase	Measurement type and form	Locations	Frequency	Control or baseline data
Operational.	Site complaint records on the complaint register.	Electronically filed.	Following a complaint.	Not applicable.
Operational.	Noise monitoring (for LAeq) by a suitably qualified person in accordance with the EPA Noise Policy.	At or near the complainant location.	15-minute period when Site is in operation and not up wind.	EPA Noise Policy indicative noise levels, currently 57dB(A) for day and 50dB(A) for night.

## 5.11 Public safety

### 5.11.1 Applicable Legislation and Standards

- *Work Health and Safety Act 2012*
- *South Australia Mining Act 1971.*

### 5.11.2 Potential impact events

The operational and closure phase potential impact event, as presented in the MC 4577 MP, is *safety incident to the public due to unauthorised access to the Site during operations or post-closure.*

The residual risk rating was ‘Low’ (very unlikely with significant consequence) (operational) and ‘Very low’ (very unlikely with moderate consequence) (closure).

### 5.11.3 Control and management strategies

The control and management strategies to mitigate potential impacts or to reduce impacts to acceptable levels are listed in **Table 28**.

**Table 28 – Control and management strategies for public safety**

Control and management strategy	Impact phase	Uncertainty and assumptions
The property is surrounded by fencing and has warning signage at the Site access point.	Operational, closure.	High certainty to prevent unauthorised access to the Site.
Gates locked at close of business by Quarry Manager/responsible person.	Operational, closure.	High certainty to prevent unauthorised access to the Site.
Signage at quarry entrance, and traffic management signs within the quarry are clearly visible.	Operational.	Moderate certainty to deter unauthorised access to the Site.
Employee induction training covers the process for the identification and management of trespassers at the Site.	Operational, closure.	High certainty to prevent unauthorised access to the Site.
Signage to be maintained, directing all visitors entering the Site to report to the quarry office before progressing any further onto the quarry.	Operational, closure.	High certainty to prevent unauthorised access to the Site.
Safety signage to be placed around the active mining areas.	Operational.	High certainty to ensure no members of the public or the landowners enter the active mining area without authorisation.
Annual inspections are undertaken to ensure that reasonable measures are employed to prevent unauthorised access to the Site.	Operational.	High certainty to maintain controls that prevent unauthorised access to the Site.

### 5.11.4 Outcome and measurement criteria

The environmental outcome and measurement criteria for public safety is provided in **Table 29** and **Table 30**.

**Table 29 – Operational Public safety environmental outcome and measurement criteria**

Environmental outcome		Measurement criteria (outcome achievement)		
The Tenement Holder must, during construction and operation, ensure that there are no public injuries and/or deaths resulting from unauthorised entry to the site that could have been reasonably prevented.		Site records will demonstrate all public injuries and/or deaths resulting from unauthorised access to the tenement are recorded and an investigation by a suitably qualified independent third-party is completed within 30 days (or other time as agreed with the lead regulating agency). The results of the investigation demonstrate the tenement holder could not have reasonably prevented the incident.		
Phase	Measurement type and form	Locations	Frequency	Control or baseline data
Operational.	Records from the incident register. Investigation report provided by a suitably qualified independent third-party.	Relevant areas within the Site.	Following an incident.	Not applicable.

**Table 30 – Closure Public safety environmental outcome and measurement criteria**

Environmental outcome		Measurement criteria (outcome achievement)		
The Tenement Holder must ensure that the risks to the health and safety of the public so far as it may be affected by mining operations or mining related activities are as low as reasonably practicable.		A review of the final landform and public safety control strategies present at closure by a suitably qualified person will confirm that the final landform is constructed consistently with the proposed final landform, geotechnically stable and safe to the public as far as reasonably practicable.		
Phase	Measurement type and form	Locations	Frequency	Control or baseline data
Closure.	Final assessment report provided by a suitably qualified person confirming that the final landform has been constructed consistently with the proposed final landform, geotechnically stable and safe to the public as far as reasonably practicable.	Disturbed areas within the Site.	Prior to lease surrender.	PEPR Drawing 10 and PEPR Drawing 11.

## 5.12 Soil

### 5.12.1 Applicable Legislation and Standards

- *Landscape South Australia Act, 2019*
- South Australian Environment Protection Authority Liquid Storage Guidelines: Bunding & Spill Management (EPA, 2016).

### 5.12.2 Potential impact events

The operational and closure phase potential impact events, as presented in the MC 4577 MP, are *soil is poorly managed and is not viable for use in the rehabilitation of the Site* (operational) and *soil is not used effectively in the rehabilitation of the Site* (closure).

The residual risk rating for both phases was ‘Very low’ (very unlikely with moderate consequence).

### 5.12.3 Control and management strategies

The control and management strategies to mitigate potential impacts or to reduce impacts to acceptable levels are listed in **Table 31**.

**Table 31 – Control and management strategies for Soil**

Control and management strategy	Impact phase	Uncertainty and assumptions
Ensure all available topsoil is stripped ahead of mining and stockpiled outside of the mining area or on the pit floor ready for rehabilitation.	Operational, closure.	Requirement for soil conservation.
Where practicable, soil will be stripped ahead of mining and used in direct replacement over the previous mining stage to maximise the soil viability.	Operational, closure.	High certainty to improve rehabilitation outcomes.
Where direct replacement is not practicable, soil will be stockpiled in low mounds no greater than 2m high with battered sides to reduce erosion potential.	Operational, closure.	High certainty to improve the likelihood of soil viability.
Soil stockpiles to be allowed to grow a vegetation cover but will be controlled for environmental weeds.	Operational, closure.	High certainty to improve the likelihood of soil viability.
Vehicles will be prevented from driving over soil stockpiles.	Operational, closure.	High certainty to prevent damage to soil structure.
Soil stockpiles to be monitored annually for potential erosion and weed issues.	Operational, closure.	High certainty to prevent damage to soil viability.
A soil material balance to be undertaken prior to rehabilitation activities to determine the appropriate depth of soil to be spread over the rehabilitation area.	Operational, closure.	High certainty to ensure soil is available for total rehabilitation area.
Subsoil will be respread over the rehabilitated landform and topsoil will be respread over the subsoil to recreate a similar soil profile similar to the pre-mining landform.	Operational, closure.	High certainty to improve rehabilitation outcomes.

### 5.12.4 Outcome and measurement criteria

The environmental outcome and measurement criteria for Soil is provided in **Table 32** and **Table 33**.

**Table 32 – Operational Soil environmental outcome and measurement criteria**

Environmental outcome		Measurement criteria (outcome achievement)		
The Tenement Holder must, during construction and operation, ensure that the existing (pre-mining) soil quality and quantity is maintained.		Records from annual inspections of soil stockpiles confirm that the stockpiles: <ul style="list-style-type: none"> <li>• are lower than 2m high</li> <li>• have vegetation cover over the majority of the surface</li> <li>• are free of environmental weeds, and</li> <li>• are not losing soil due to erosion.</li> </ul>		
Phase	Measurement type and form	Locations	Frequency	Control or baseline data
Operational.	Records from annual inspections of Soil stockpiles.	Soil stockpile areas.	Annually.	Not applicable.

**Table 33 – Closure Soil environmental outcome and measurement criteria**

Environmental outcome		Measurement criteria (outcome achievement)		
The Tenement Holder must, during construction and operation, ensure that the existing (pre-mining) soil quality and quantity is maintained.		An inspection of the final landform by a suitably qualified person will confirm that: <ul style="list-style-type: none"> <li>• all available soil has been utilised</li> <li>• Soil has been applied evenly over the areas discussed in the rehabilitation plans, and</li> <li>• the rehabilitated surfaces have been prepared in a manner that reduces erosion and is likely to sustain vegetation growth.</li> </ul>		
Phase	Measurement type and form	Locations	Frequency	Control or baseline data
Closure.	Records from an inspection of the rehabilitated areas to confirm that: <ul style="list-style-type: none"> <li>• all soil has been used</li> <li>• soil has been evenly applied across the rehabilitation areas requiring soil, and</li> <li>• that the sections of the final landform that has soil applied is stable and likely to sustain vegetation.</li> </ul>	Sections of the final landform where soil application is required.	Prior to surrender.	Not applicable.

## 5.13 Surface water

### 5.13.1 Applicable Legislation and Standards

- South Australian Environment Protection (Water Quality) Policy 2015
- *Water Act, 2007*
- *Environment Protection and Biodiversity Conservation Act, 1999*
- *Landscape South Australia Act, 2019*
- South Australian Environment Protection Authority Liquid Storage Guidelines: Bunding & Spill Management (EPA, 2016).

### 5.13.2 Potential impact events

The operational and closure phases potential impact events, as presented in the MC 4577 MP, is *sediment laden runoff leaves the operating areas and contaminates downstream surface water resources and/or aquatic ecosystems* (operational) and *avoidable capture and diversion of surface water reduces the quantity of water for downstream surface water resources and/or aquatic ecosystems* (closure).

The residual risk rating for both phases was ‘Very low’ (very unlikely with minor consequence).

### 5.13.3 Control and management strategies

The control and management strategies to mitigate potential impacts or to reduce impacts to acceptable levels are listed in **Table 34**.

**Table 34 – Control and management strategies for surface water**

Control and management strategy	Impact phase	Uncertainty and assumptions
Operations are undertaken in accordance with the mining and rehabilitation plans to direct all surface water flows internally to the disturbance area.	Operational, closure.	High certainty to prevent surface water from leaving the disturbance area.
Annual inspections will be undertaken to ensure surface water is not leaving the disturbance areas.	Operational.	High certainty to address potential sediment laden water leaving the Site.
Disturbance areas and internal roads to be limited to what is required to efficiently and effectively mine the site.	Operational.	High certainty to reduce sediment runoff.
Progressive rehabilitation to be undertaken in accordance with the mining and rehabilitation plans to reduce the disturbance area.	Operational.	High certainty to reduce sediment runoff.

### 5.13.4 Outcome and measurement criteria

The environmental outcome and measurement criteria for Surface water is provided in **Table 35** and **Table 36**.

**Table 35 – Operational surface water environmental outcome and measurement criteria**

Environmental outcome		Measurement criteria (outcome achievement)		
The Tenement Holder must, during construction and operation, ensure there is no adverse impacts on surface water quality or quantity as a result of mining operations.		Site records will demonstrate that inspections of the Site are undertaken annually, and any observed areas of erosion and/or potential sediment runoff issues were remediated with appropriate control strategies within 30 days.		
Phase	Measurement type and form	Locations	Frequency	Control or baseline data
Operational.	Records from erosion and sediment runoff inspection (and remedial actions as required).	Internal surface water drainage areas.	Annually.	Nil.

**Table 36 – Closure surface water environmental outcome and measurement criteria**

Environmental outcome		Measurement criteria (outcome achievement)		
The tenement holder must, post-completion, ensure there is no adverse impact on surface water quantity or quality caused by the final landform.		Records of an inspection of the final landform conducted by a suitably qualified person of the boundary of the Site confirms that no current or potential future erosion and/or potential sediment runoff issues are present.		
Phase	Measurement type and form	Locations	Frequency	Control or baseline data
Closure.	Record from erosion and sediment runoff inspection of the final landform.	Rehabilitation areas.	Prior to surrender.	Not applicable.

## 5.14 Traffic

### 5.14.1 Applicable Legislation and Standards

- *South Australian Mining Act, 1971*
- *South Australian Road Safety Act, 1961.*

### 5.14.2 Potential impact events

The operational phase potential impact event, as presented in the MC 4577 MP, is *an accident involving traffic related to the mining operations and the public occurs near the Property Access Point.*

The residual risk rating was ‘Low’ (very unlikely with significant consequence).

### 5.14.3 Control and management strategies

The control and management strategies to mitigate potential impacts or to reduce impacts to acceptable levels are listed in **Table 37**.

**Table 37 – Control and management strategies for Traffic**

Control and management strategy	Impact phase	Uncertainty and assumptions
All transport truck operators accessing the Site are appropriately licenced and inducted on driver responsibilities and local traffic conditions.	Operational.	Moderate certainty to reduce the likelihood of a truck driver causing an accident.
All vehicles carrying materials from the Site must be loaded and transported in a manner which prevents spillage of materials onto a public road.	Operational.	High certainty to reduce the likelihood of a traffic incident due to material build up on the road.
The Site access point is free from obstructions and has good visibility of oncoming traffic in both directions.	Operational.	High certainty to reduce the likelihood of a traffic incident.
All contractors and visitors must report to the Site office as directed upon arrival to the Site.	Operational.	Moderate certainty to reduce the likelihood of a traffic incident.
Annual monitoring of the Site access point will be undertaken to ensure traffic risks are as low as reasonably practicable.	Operational.	High certainty to reduce the likelihood of a traffic incident.
The intersection at the Site Access Point will be upgraded in consultation with the Alexandrina Council within 6 months of the approval of this PEPR.	Operational.	Moderate certainty to reduce the likelihood of a traffic incident.

#### 5.14.4 Outcome and measurement criteria

The environmental outcome and measurement criteria for Traffic is provided in **Table 38**.

**Table 38 – Traffic environmental outcome and measurement criteria**

Environmental outcome		Measurement criteria (outcome achievement)		
The Tenement Holder must, during construction and operation, ensure there are no traffic accidents involving members of the public and mining related traffic that could have been reasonably prevented by the tenement holder.		Site records will demonstrate that annual monitoring of the Site access point is undertaken and that any safety issues observed are addressed within 14 days. Site records demonstrate that all traffic accidents involving the public and mining related traffic are recorded. An investigation of each incident is undertaken by a suitably qualified independent third-party within 30 days (or other time as agreed with the lead regulating agency) and demonstrates the Tenement Holder could not have reasonably prevented the accident from occurring.		
Phase	Measurement type and form	Locations	Frequency	Control or baseline data
Operational.	Site records of annual inspections.	Site access point and section of the road within 50m.	Annually.	Previous annual compliance reports.
Operational.	Site records (incident register) and investigation reports.	Site access point and section of the road within 50m.	Within 30 days of a traffic incident.	Not applicable.

## 5.15 Visual amenity

### 5.15.1 Applicable Legislation and Standards

- South Australia Planning and Design Code.

### 5.15.2 Potential impact events

The operational and closure phase potential impact events, as presented in the MC 4577 MP, is *the Site causes visual impacts to the public at nearby dwellings and public areas* (operational) and *the final landform does not integrate and harmonise with the surrounding landscape* (closure).

The residual risk rating for both phases was ‘Very low’ (very unlikely with trivial consequence).

### 5.15.3 Control and management strategies

The control and management strategies to mitigate potential impacts or to reduce impacts to acceptable levels are listed in **Table 39**.

**Table 39 – Control and management strategies for Visual amenity**

Control and management strategy	Impact phase	Uncertainty and assumptions
Undertake progressive rehabilitation in accordance with the mine plans and proposed rehabilitation methods.	Operational, closure.	High certainty to reduce visual amenity impacts.
No disturbance within 200m of the landowners dwelling.	Operational.	High certainty to reduce visual amenity impacts.
Mining will occur into the hill from south to north and will use the topography to reduce views into the operating area from the landowner residence.	Operational.	High certainty to reduce visual amenity impacts.
Annual inspections of the Site will be undertaken to survey for emerging visual amenity impacts due to changes to visual screening.	Operational, closure.	High certainty to effectively manage visual amenity impacts during operations and provide an early indication for achievement of the closure outcome for visual amenity.

### 5.15.4 Outcome and measurement criteria

The environmental outcome and measurement criteria for Visual amenity are provided in **Table 40**.

**Table 40 – Control and management strategies for Visual amenity**

Environmental outcome		Measurement criteria (outcome achievement)		
The Tenement Holder must, during construction, operation and post mine completion, ensure that the form, contrasting aspects and reflective aspects of mining operations are visually softened to blend in with the surrounding landscape.		Operational – Site records will demonstrate that inspections of the Site are undertaken annually to ensure visual amenity impacts are as low as reasonably practicable and any offensive visible aspects of the mining operations are addressed within 30 days (or other period as approved by the lead regulating agency). Closure – Visual assessment of the Site and surrounds undertaken by a suitably qualified person at closure confirms that the final landform integrates and harmonises with the surrounding landscape and is consistent with the proposed final landform.		
Phase	Measurement type and form	Locations	Frequency	Control or baseline data
Operational.	Records from annual inspections of the vegetation screening.	Boundary of the operational areas.	Annually.	Previous inspection.
Closure.	Report from visual assessment of the final landform.	Areas outside of the Site where line of sight exists into the Site.	Prior to surrender.	<b>PEPR Drawing 10.</b>

## 5.16 Waste disposal

### 5.16.1 Applicable Legislation and Standards

- *South Australian Environment Protection Act 1993*
- Environment Protection Regulations 2009.

### 5.16.2 Potential impact events

The operational and closure phase potential impact events, as presented in the MC 4577 MP, are *contamination of land and/or waters on and off the Site from poor waste management practices (including liquid chemicals)* (operational) and *waste produced by mining remains at the Site post-closure* (closure).

The residual risk rating for both phases was ‘Very low’ (unlikely with minor consequence (operational) and very unlikely with minor consequence (closure)).

### 5.16.3 Control and management strategies

The control and management strategies to mitigate potential impacts or to reduce impacts to acceptable levels are listed in **Table 41**.

**Table 41 – Control and management strategies for Waste disposal**

Control and management strategy	Impact phase	Uncertainty and assumptions
General waste is neatly stored in bins with lids before being collected from the Site by licenced third-party waste management services.	Operational.	High certainty to reduce pollution from wastes.
Chemical additives to be managed in accordance with the pre-existing 'Soil Borne Pathogens Treatment and Management Plan' for EML 6271 ( <b>Attachment 5 - Confidential</b> ).	Operational.	High certainty to prevent wastes from chemical additives to control Phytophthora.
Staff and operators to be inducted over good housekeeping and waste reduction practices.	Operational.	High certainty to reduce pollution from wastes.
Major mechanical servicing is undertaken offsite unless not possible to relocate the machinery.	Operational.	High certainty to prevent pollution from wastes.
All wastes to be managed within the existing ancillary mining area on EML 6271, which is functioning effectively.	Operational.	High certainty to prevent pollution from wastes.
Spill kits will be made available on the Site to clean minor spills, and any minor spills will be either removed from the Site to an EPA licenced facility or treated in a bioremediation area and decontaminated.	Operational.	High certainty to prevent pollution from wastes.
An inspection of the Site conducted annually (and prior to closure) will ensure that all mining related wastes are appropriately stored or have been removed from the Site.	Operational, closure.	High certainty to demonstrate good waste management.

#### 5.16.4 Outcome and measurement criteria

The environmental outcome and measurement criteria for Waste disposal is provided in **Table 42** and **Table 43**.

**Table 42 – Operational Waste disposal environmental outcome and measurement criteria**

Environmental outcome		Measurement criteria (outcome achievement)		
The Tenement Holder must, during construction and operation, ensure that all commercial, domestic or industrial waste is disposed of in accordance with relevant legislation.		Site records will demonstrate that all waste has been managed in accordance with relevant waste policies, standards, and guidelines under the <i>Environment Protection Act 1993</i> .		
Phase	Measurement type and form	Locations	Frequency	Control or baseline data
Operational.	Site records (evidence of appropriate waste disposal and annual inspections).	Disturbance area.	Ongoing and annually.	Not applicable.

**Table 43 – Closure Waste disposal environmental outcome and measurement criteria**

Environmental outcome		Measurement criteria (outcome achievement)		
The Tenement Holder must ensure that no mining related wastes are present on the land at the completion of mining activities.		An inspection by a suitably qualified person will confirm that all mining related waste has been removed from the final rehabilitated landform and the land is free of contamination.		
Phase	Measurement type and form	Locations	Frequency	Control or baseline data
Closure.	Report from inspection of the whole final landform area.	Whole site.	Prior to surrender.	Not applicable.

## 5.17 Weeds, pests, and plant pathogens

### 5.17.1 Applicable Legislation and Standards

- *Landscape South Australia Act, 2019.*

### 5.17.2 Potential impact events

The operational phase potential impact event, as presented in the MC 4577 MP, are *an increase in the abundance or introduction of new weeds to the Site causes weeds to spread outside of the Site and an increase in the abundance of pest fauna due to stockpile landforms supporting denning, nesting, or burrows.*

The residual risk rating was ‘Low’ (unlikely with moderate consequence) and ‘Very low’ (very unlikely with moderate consequence) respectively.

### 5.17.3 Control and management strategies

The control and management strategies to mitigate potential impacts or to reduce impacts to acceptable levels are listed in **Table 44**.

**Table 44 – Control and management strategies for Plant pathogens**

Control and management strategy	Impact phase	Uncertainty and assumptions
Staff and contractors are made aware of the requirement to operate in a manner that minimises the potential spread of weeds and plant pathogens.	Operational.	Moderate certainty to reduce the spread of weeds at the Site.
Additional signage installed to ensure that vehicles and machinery only travel on well-defined access tracks and operate within well-defined work areas.	Operational.	High certainty to reduce the likelihood of the introduction of new weeds and pathogens.
If areas containing weeds and plant pathogens are entered, clean all equipment, vehicles and machinery prior to leaving the area.	Operational.	Moderate certainty to reduce the spread of weeds.
Staff and contractors to implement the ‘Soil Borne Pathogens Treatment and Management Plan’ (SPTMP) on EML 6271 to prevent <i>Phytophthora</i> from spreading on to ML 6564. The SPTMP has been updated to include	Operational.	High certainty to reduce the likelihood plant pathogens from being exported from the Site.

Control and management strategy	Impact phase	Uncertainty and assumptions
ML 6564 and will be reviewed at the completion of each mining stage on ML 6564.		
All vehicles leaving the Site are to drive through the tyre and wheel decontamination spray wash.	Operational.	High certainty to reduce the likelihood plant pathogens from being exported from the Site.
General waste is covered and disposed of regularly so not to attract vermin.	Operational.	High certainty to prevent pest fauna being attracted to the Site.
Annual weed, plant pathogens and pest fauna inspections are undertaken.	Operational.	High certainty to identify and address weed, pest, or plant pathogen impacts.
Weed and pest fauna management undertaken as required in accordance with advice provided by the Limestone Coast Landscape Board/PIRSA following observations made in annual inspections or operational observations during operations.	Operational.	High certainty to address weed, pest, or plant pathogen impacts.

#### 5.17.4 Outcome and measurement criteria

The environmental outcome and measurement criteria for weeds, pests and plant pathogens are provided in **Table 45** and **Table 46**.

**Table 45 – Weeds, pests and plant pathogen environmental outcome and measurement criteria**

Environmental outcome		Measurement criteria (outcome achievement)		
The Tenement Holder must, during construction and operation, ensure no introduction of new species of Weeds, plant pathogens or pests (including feral animals), nor increase in abundance of existing Weed or pest species in the Land.		Site records will demonstrate that annual inspections are undertaken for new weeds, plant pathogens or pests (including feral animals) and for evidence of increased abundance of existing weeds, plant pathogens and/or pests (including feral animals) and any positive observations were managed in a timely fashion and in accordance with available advice from PIRSA and/or the Landscape Board.		
Phase	Measurement type and form	Locations	Frequency	Control or baseline data
Operational.	Annual inspections for weeds and plant pathogens and records of follow-up management actions as required.	Whole Site particularly around disturbed areas and internal roads.	Annual inspections and follow-up actions undertaken in the appropriate season as advised by PIRSA and/or the Landscape Board.	Previous annual compliance report and neighbouring properties.
Operational.	Annual inspections for pest fauna and records of follow-up management actions as required.	Whole Site particularly around waste-rock landforms.	Annual inspections and follow-up actions undertaken in the appropriate season as advised by PIRSA and/or the Landscape Board.	Previous annual compliance report.

**Table 46 – Weeds, pests and plant pathogen environmental outcome and measurement criteria**

Environmental outcome		Measurement criteria (outcome achievement)		
The Tenement Holder must, during construction and operation, ensure that reasonable and practicable measures are undertaken to prevent plant pathogens from leaving the Site.		Site records will demonstrate that annual inspections are undertaken to confirm that strategies to control the transportation of plant pathogens from the Site are being generally implemented in accordance with the 'Soil Borne Pathogens Treatment and Management Plan'.		
Phase	Measurement type and form	Locations	Frequency	Control or baseline data
Operational.	Annual inspections of plant pathogen controls in reference to the 'Soil Borne Pathogens Treatment and Management Plan'.	Undisturbed areas, soil stockpiles and rehabilitation areas.	Annual inspections.	'Soil Borne Pathogens Treatment and Management Plan'.

### 5.18 Compliance summary and monitoring plan

A summary of the environmental outcomes and measurement criteria derived from the impact assessment above, and a compliance monitoring plan for the Site is provided in **Attachment 6 – Compliance summary and monitoring plan**.

## 6 OPERATOR CAPABILITY

Futuretop Developments Pty Ltd:

- is an experienced operator as demonstrated by its current operations at:
  - Currency Creek (Goolwa) Quarry since 1988 (as Goolwa Quarries Pty Ltd)
  - Futuretop Sand Pit (EML 6156) since 2004
  - Hartley Rubble Pit (EML 6271) since 2007

and previous successful mining and rehabilitation of the Woodchester Quarry (PM 259) (as Goolwa Quarries Pty Ltd).

- are aware of their obligations under the *Mining Act 1971* and requirement to operate in accordance with the conditions of the Site, including to implement the commitments included within this PEPR.
- is a viable company and has the technical, operational and financial capability to successfully carry out operations at the Hartley Rubble Pit in accordance with the *Mining Act 1971*, lease conditions and the PEPR.
- will maintain records of any complaints received by the public and the actions taken to address the complaint and is keen to continue to develop a reputation as a responsible quarry operator in the area and maintain a 'social licence' for the operation.

## **7 LEASE/LICENCE**

ML 6564 does not have any specific lease conditions that are not environmental outcomes.

## 8 MAPS AND CROSS-SECTIONS

A list of all the drawings provided to support the contents of this PEPR is provided in the **Drawings** section.

### 8.1 Description of Quarrying Operations Maps

**Table 47** provides a checklist for items to be included in the maps supporting the description of mining operations and reference to the Drawing that each item is located.

**Table 47 – Description of the proposed quarrying operations map reference table**

<b>TOR002 subheading</b>	<b>Map item</b>	<b>Featured drawing</b>
Site Layout Map	Tenement boundaries.	All drawings.
	Location of sediment management infrastructure.	Not applicable.
	If relevant, location of process water dams.	Not applicable.
	Location of haul roads.	<b>PEPR Drawing 12.</b>
	If relevant, location of fixed plant.	<b>PEPR Drawing 3.</b>
	Location of mobile plant for Stage 1 of mining.	<b>PEPR Drawing 3.</b>
	Location of overburden.	Not applicable.
	Location and extent of topsoil/subsoil and product stockpiles.	<b>PEPR Drawings 4 – 9.</b>
Sequence of Quarrying and Progressive Rehabilitation Map	Proposed tenement boundaries.	<b>PEPR Drawings 4 – 9.</b>
	Conceptual staging of each progressive mining stage.	<b>PEPR Drawings 4 – 9.</b>
	Proposed native vegetation clearance.	Not applicable.
	Conceptual staging of each progressive rehabilitation stage.	<b>PEPR Drawings 4 – 9.</b>
Access Route Map	Proposed access route for heavy vehicles.	<b>PEPR Drawing 12.</b>
	Proposed exit route for heavy vehicles.	<b>PEPR Drawing 12.</b>
	Any road upgrades or new roads to be constructed if relevant.	Not applicable.
Mine Completion Map	Final landforms (including rehabilitated and non-disturbed areas).	<b>PEPR Drawing 10.</b>
	Proposed topographical contours of the entire Site (including rehabilitated and non-disturbed areas).	<b>PEPR Drawing 10.</b>

## 8.2 Cross-sections for the description of quarrying operations

**Table 48** provides a checklist for items to be included in cross-section drawings supporting the description of mining operations and reference to the Drawing that each item is located.

**Table 48 – Cross-section for the description of the proposed mining operations map reference table**

TOR002 subheading	Map item	Featured drawing
Quarry operation cross-sections	Proposed pit depth.	PEPR Drawing 11.
	Proposed pit dimensions.	PEPR Drawing 11.
Quarry completion cross-sections	Pre quarrying natural surface.	PEPR Drawing 11.
	Proposed final rehabilitated surface.	PEPR Drawing 11.

## 8.3 Monitoring locations

**Table 49** provides a list of monitoring locations included in a monitoring location map (**PEPR Drawing 13**) and reference to the section of this PEPR relevant to the monitoring.

**Table 49 – Compliance monitoring map reference table**

Environmental outcome	Monitoring point / area	Approximate coordinates (MGA zone 54H) or monitoring area
Caves, Heritage, Land use, Native fauna, Surface water, Waste disposal, Weeds and pests.	Disturbance area.	Area shown in <b>PEPR Drawing 13</b> .
Drag out, Traffic.	Site access point.	321259 mE 6102339 mS
Land use and third-party property.	(1) Disturbance boundary (2) Local infrastructure (power and private water lines) (3) Property bores.	(1) Disturbance boundary as shown in <b>PEPR Drawing 13</b> . (2) Local infrastructure as shown in <b>PEPR Drawing 13</b> . (3) Groundwater well 6727-2955: 320378 mE 6100499 mS. Groundwater well 6727-1406: 321006 mE 6099947 mS.
Native vegetation.	Scattered tree buffers.	Indicative 5-metre tree buffer locations shown in <b>PEPR Drawing 10</b> .
Native vegetation.	Native vegetation survey area within 150m of remnant native vegetation area.	Shown in <b>PEPR Drawing 13</b> .
Public safety.	(4) Site access point (5) Disturbance area.	(1) 321259 mE 6102339 mS (2) Area shown in <b>PEPR Drawing 13</b> .
Soil.	Soil stockpile locations.	Indicative soil stockpile locations at the time of monitoring shown for all stages in <b>PEPR Drawing 13</b> .

## 9 REFERENCES

Department of Climate Change, Energy, the Environment and Water (2024a), *Protected Matters Search Tool*, accessed online on 11 July 2024 at [this link](#).

Department for Energy and Mining (SA) (2020), *Mineral regulatory guideline MG30 - Developing outcomes for quarrying and mining*, accessed online 4 October 2024 at [this link](#).

Department for Energy and Mining (SA) (2021), *Mineral regulatory guideline MG38 – New quarry applications*, accessed online 4 October 2024 at [this link](#).

Department for Energy and Mining (SA) (2020), *Terms of Reference 002 – Extractive mineral quarry PEPRs*, accessed 4 October 2024 at [this link](#).

Department of Primary Industries (SA) (2024a), *Declared weeds in SA*, accessed online 25 July 2024 at [this link](#).

Government of South Australia (2024a), *South Australian Resources Information Gateway*, accessed online 22 July 2024 at [this link](#).

Government of South Australia (2024c), *Nature Maps*, accessed online 25 July 2024 at [this link](#).

*Mining Act (SA) 1971.*

*Mining Regulations (SA) 2020.*

# Drawings

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**PEPR Drawing 1 – Site location map**

**PEPR Drawing 2 – Local housing and infrastructure map**

**PEPR Drawing 3 – Stage 1 conceptual site layout map**

**PEPR Drawing 4 – Stage 1 mining and rehabilitation plan**

**PEPR Drawing 5 – Stage 2 mining and rehabilitation plan**

**PEPR Drawing 6 – Stage 3 mining and rehabilitation plan**

**PEPR Drawing 7 – Stage 6 mining and rehabilitation plan**

**PEPR Drawing 8 – Stage 10 mining and rehabilitation plan**

**PEPR Drawing 9 – Stage 11 mining and rehabilitation plan**

**PEPR Drawing 10 – Final landform design plan**

**PEPR Drawing 11 – Final landform cross-sections**

**PEPR Drawing 12 – Product transport route map**

**PEPR Drawing 13 – Compliance monitoring map.**

# PEPR Drawing 1 Site location map

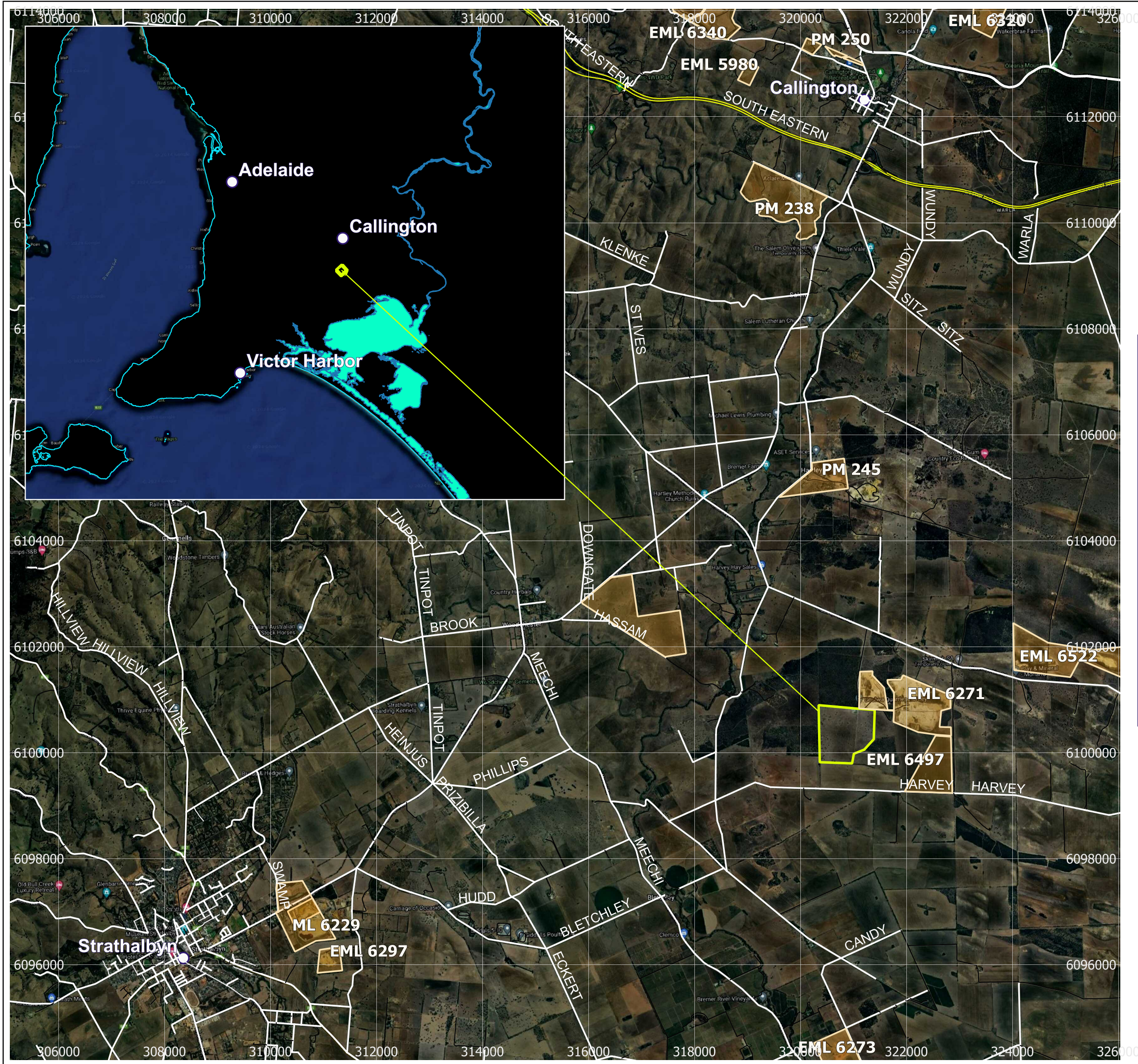
Hartley Rubble Pit  
Futuretop Developments Pty Ltd  
Mining Lease 6564

29/07/2024

GDA2020 / MGA zone 54

## Legend

- City / town
  - ▭ Mining Lease 6564
  - ▭ Other mining tenement
  - ▭ River Murray
- Roads
- FREEWAY
  - ROAD
- Google hybrid

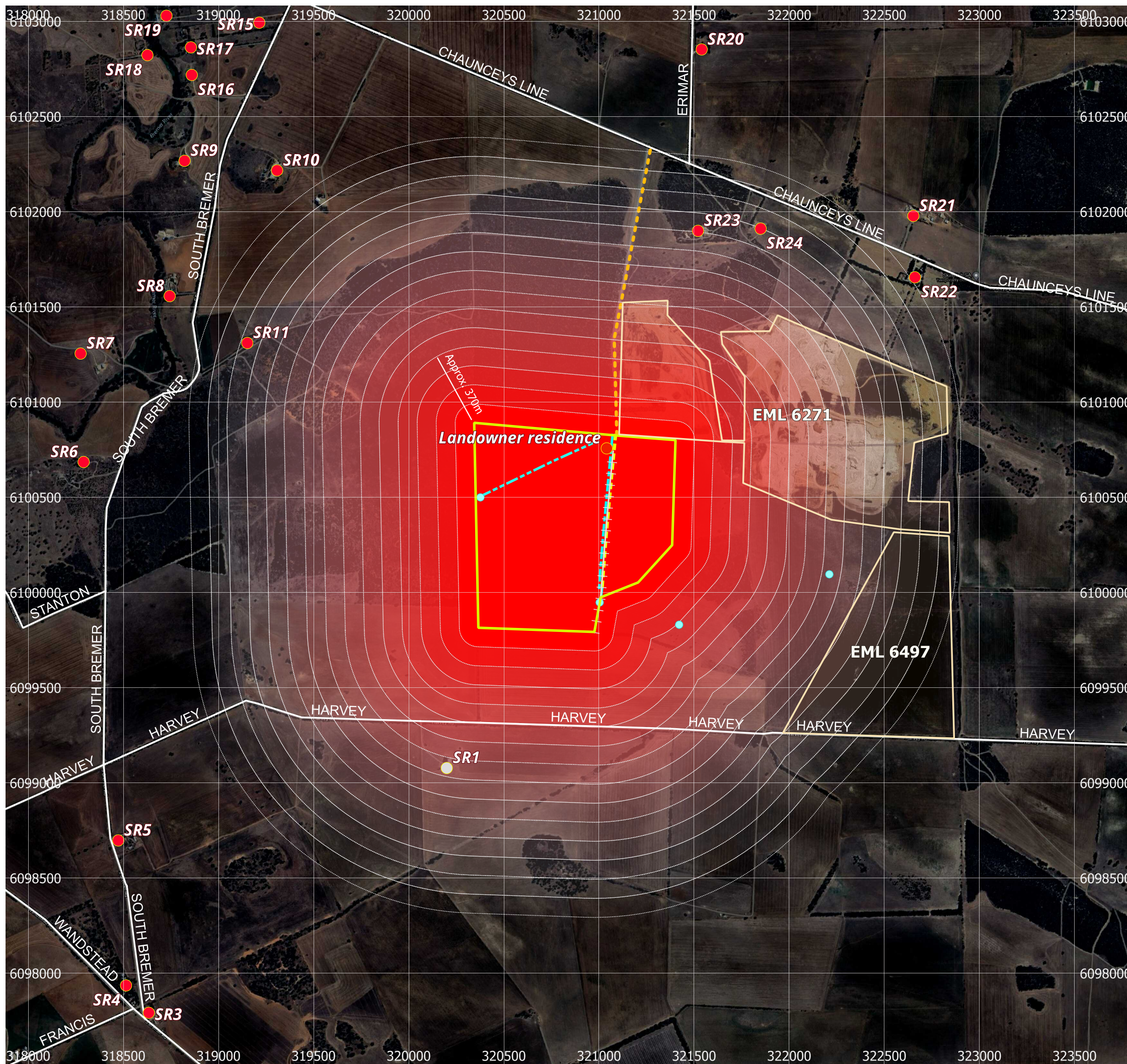


# PEPR Drawing 2 Local housing and infrastructure map

Hartley Rubble Pit  
Futuretop Developments Pty Ltd  
Mining Lease 6564

01/09/2024

GDA2020 / MGA zone 54



## Legend

- Property bores
- Internal access track
- Internal property fence line
- Overhead powerline
- Underground waterline (private)

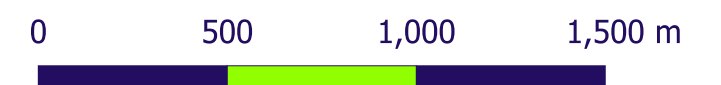
## Sensitive receptors

- Uninhabited dwelling
- Inhabited dwelling

## Buffer from Mineral Claim boundary

- Mining Lease 6564
- Other mining tenement

Google hybrid



321000



# PEPR Drawing 3 Stage 1 site layout map

Hartley Rubble Pit  
 Futuretop Developments Pty Ltd  
 Mining Lease 6564  
 09/08/2025  
 GDA2020 / MGA zone 54

## Legend

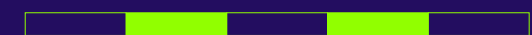
- Mining lease 6564
- Site layout points
- Internal access track
- Stage 1 product stockpiles
- Stage 1 mining area
- Stage 1 topsoil stockpiles
- Trees (5m buffer)
- Working face

Orthophoto (2024)

Google hybrid



0 20 40 60 80 100 m



321000

# PEPR Drawing 4 Stage 1 mining and rehabilitation plan

Hartley Rubble Pit  
Futuretop Developments Pty Ltd  
Mining Lease 6564

08/09/2024

GDA2020 / MGA zone 54



## Legend

- Landowner dwelling
  - Trees (5m buffer)
  - Active mining stage
  - Future mining stage
  - Mining Lease 6564 (97.15 ha)
  - Other mining tenement
  - Internal fence line
  - Internal gates
  - Stage 1 topsoil stockpiles
  - Water lines
- Google hybrid



- Direction of mining (neighbouring stage)
- Direction of mining (non-neighbouring stage)



# PEPR Drawing 5 Stage 2 mining and rehabilitation plan

Hartley Rubble Pit  
Futuretop Developments Pty Ltd  
Mining Lease 6564

08/09/2024

GDA2020 / MGA zone 54



## Legend

- Landowner dwelling
- Trees (5m buffer)
- Active mining stage
- Future mining stage
- Progressive rehabilitation
- Mining Lease 6564 (97.15 ha)
- Other mining tenement
- Internal fence line
- Internal gates
- Stage 2 topsoil stockpiles
- Water lines

Google hybrid



0 100 200 300 m



→ Direction of mining (neighbouring stage)

Direction of mining (non-neighbouring stage)

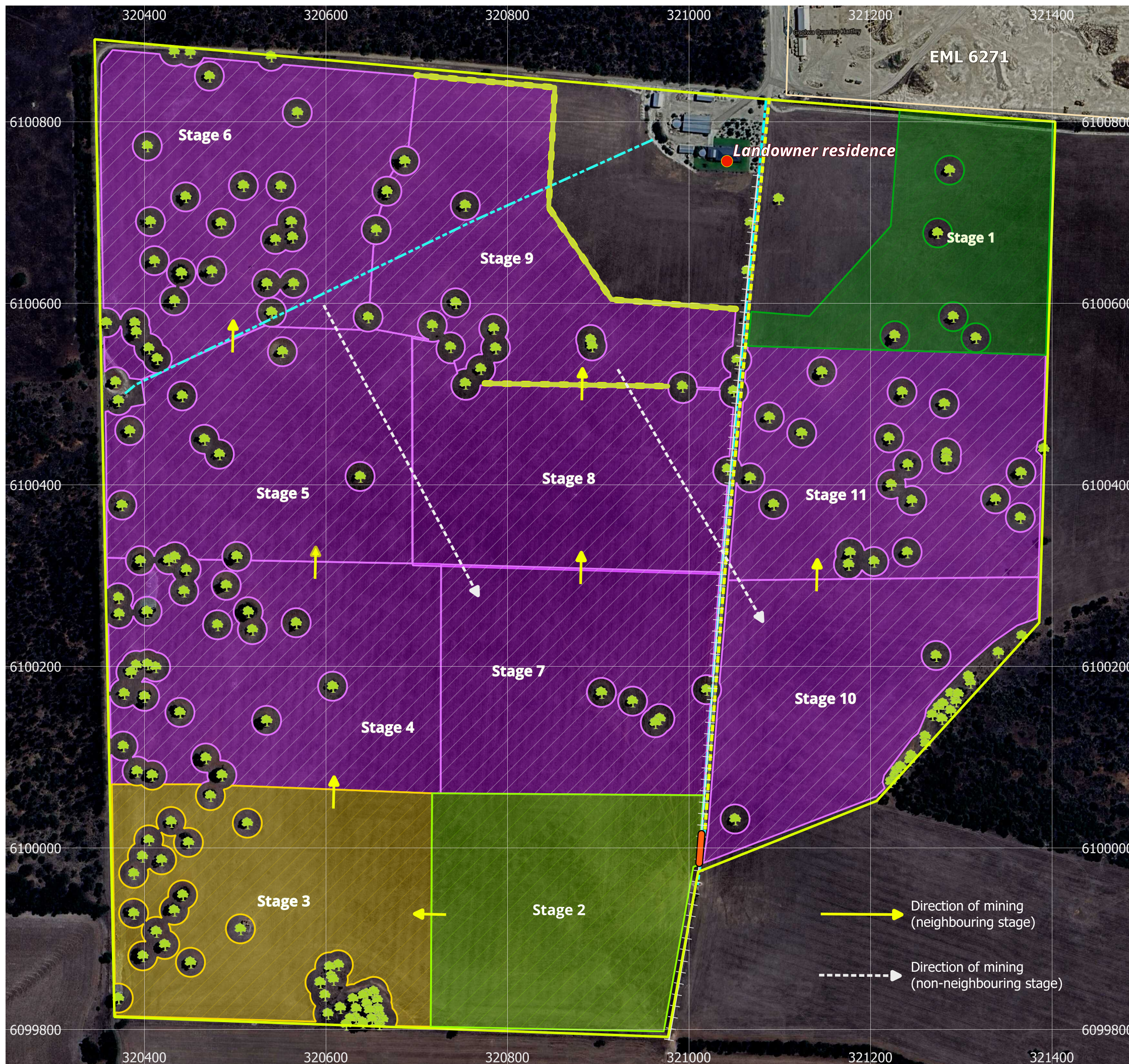


# PEPR Drawing 6 Stage 3 mining and rehabilitation plan

Hartley Rubble Pit  
Futuretop Developments Pty Ltd  
Mining Lease 6564

08/09/2024

GDA2020 / MGA zone 54



## Legend

- Landowner dwelling
- Trees (5m buffer)
- Active mining stage
- Completed rehabilitation
- Future mining stage
- Progressive rehabilitation
- Mining Lease 6564 (97.15 ha)
- Other mining tenement
- Internal fence line
- Internal gates
- Stage 2 topsoil stockpiles
- Water lines

Google hybrid



0 100 200 300 m



→ Direction of mining (neighbouring stage)

Direction of mining (non-neighbouring stage)

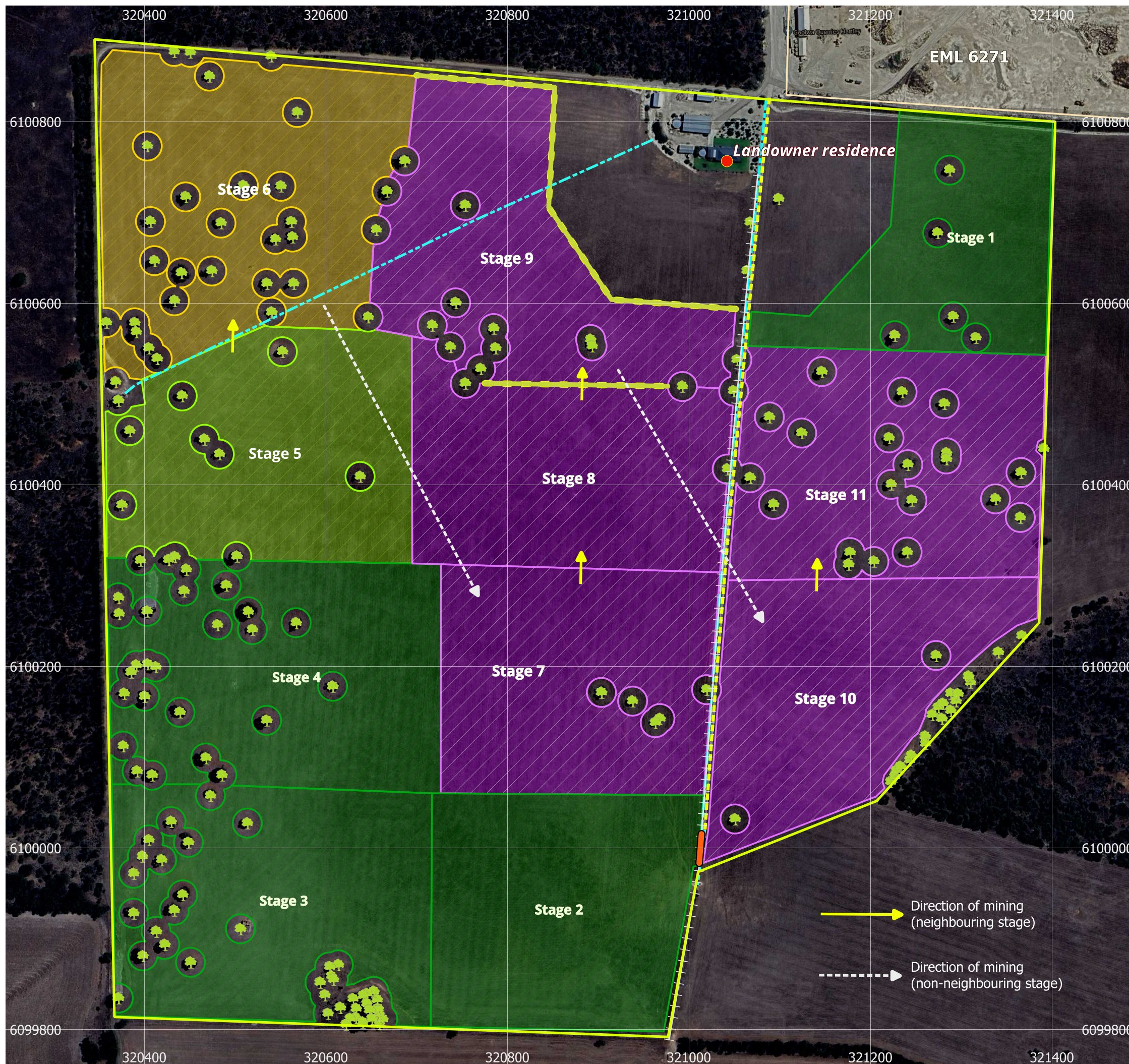


# PEPR Drawing 7 Stage 6 mining and rehabilitation plan

Hartley Rubble Pit  
Futuretop Developments Pty Ltd  
Mining Lease 6564

08/09/2024

GDA2020 / MGA zone 54



## Legend

- Landowner dwelling
  - Trees 5m (buffer)
  - Active mining stage
  - Completed rehabilitation
  - Future mining stage
  - Progressive rehabilitation
  - Mining Lease 6564 (97.15 ha)
  - Other mining tenement
  - Internal fence line
  - Internal gates
  - Stage 2 topsoil stockpiles
  - Water lines
- Google hybrid



0 100 200 300 m



- Direction of mining (neighbouring stage)
- Direction of mining (non-neighbouring stage)

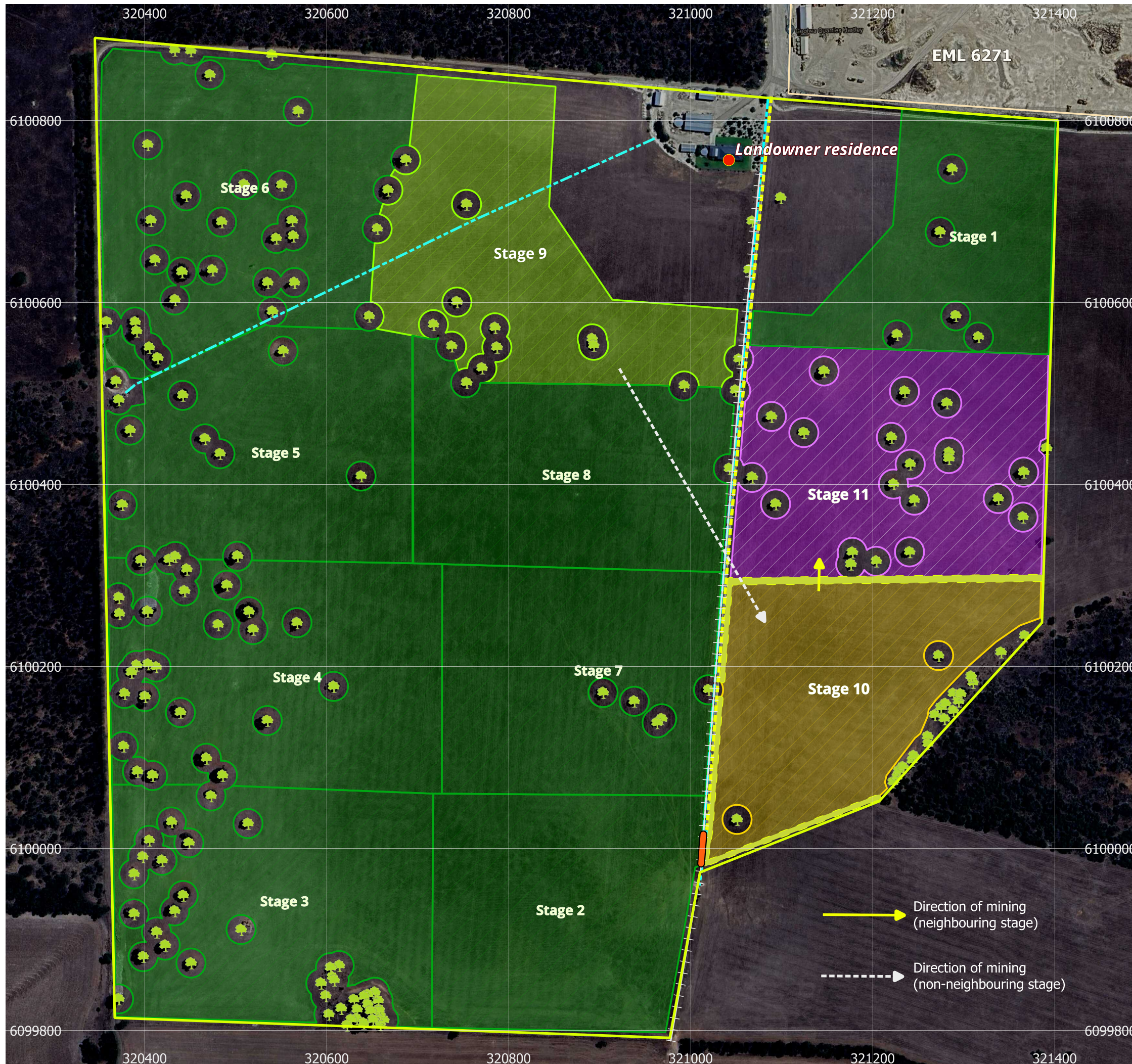


# PEPR Drawing 8 Stage 10 mining and rehabilitation plan

Hartley Rubble Pit  
Futuretop Developments Pty Ltd  
Mining Lease 6564

08/09/2024

GDA2020 / MGA zone 54



## Legend

- Landowner dwelling
  - Trees (5m buffer)
  - Active mining stage
  - Completed rehabilitation
  - Future mining stage
  - Progressive rehabilitation
  - Mining Lease 6564 (97.15 ha)
  - Other mining tenement
  - Internal fence line
  - Internal gates
  - Stage 2 topsoil stockpiles
  - Water lines
- Google hybrid



0 100 200 300 m

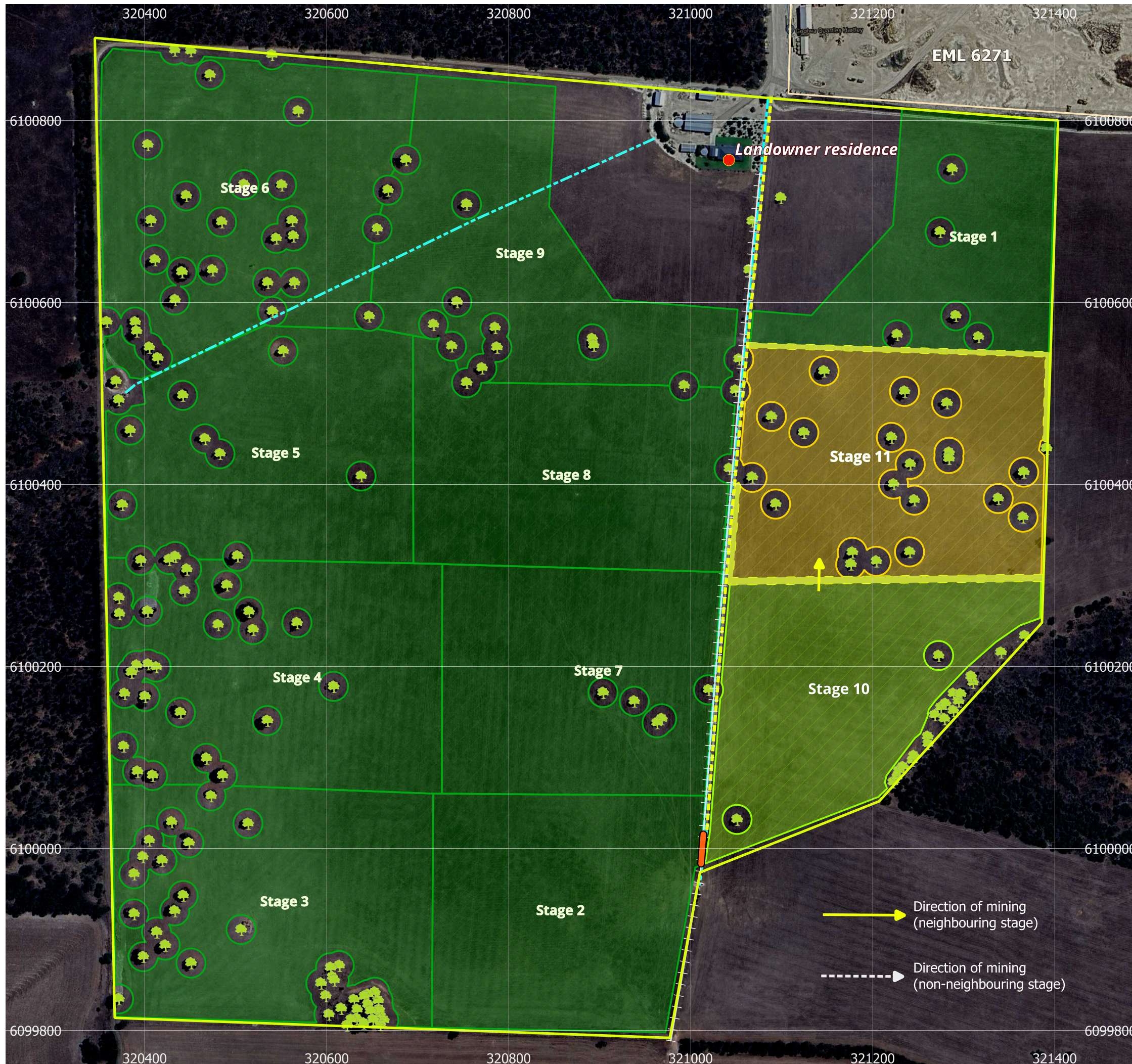


→ Direction of mining (neighbouring stage)  
- - - - - Direction of mining (non-neighbouring stage)



# PEPR Drawing 9 Stage 11 mining and rehabilitation plan

Hartley Rubble Pit  
Futuretop Developments Pty Ltd  
Mining Lease 6564  
08/09/2024  
GDA2020 / MGA zone 54



## Legend

- Landowner dwelling
- Trees (5m buffer)
- Active mining stage
- Completed rehabilitation
- Progressive rehabilitation
- Mining Lease 6564 (97.15 ha)
- Other mining tenement
- Internal fence line
- Internal gates
- Stage 2 topsoil stockpiles
- Water lines

Google hybrid



0 100 200 300 m



→ Direction of mining (neighbouring stage)

- - - - - → Direction of mining (non-neighbouring stage)



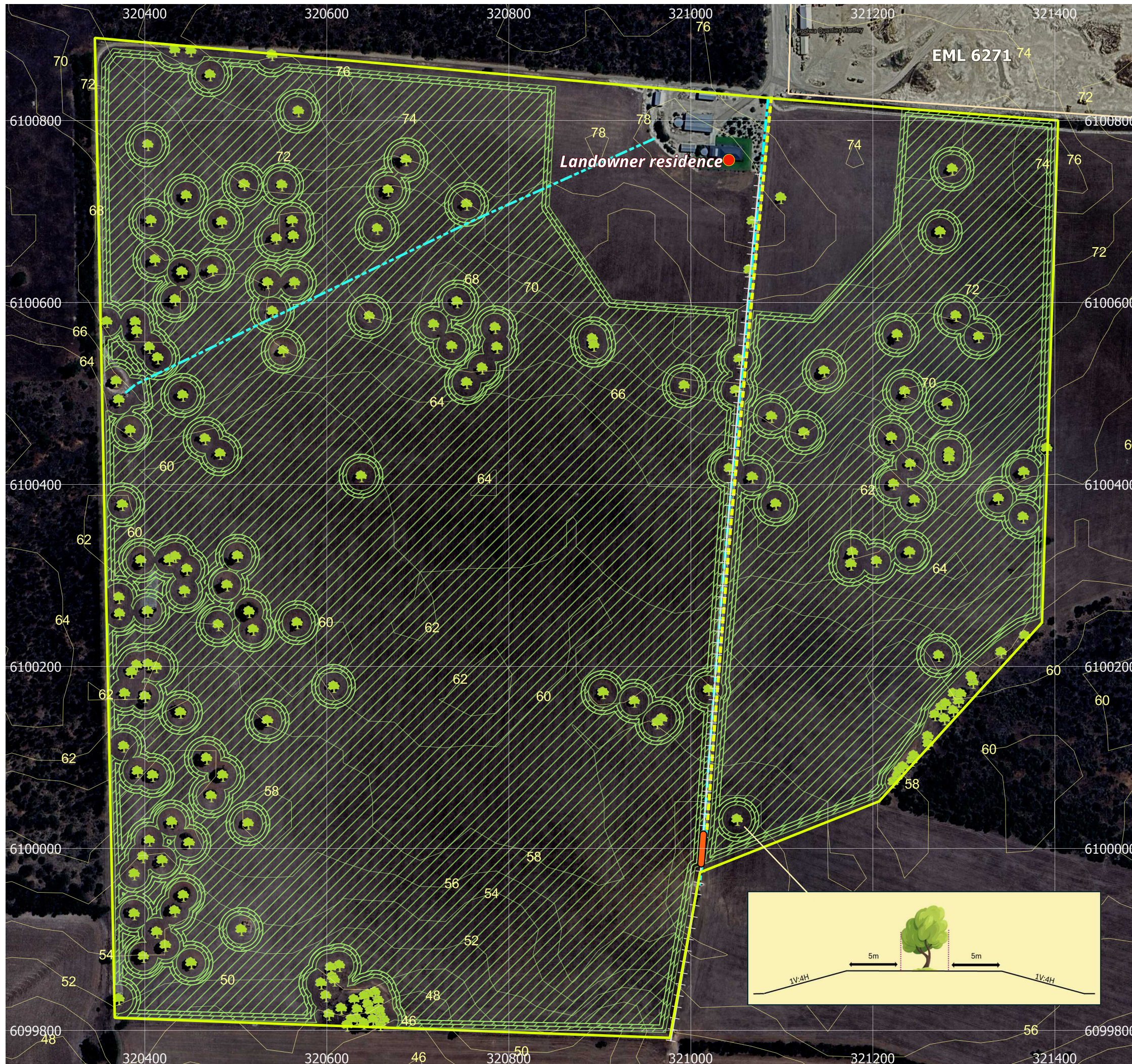
# PEPR Drawing 10

## Concept final landform design map

Hartley Rubble Pit  
 Futuretop Developments Pty Ltd  
 Mining Lease 6564

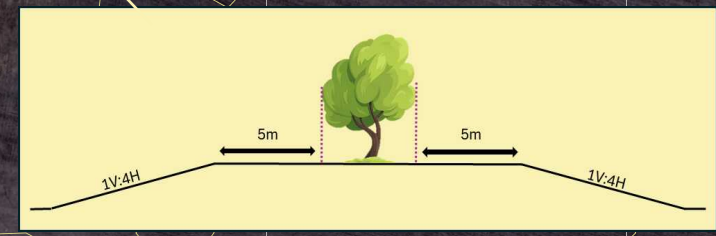
05/09/2024

GDA2020 / MGA zone 54



### Legend

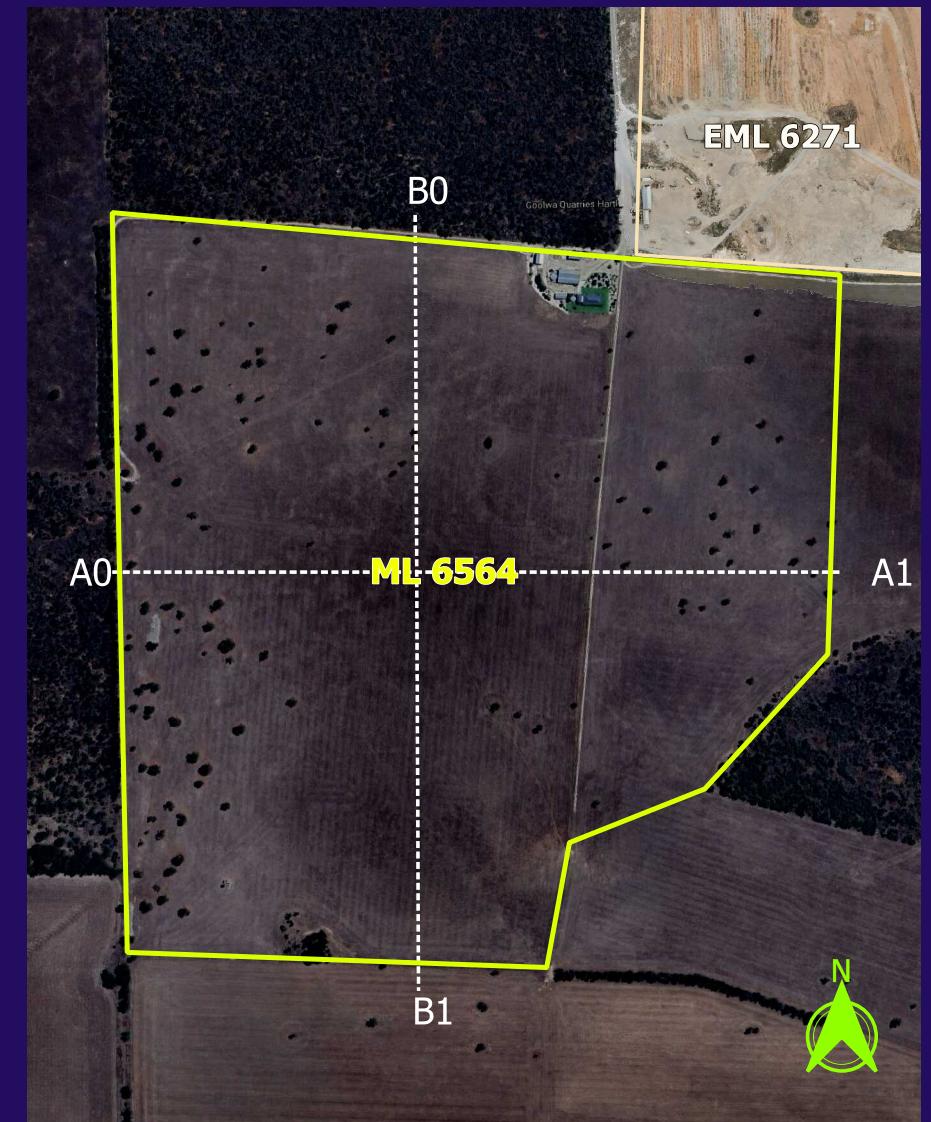
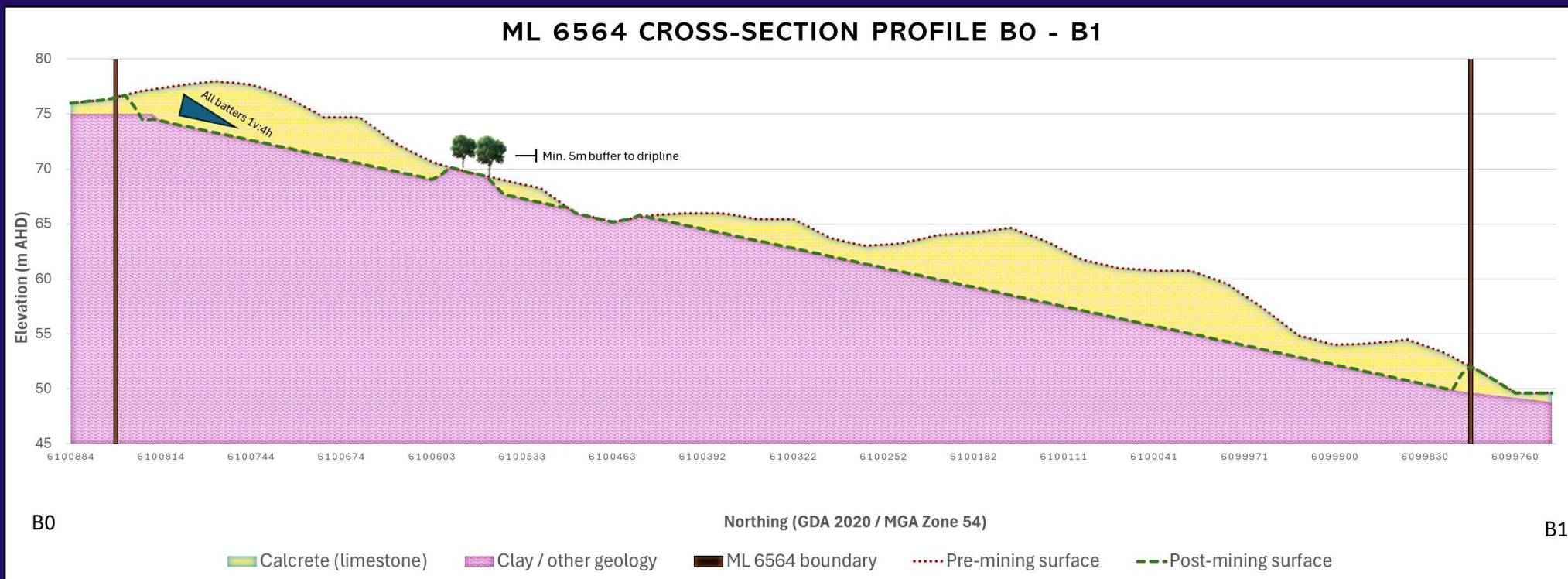
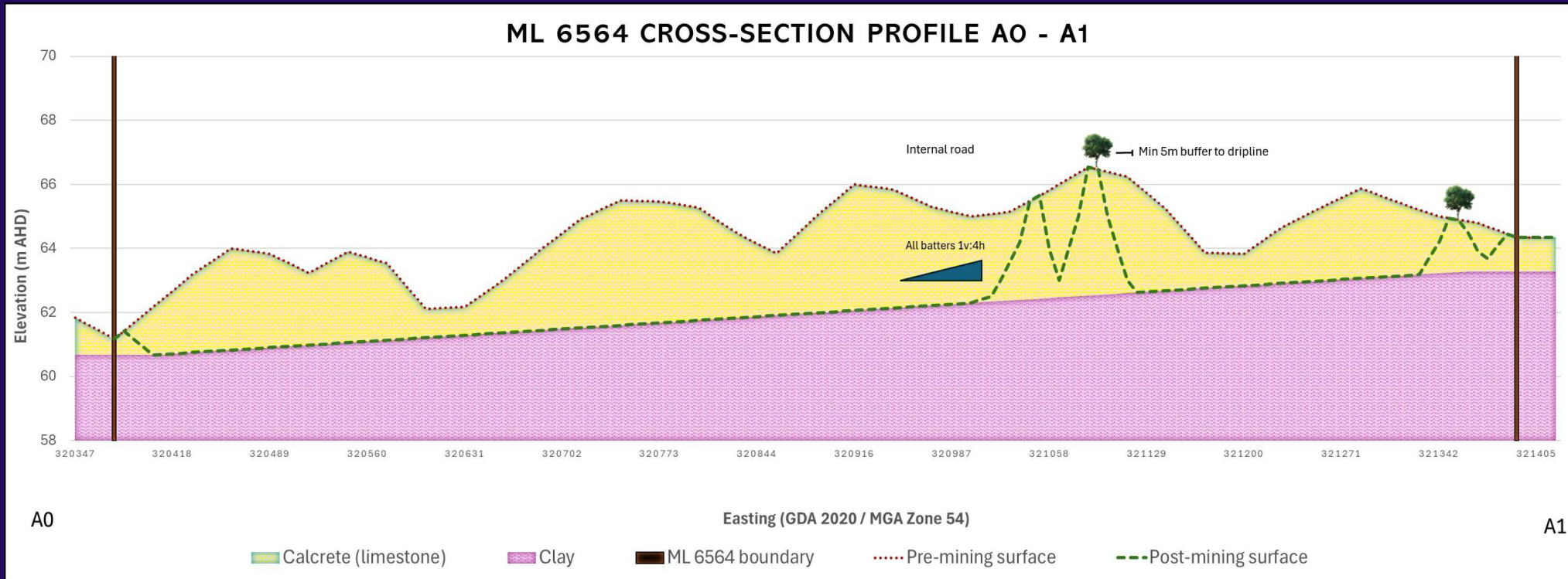
- Landowner dwelling
- Trees
- Final landform
- Mining Lease 6564
- Other mining tenement
- Contours (2m) (final landform)
- Contours (2m) (natural landform)
- Internal fence line
- Internal gates
- Water lines
- Google hybrid



Note: vertical profiles are exaggerated.

# PEPR Drawing 11 Final landform design cross-sections

Hartley Rubble Pit  
Futuretop Developments Pty Ltd  
Mining Lease 6564  
23/10/2025  
GDA2020 / MGA zone 54

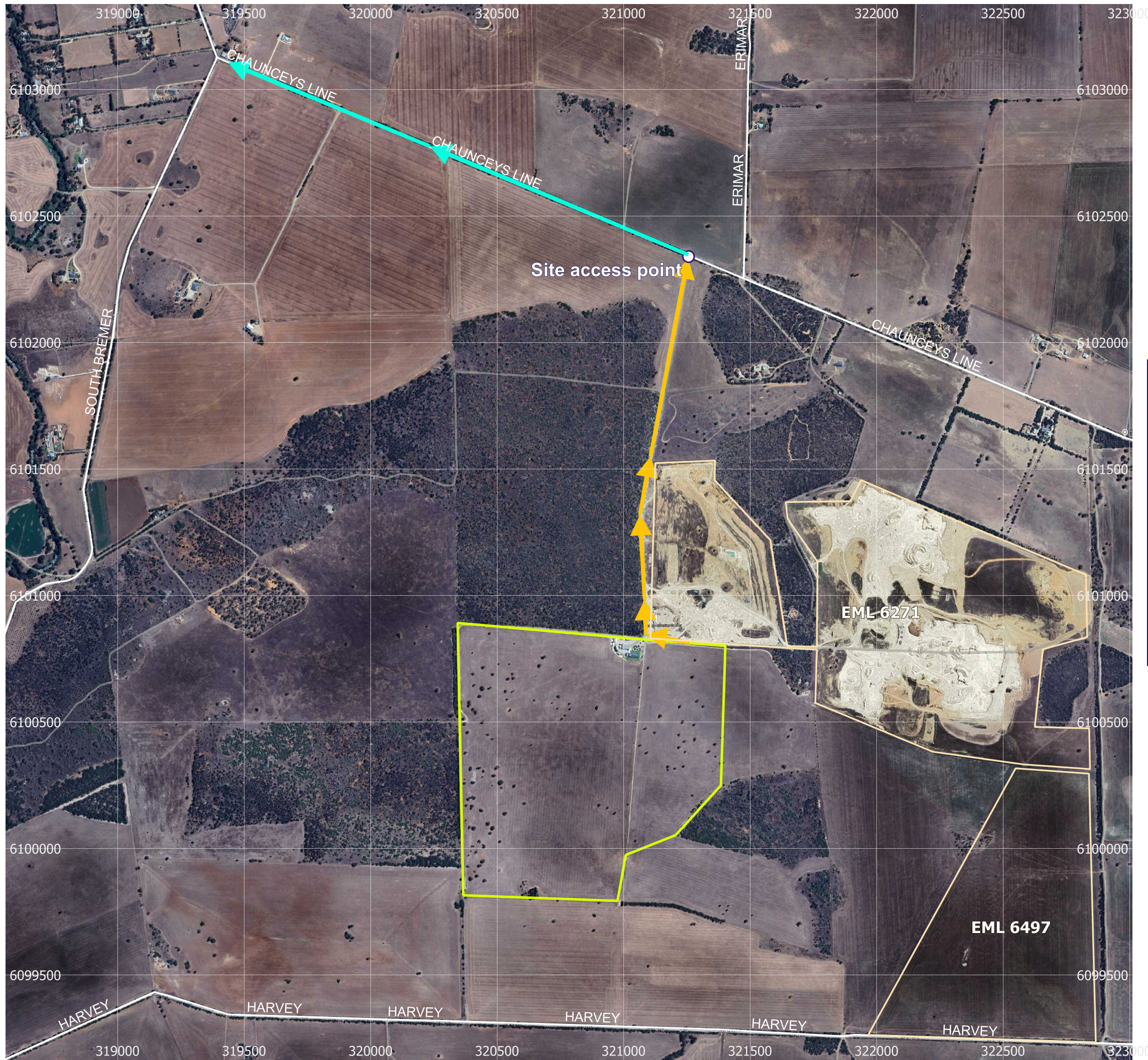


# PEPR Drawing 12 Product transport route map

Hartley Rubble Pit  
Futuretop Developments Pty Ltd  
Mining Lease 6564

14/09/2024

GDA2020 / MGA zone 54



## Legend

- Site access point
- ▭ Mining Lease 6564
- ▭ Other mining tenement
- Internal access track
- Primary access route

Google hybrid



0 250 500 750 1,000 1,250 m

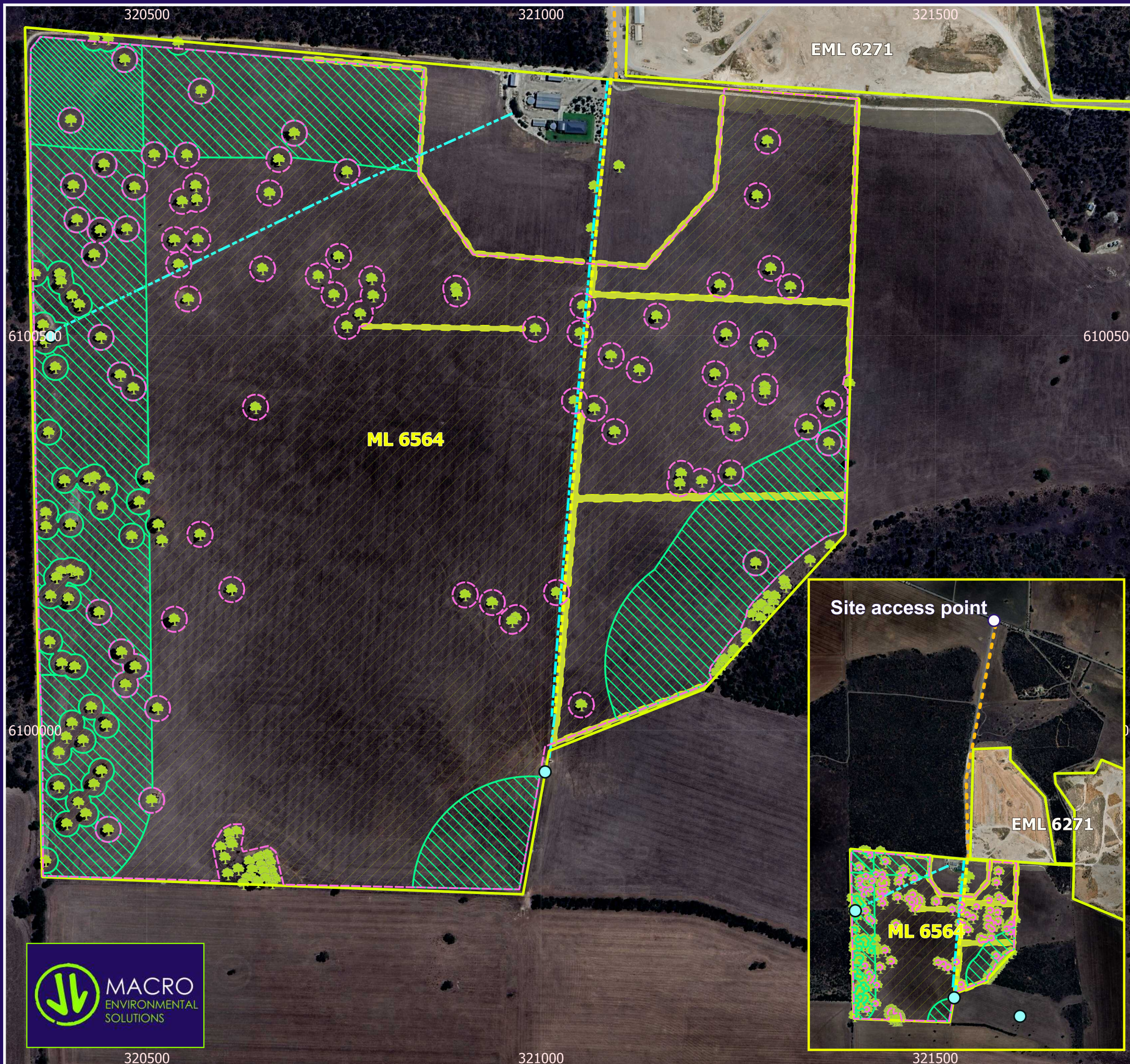


# PEPR Drawing 13 Compliance monitoring map

Hartley Rubble Pit  
Futuretop Developments Pty Ltd  
Mining Lease 6564

03/09/2025

GDA2020 / MGA zone 54



## Legend

- Disturbance area
- Mining lease boundary
- Orchid survey area
- Overhead powerline
- Property bores
- Site access point
- Soil stockpiles (all stages)
- Tree buffer monitoring
- Water lines

Google hybrid



0 100 200 300 m



320500

321000

321500

6100500

6100500

6100000

6100000

# Attachments

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**Attachment 1** – Certificate of Title for CT 5896/647

**Attachment 2** – Blast Management Plan

**Attachment 3** – Dust Trigger and Response Plan (TARP)

**Attachment 4** – Aboriginal Heritage Discovery Protocol

**Attachment 5** – Soil Borne Pathogens Treatment and Management Plan (**Confidential**)

**Attachment 6** – Compliance summary and monitoring plan.

# **Attachment 1**

## **Certificate of Title for CT 5896/647**

---

## Certificate of Title

Title Reference CT 5896/647  
Status CURRENT  
Easement YES  
Owner Number 12767399  
Address for Notices 420 CHAUNCEYS LINE RD HARTLEY 5255  
Area 260.9ha (CALCULATED)

## Estate Type

FEE SIMPLE

## Registered Proprietor

ROSS THOMAS  
JENNIFER ANN THOMAS  
OF PO BOX 53 BLACKWOOD SA 5051  
AS JOINT TENANTS

## Description of Land

ALLOTMENT COMPRISING PIECES 6 AND 7 DEPOSITED PLAN 61287  
IN THE AREA NAMED HARTLEY  
HUNDRED OF FREELING

## Last Sale Details

There are no sales details recorded for this property

## Constraints

### Encumbrances

NIL

### Stoppers

NIL

## Valuation Numbers

Valuation Number	Status	Property Location Address
7707206506	CURRENT	420 CHAUNCEYS LINE ROAD, HARTLEY, SA 5255

## Notations

### Dealings Affecting Title

NIL

### Notations on Plan

NIL

## Registrar-General's Notes

PLAN FOR HERITAGE AGREEMENT PURPOSES VIDE G298/1992

## **Administrative Interests**

NATIVE VEGETATION HERITAGE AGREEMENT HA 702

# **Attachment 2**

## **Blast Management Plan**

---



**MACRO**  
ENVIRONMENTAL  
SOLUTIONS



Hartley Rubble Pit  
Mineral Lease 6564

**Blast Management Plan**

**September 2025**

Prepared for Futuretop Developments Pty Ltd

## REVISION HISTORY

Version	Prepared By	Details	Distribution
1	Terry Menadue, Macro ES	Initial draft	Draft prepared for Client review.



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**Web** [www.macroes.com.au](http://www.macroes.com.au)

## Contents

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2.2	Blasting in the context of the ML 6564 mining approvals .....	2
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## Attachments

Attachment A – Blast Controller Checklist

## 1 Introduction

---

This Blast Management Plan (BMP) relates to mining operations at Futuretop Developments Pty Ltd (FTD) Hartley Rubble Pit (HRP) on Mineral Lease (ML) 6564.

The purpose of this BMP is to outline planned blasting activities, control and management strategies to achieve the proposed environmental outcomes and measurement criteria for blasting in the HRP revised Program for Environmental Protection and Rehabilitation (PEPR).

The BMP has been developed in accordance with the blasting methodologies and management strategies employed by FTD at the adjoining Extractives ML 6271 for several years.

## 2 Planned blasting activities

---

### 2.1 Requirement for blasting

Blasting is required at ML 6564 to break up a hard calcrete layer that runs across the tenement as the rock is generally too hard to be extracted using heavy machinery.

### 2.2 Blasting in the context of the ML 6564 mining approvals

This BMP is an Attachment to a revised Program for Environment Protection and Rehabilitation (PEPR) submitted to the Department for Energy and Mining (DEM). The BMP has been prepared to outline the proposed control strategies and monitoring to be employed to ensure that blasting activities are compliant with the environmental outcome and associated measurement criteria for blasting in the revised PEPR.

As the BMP is an Attachment of the PEPR, the BMP will reference the content and drawings within the PEPR rather than re-attaching them to the BMP.

The BMP may be updated from time to time if improvements to control and management strategies at the Site are identified in the course of drill and blast mining activities at the Site.

The BMP aligns with the Description of Mining in **Section 3.3.4** of the PEPR.

### 2.3 Planned blasting location and operations

All blasting activities will occur within the approved mining areas displayed in the Mining and Rehabilitation Plans featured in **Drawings 4 – 9** of the PEPR.

Blasting occurs regularly (approximately one blast per week) at approximately 4pm to reduce the number of employees onsite.

As the resource is shallow at 2 – 3m deep, blasts are relatively small in size and generally loosen approximately 6,000 tonnes of material per blast.

Blasting is sequentially fused to minimise noise and vibration.

Ammonium Nitrate Fuel Oil Mix (ANFO) is the explosive to be used. The emulsion mix is not stored onsite and only ordered and used as required and supplied by third party providers.

Explosives are stored on the neighbouring EML 6271.

All neighbouring property owners are contacted and informed about each future blasting dates and times on the morning of the blast - firstly by phone with a voice message left if not available. A text message is also sent to those who cannot be contacted by phone.

## 3 Blast management plan

---

### 3.1 Surrounding land use

The predominant surrounding land uses in the immediate area are as follows:

- Livestock grazing,
- Agriculture,
- Native vegetation / ecosystems, and
- Quarrying.

The nearest public road is Harvey Road which is approximately 500m from the ML 6564 southern boundary.

The northern boundary is adjacent to the EML 6271 southern boundary. EML 6271 is also operated by FTD.

### 3.2 Sensitive receptors

The nearest sensitive receptor is the owner of the property that ML 6564 is located on. The landowner residence is located approximately 165m from the extent of approved mining operations.

No other dwellings are located within 1km of the blasting areas.

Due to the proximity to the blasting locations compared to the other dwellings, the potential impacts from blasting (vibration, airblast overpressure and fly rock) are only expected to potentially occur at the landowner's residence.

### 3.3 Consultation

#### 3.3.1 Landowner

Consultation with the landowner was conducted on 8 August 2024 and 9 September 2024.

The landowner is familiar with the proposed operations as the same quarrying methods are occurring on Extractives ML 6271 on the same property.

### 3.4 Communication Protocol

The landowners and 7 nearest neighbours will be provided with a notification approximately 24-hours prior to the blast being undertaken.

The list of neighbours contacted prior to the blast is recorded on the Black Controller Checklist (**Attachment A**).

### 3.5 Environmental outcome and measurement criteria

The environmental outcome and measurement criteria for Blasting is provided in **Table 1**.

**Table 1 – Blasting environmental outcome and measurement criteria**

Environmental outcome		Measurement criteria (outcome achievement)		
The Tenement Holder must, during construction and operation, ensure that there are no public health and/or nuisance impacts from airblast, fly rock and vibration caused by blasting.		(1) Site records will demonstrate that any blasting related complaints regarding vibration and/or airblast overpressure are acknowledged within 48 hours with the complaint investigated within seven days. (2) In response to the complaint, control and management strategies will be reviewed and updated as required and Site records will show the updates were provided to the complainant and/or monitoring for vibration and airblast overpressure will be undertaken at or near the complainants location to demonstrate that peak sound pressure (overpressure) is less than 115 dB(A) for 95% of blasts and less than 120dB(A) for 100% of blasts, and ground vibration is less than 5mm/s for 95% of blasts and less than 10mm/s for 100% of blasts. (3) No evidence of flyrock observed outside of the Site area during post-blasting inspections.		
Phase	Measurement type and form	Locations	Frequency	Control or baseline data
Operational.	Complaint records.	Electronically filed.	Ongoing.	Not applicable.
	Records from vibration and airblast overpressure monitoring.	At or near the complainant’s location (as agreed with the Mining Regulator).	Up to 3 blasts following a complaint.	AS 2187.2 human comfort standards.
Operational.	Records from post-blast inspections of the Site boundary near the blast area.	Outside of the Site boundary.	Following each blast.	Not applicable.

### 3.6 Control and management strategies

Control and management strategies implemented to ensure compliance with the environmental outcome are featured in **Table 2**.

**Table 2 – Blasting control and management strategies**

Control and management strategy	Strategy Type
Blasting activities will be undertaken in accordance with the Blasting Management Plan.	Planning.
All blasting to be undertaken by licenced staff and/or contractors and in accordance with Australian Standard (AS 2187.2).	Mitigation.
All blasts are to be recorded in Site records, detailing timing, size, number of blast holes, quantity and type of explosives used.	Recording / Reporting.
All blasting will be undertaken on weekdays with blasts initiated within normal working hours (8:00am to 5:00pm), and usually at approximately 4:00pm.	Mitigation.

Control and management strategy	Strategy Type
Neighbouring property owners are notified approximately 24 hours before the scheduled day and time of blasts that may potentially be heard or felt outside of the Site boundary.	Mitigation.
No explosives are stored within the ML area.	Prevention.
Safety protocols are in place to ensure that the pit area and a 500 metre exclusion zone are vacant ahead of any blasts. This includes three blast guards monitoring the area surrounding the blast from elevated viewpoints ( <b>BMP Drawing 1 – Blast management map</b> ).	Prevention.
Blasts are relatively small in size (~6,000 tonnes) which reduces vibration and airblast overpressure.	Mitigation.
Monitoring for vibration and overpressure will be undertaken near the closest residents should a complaint be received.	Performance evaluation.
Efficient, effective, and safe blasting technology will be used in accordance with AS 2187.2.	Mitigation.

### 3.7 Monitoring

#### 3.7.1 Vibration and airblast overpressure

Monitoring for vibration and overpressure will be undertaken near the closest residents should a complaint be received.

#### 3.7.2 Flyrock

Observations of flyrock will be made from sentry points looking at the blast location at the time of blasting.

The areas surrounding the blast zone will be inspected post-blast to ensure that no flyrock was created that travelled outside of the approved mining area.

### 3.8 Reporting

The checklist provided in **Attachment A** will be completed by the blasting controller.

Copies of completed checklists will be maintained in the Site records and provided to DEM upon request.

Any non-compliance with the environmental outcome for blasting and associated measurement criteria will be reported to DEM as an incident in accordance with Regulation 79 of the *Mining Regulations 2020*.

The number of blasts, any monitoring results, a summary of the effectiveness of the control strategies and any complaints and/or incidents will be reported in the Mining Compliance Report submitted annually to DEM in accordance with Regulation 77 of the *Mining Regulations 2020*.

## 4 Drawings

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BMP Drawing 1 – Blast management map.

# BMP Drawing 1 Blast management map


Hartley Rubble Pit  
Futuretop Developments Pty Ltd  
Mining Lease 6564

09/09/2025

GDA2020 / MGA zone 54

## Legend

 ML 6564 boundary

 Other mining leases

 Blasting areas

 Blast exclusion zone

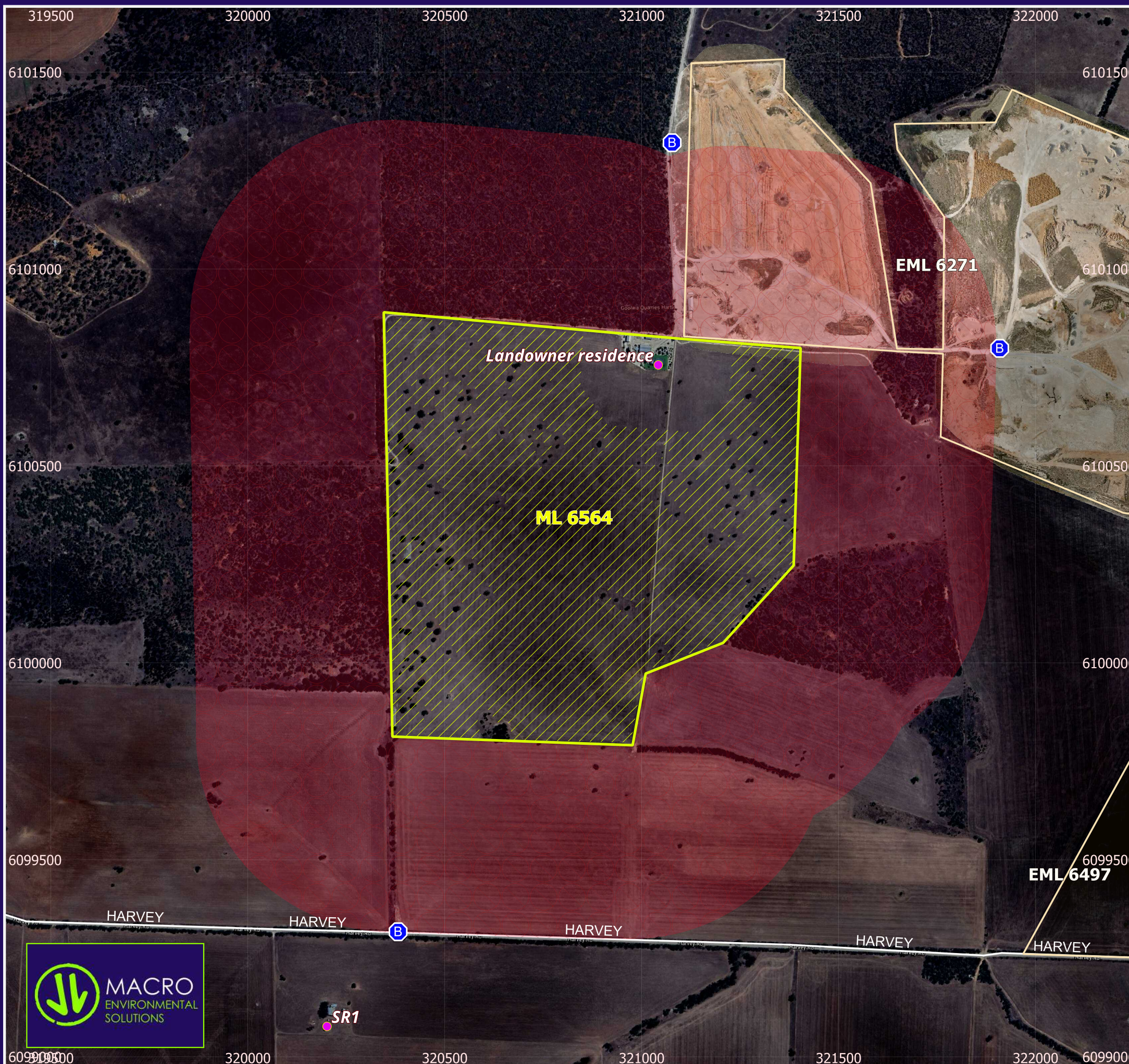
 Blast guard locations

 Landowner dwelling

Road network

 ROAD

Google hybrid



SR1



# Attachment A

Blast controller checklist

---

# Goolwa Quarries Blasting Operations

## Blast Controller Checklist

Blast Operation:.....

Date:.....

Blast Controller Name:.....

Time of Blast:.....

Topic		Yes	No
Blast plan discussed with shot firer			
Informed neighbours			
Weather Temp			
Wind Direction			
Blast Guard 1 Name			
Blast Guard 2 Name			
Blast Guard 3 Name			
Blast Controller Inspect site			
Blast Guards into positions			
Drone ready for inspection and filming.			
All personnel away from blast zone			
All personnel accounted for			
2 <sup>nd</sup> Inspection of site with Siren			
“All clear” from blast guards			
Shot firer given the “All Clear” to fire from blast controller.			
Drone FlyBy to inspect after blast initiation			
Shot Firer notify intent to inspect			
Was there a misfire?			
Blast results Satisfactory			
Blast Guards “Stand down”			
Blast Monitoring cause trigger event?			
Blast Report Generated?			

Blast notes:

## Hartley Site Neighbours.

On Blast days please contact sites neighbours to notify them of blast times

Name	Number	Phone	Text
R	04		
N	04		
H	04		
M	04		
N	04		
M	85		
S	04		
A	04		

Signature:.....

# Goolwa Quarries Explosive/ Detonators Stock Record

Hartley Site Stock

Date ...../...../.....

Shot Number .....

Items	ON HAND	USED	NEW ORDER	BALANCE
Handi Dets 6M 25/400m/s (box 100)				
CON DETS 3.6M 17m/s (box 160)				
CON DETS 4.9M 17m/s (box 160)				
CON DETS 3.6M 25m/s (box 180) RED				
CON DETS 4.9M 25m/s (box 160) RED				
CON DETS 3.6M 42m/s (box 180) WHITE				
CON DETS 4.9M 42m/s (box 180) WHITE				
CON DETS 4.8m 100M/S (box 160)				
DHD DETS 3.6M delay 12 (box 210)				
ELECTRIC DETONATORS - 7				
ELECTRIC DETONATORS - 8				
ELECTRIC DETONATORS - 9				
ELECTRIC DETONATORS - 10				
ELECTRIC DETONATORS - 11				
ELECTRIC DETONATORS - 12				
ELECTRIC DETONATORS - 13				
ELECTRIC DETONATORS - 14				
ELECTRIC DETONATORS - 15				
ELECTRIC DETONATORS - 16				
ELECTRIC DETONATORS - 17				
ELECTRIC DETONATORS - 18				
PENTAX BOOSTERS (box 80)				
SENATEL 32x200 CHUBBS (box 135)				
NITROPRIIL -total Kg				

SHOTFIRER .....

SIGNATURE .....

GOOLWA QUARRIES

**RISK ASSESSMENT PRIOR TO BLASTING OPERATIONS.**

**Shotfirer:** \_\_\_\_\_ **Site:** Hartley/Currency. **Date** \_\_\_\_\_

Prior to detonation of explosives this form to be completed & thereafter returned to Office.

The shotfirer who is supervising a blasting operation must ensure that;

You are personally attending & are satisfied that: 1. Explosive was prepared correctly. 2. Explosive was placed in shotholes and <u>all consumable items used are recorded.</u> 3. The charge is ready to be fired. (The same person that loaded and charged the shotholes is required to initiate the blast)	
The safety cones that define the blast exclusion zone have been removed to MMU At all times during the operation be ready to deal with any accident or emergency.	
Each other person engaged in the preparation received sufficient information & instruction for the performance of their responsibilities in relation to explosives.	
All reasonably foreseeable risks have been identified. These risks have been assessed.	
Where any of these assessed risks cannot be eliminated, have these been minimised.	
For the purpose of limiting – noise, dust, air blast, ground vibrations & debris , has the size or number of charges been restricted to contain the effects of this blast.	
Insofar as is reasonably practicable are you prepared for any potentially dangerous situation that may arise & in the event it does to ensure that appropriate action will be taken.	
All persons have been withdrawn from the Blast Operation Area & said area has been kept under observation by a competent person or made reasonably secure against unauthorised entry till such time as the charge is fired.	
All blast materials <u>not used</u> in the operation have been counted; <u>numbers confirmed</u> by another person, quantities recorded on packages and items returned to safe storage.	
You have implemented the blasting procedure for “ Explosives & Blasting “ – ( in Goolwa Quarries blasting plan ).	
You have advised the Manager who has given approval for Detonation at (record time here).	Hrs

Signed..... At.....Hrs.

# **Attachment 3**

## **Dust Trigger and Response Plan (TARP)**

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## Hartley Rubble Pit – Dust Trigger and Response Plan

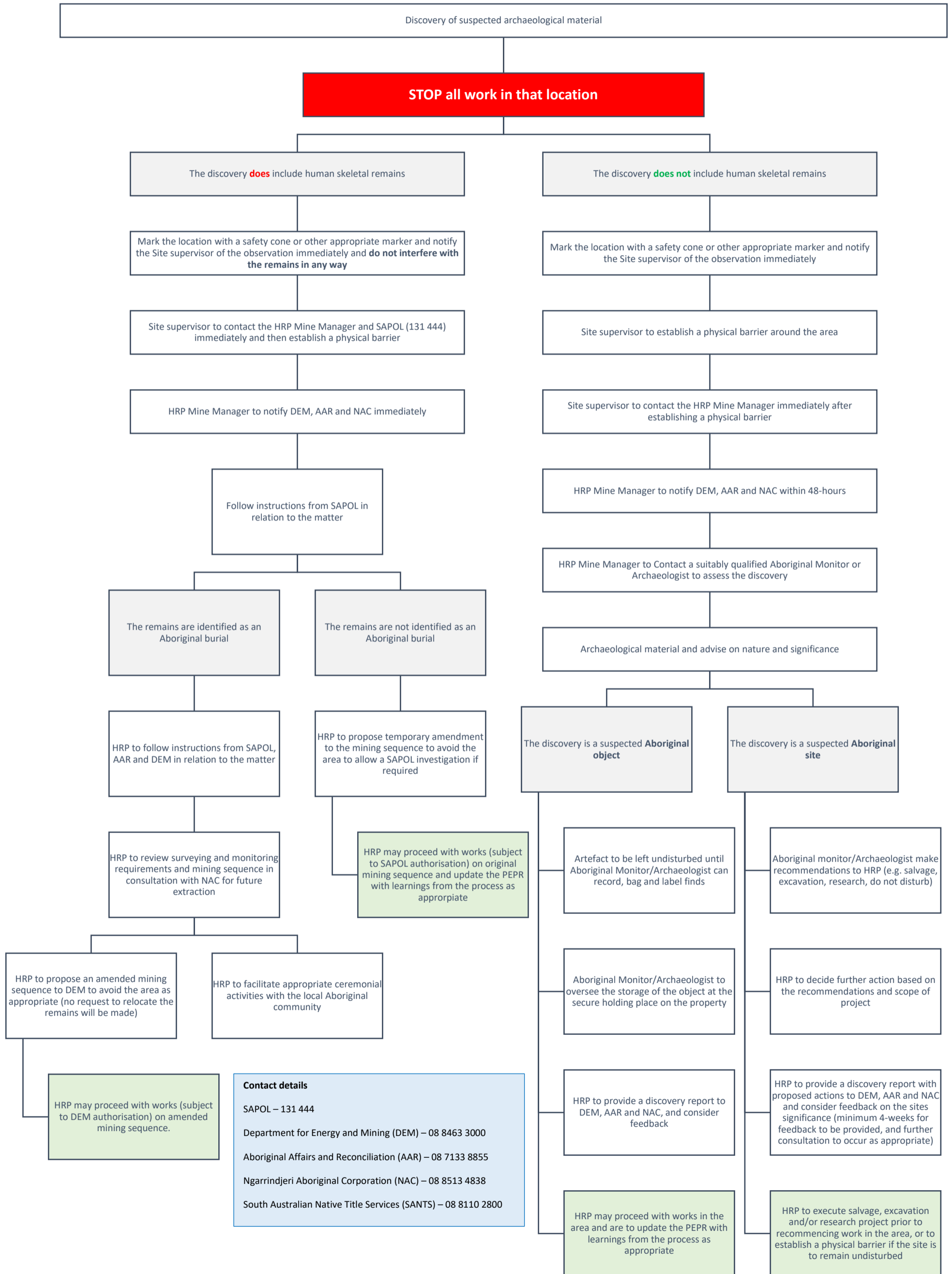
Version 1 – August 2024

Activity / dust source	Trigger (monitoring)	Response (controls)
Vehicle movements on unsealed roads.	Visible dust from vehicle movements is leaving the Site with the potential to impact offsite sensitive receptors.	<p>Use of water cart to control haul road dust.</p> <p>Ensure vehicle speeds do not exceed 20km/hr.</p> <p>Limit all unnecessary vehicle movements.</p>
Topsoil stripping, drilling, excavations/dozer push, loading, crushing and screening.	<p>Dry and windy conditions (&gt;40kmh).</p> <p>Visible dust from the activity is leaving the Site with the potential to impact offsite sensitive receptors.</p>	<p>Monitor the Bureau of Meteorology website for forecast weather conditions – temperature, wind speed and direction and plan daily operations accordingly.</p> <p>Ensure water sprayers are turned on and working effectively.</p> <p>Shut down dust producing operations during high wind forecasts.</p> <p>Shut down dust producing operations that can't be effectively controlled under the current conditions.</p>
Wind erosion from stockpiles and general disturbance areas.	<p>Dry and windy conditions.</p> <p>Wind is causing visible dust plumes from the stockpile / open areas that is leaving the Site with the potential to impact on offsite sensitive receptors.</p>	<p>Increase the use of water suppression on stockpiles and disturbed areas.</p> <p>Rehabilitate and revegetate disturbed areas as soon as practical.</p>

# **Attachment 4**

## **Aboriginal Heritage Discovery Protocol**

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# **Attachment 5**

## **Soil Borne Pathogens Treatment and Management Plan (Confidential)**

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# **Attachment 6**

## **Compliance summary and monitoring plan**

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## HARTLEY RUBBLE PIT (ML 6564) - COMPLIANCE SUMMARY AND MONITORING PLAN

### Compliance summary for the operational phase

Environmental element	Objective	Measurement criteria (objective achievement)	Measurement type and form	Locations	Frequency	Control or baseline data
Air quality	The Tenement Holder must, during construction and operation, ensure that there are no public health and/or nuisance impacts from air emissions and dust generated by mining operations.	Site records will demonstrate that any air quality related complaints are acknowledged within 48 hours and investigated within seven days.	Complaint records.	Electronically filed.	Ongoing.	Not applicable.
		<p>In response to a complaint, control and management strategies will be reviewed and updated as required and Site records will show the updates were provided to the complainant and/or the Regulator.</p> <p>Should an ongoing complaint not be resolved to the satisfaction of the Regulator, air quality monitoring is to occur at locations, and using methods, as agreed with the relevant regulating agency, to demonstrate:</p> <ul style="list-style-type: none"> <li>that mining operations do not cause dust deposition (ash content) to exceed 4g/m<sup>2</sup>/month (rolling annual average), when monitored in accordance with Australian Standard AS 3580.10.1 Methods for sampling and analysis of ambient air – Determination of particulates – Deposited matter – Gravimetric method , and/or</li> </ul>	Air quality monitoring (dust deposition and/or continuous PM <sub>10</sub> monitoring).	Representative of complainant location as agreed with the Mining Regulator.	Monthly sampling (+/- 2 days); Continuous monitoring for PM <sub>10</sub> for a period as agreed with the lead regulating agency.	Background dust deposition and PM <sub>10</sub> levels.

Compliance Summary and Monitoring Plan

Environmental element	Objective	Measurement criteria (objective achievement)	Measurement type and form	Locations	Frequency	Control or baseline data
		<ul style="list-style-type: none"> <li>that mining operations do not cause ground level concentrations of PM<sub>10</sub>* to exceed 50µg/m<sup>3</sup> over a 24-hour period at locations and using methods as agreed with the lead regulating agency. <i>*PM10 – Particulate matter with an aerodynamic diameter of 10 micrometres or less.</i></li> <li>Air quality monitoring will be undertaken until such time that the regulating agency provides a formal notification that the monitoring is no longer required due to a sustained period of compliance.</li> </ul>				
Blasting	The Tenement Holder must, during construction and operation, ensure that there are no public health and/or nuisance impacts from airblast, flyrock and	(1) Site records will demonstrate that any blasting related complaints regarding vibration and/or airblast overpressure are acknowledged within 48 hours with the complaint investigated within seven days.	Complaint records.	Electronically filed.	Ongoing.	Not applicable.
		(2) In response to the complaint, control and management strategies will be reviewed and updated as required and Site records will show the updates were provided to the complainant and/or	Records from vibration and airblast overpressure monitoring.	At or near the complainant’s location (as agreed with the Mining Regulator).	Up to 3 blasts following a complaint.	AS 2187.2 human comfort standards.

Compliance Summary and Monitoring Plan

Environmental element	Objective	Measurement criteria (objective achievement)	Measurement type and form	Locations	Frequency	Control or baseline data
	vibration caused by blasting.	<p>monitoring for vibration and airblast overpressure will be undertaken at or near the complainants location to demonstrate that peak sound pressure (overpressure) is less than 115 dB(A) for 95% of blasts and less than 120dB(A) for 100% of blasts, and ground vibration is less than 5 mm/s for 95% of blasts and less than 10 mm/s for 100% of blasts.</p> <p>(3) No evidence of flyrock observed outside of the Site area during post-blasting inspections.</p>	Records from post-blast inspections of the Site boundary near the blast area.	Outside of the Site boundary.	Following each blast.	Not applicable.
Caves	<p>The Tenement Holder must, during construction and operation, ensure no unauthorised damage to caves of significance as a result of mining operations.</p> <p><i>Note: for the purpose of this outcome the term "caves" includes any underground opening or cavity</i></p>	<p>Records demonstrate that annual inspections for caves are conducted.</p> <p>Records demonstrate that following an observation of a cave, work ceased in the area of the cave until such time that the cave is assessed by a suitably qualified expert endorsed by the Mining Regulator.</p> <p>Records demonstrate that work only recommenced in the area of the cave following written authority provided by the Mining Regulator.</p>	Records from inspections of the pit area for caves.	Pit area.	Annually.	Not applicable.
			Records relating to communications and actions taken following the discovery of a cave at the Site.	Electronically filed.	Following discovery of a cave.	Not applicable.

Compliance Summary and Monitoring Plan

Environmental element	Objective	Measurement criteria (objective achievement)	Measurement type and form	Locations	Frequency	Control or baseline data
	<i>with a cross-sectional area greater than 0.25m<sup>2</sup>, and a minor axis measuring greater than 0.4 metres.</i>					
Drag out	The Tenement Holder must, during construction and operation, ensure there are no public safety or nuisance impacts off the land that are caused by drag out of dirt, mud or other material onto roads associated with quarry related traffic..	<p>Site records will demonstrate that any drag out related complaints are acknowledged within 48 hours and investigated within seven days.</p> <p>In response to the complaint, control and management strategies will be reviewed and updated as required and Site records will show the updates were provided to the complainant and/or the Mining Regulator.</p> <p>Site records demonstrate that all traffic accidents involving the public that are allegedly caused by drag out from the Site are recorded.</p> <p>An investigation of each incident is undertaken by a suitably qualified independent third-party within 30 days (or other time as agreed with the lead regulating agency) and demonstrates that the incident was not caused as a result of drag out from the Site.</p>	Complaint records.	Electronically filed.	Ongoing.	Not applicable.
			Site records (incident register) and investigation reports.	Electronically filed, Site access point and section of the road within 50m.	Within 30 days of a traffic incident.	Not applicable.

Compliance Summary and Monitoring Plan

Environmental element	Objective	Measurement criteria (objective achievement)	Measurement type and form	Locations	Frequency	Control or baseline data
Groundwater	The Tenement Holder must, during construction and operation, ensure there is no adverse impact to the quality or quantity of groundwater available to existing users and groundwater dependent ecosystems as a result of mining operations.	Quantity and quality – Site records will demonstrate that annual surveying confirms mining has occurred as proposed in the mining plans and a buffer to groundwater greater than 2-metres has been maintained.	Annual surface survey for pit floor level.	Pit floor.	Annual.	Previous groundwater measurements.
		Quality – Records from annual surveys demonstrate that no evidence of hydrocarbons spills is present in the operating areas.	Annual inspection of the operating area for discolouration and odour suggesting a hydrocarbon spill.	Operating areas.	Annual.	Not applicable.
Heritage	The Tenement Holder must, during construction and operation, ensure that there is no disturbance to Aboriginal or Non-Aboriginal heritage sites, objects or remains unless prior approval under the relevant	<p>Site records will show that upon discovery within the lease of any possible:</p> <ul style="list-style-type: none"> <li>• Aboriginal sites</li> <li>• Objects</li> <li>• Remains</li> <li>• European sites of significance</li> </ul> <p>that work is ceased until the relevant authorities were notified and work recommenced only once authorisation was received.</p>	Records of actions and communications following the discovery of a cultural heritage Site / Object / Remains.	Investigation on the Site. Electronically filed.	Following discovery.	Not applicable.

Compliance Summary and Monitoring Plan

Environmental element	Objective	Measurement criteria (objective achievement)	Measurement type and form	Locations	Frequency	Control or baseline data
	legislation is obtained.					
Land use and third-party property	The Tenement Holder must during construction and operation, ensure that there is no unauthorised damage (including that cause by fire) to adjacent public or private property and infrastructure.	Annual inspections of the Site will confirm that mining operations have not caused damage to third-party land uses or property. Site records will demonstrate that any land use and third-party property related complaints are acknowledged within 48 hours. An investigation by a suitably qualified person into a complaint relating to impacts from mining on third-party land use and/or property is completed within 30 days and demonstrates that the tenement holder could not have reasonably prevented the impacts from occurring.	Records from annual inspections and post-complaint investigation reports.	The Site and surrounding areas.	Annual and following a complaint.	Not applicable.
Native fauna	The Tenement Holder must, during construction and operation, ensure there are no native fauna injuries or deaths due to mining operations that could have been reasonably prevented.	Site records will demonstrate that annual site inspections were undertaken and found that there is no potential fauna traps present at the Site or that unauthorised habitat disturbance occurred as a result of mining operations. Site records will demonstrate that any native fauna injuries, deaths, or unauthorised habitat destruction caused by mining operations were recorded and investigated	Records from annual inspections and post-incident investigation reports.	Disturbed areas within the Site.	Annual and following a fauna incident.	Not applicable.

Compliance Summary and Monitoring Plan

Environmental element	Objective	Measurement criteria (objective achievement)	Measurement type and form	Locations	Frequency	Control or baseline data
		to determine if the incident was reasonably preventable.				
Native vegetation	The Tenement Holder must, during construction and operation, ensure that there is no loss of abundance and/or diversity of native vegetation on or off the Land unless a significant environmental benefit has been approved in accordance with the relevant legislation.	Site visual survey and photographic evidence will show no clearance of native vegetation without prior approval.	Records from 6-monthly inspections.	Native vegetation areas at the Site.	6-monthly	<b>PEPR Drawings 4 – 9.</b> Imagery from the previous survey.
Noise	The Tenement Holder must, during construction and operation, ensure that there are no public nuisance impacts from noise	Site records will demonstrate that any noise related complaints are acknowledged within 48 hours and investigated within seven days. In response to the complaint, control and management strategies will be reviewed and updated as required and Site records will show the updates were provided to the complainant and/or the Mining Regulator.	Site complaint records on the complaint register.	Electronically filed.	Following a complaint.	Not applicable.
			Noise monitoring (for LAeq) by a suitably qualified person in accordance with	At or near the complainant location.	15-minute period when Site is in operation and not upwind.	EPA Noise Policy indicative noise levels, currently 57dB(A) for day

Compliance Summary and Monitoring Plan

Environmental element	Objective	Measurement criteria (objective achievement)	Measurement type and form	Locations	Frequency	Control or baseline data
	emanating from the Land.	Should complaints continue, monitoring will be undertaken by a suitably qualified person near the receptor location to demonstrate that noise levels do not exceed the Indicative Noise Levels described in the EPA Noise Policy (57dB(A) for day and 50dB(A) for night).	the EPA Noise Policy.			and 50dB(A) for night.
Public safety	The Tenement Holder must, during construction and operation, ensure that there are no public injuries and/or deaths resulting from unauthorised entry to the site that could have been reasonably prevented.	Site records will demonstrate all public injuries and/or deaths resulting from unauthorised access to the tenement are recorded and an investigation by a suitably qualified independent third-party is completed within 30 days (or other time as agreed with the lead regulating agency). The results of the investigation demonstrate the tenement holder could not have reasonably prevented the incident.	Records from the incident register.  Investigation report provided by a suitably qualified independent third-party.	Relevant areas within the Site.	Following an incident.	Not applicable.
Soil	The Tenement Holder must, during construction and operation, ensure that the existing (pre-mining) soil quality	Records from annual inspections of soil stockpiles confirm that the stockpiles: <ul style="list-style-type: none"> <li>• are lower than 2m high</li> <li>• have vegetation cover over the majority of the surface</li> <li>• are free of environmental weeds, and</li> <li>• are not losing soil due to erosion.</li> </ul>	Records from annual inspections of Soil stockpiles.	Soil stockpile areas.	Annually.	Not applicable.

Compliance Summary and Monitoring Plan

Environmental element	Objective	Measurement criteria (objective achievement)	Measurement type and form	Locations	Frequency	Control or baseline data
	and quantity is maintained.					
Surface water	The Tenement Holder must, during construction and operation, ensure there is no adverse impacts on surface water quality or quantity as a result of mining operations.	Site records will demonstrate that inspections of the Site are undertaken annually, and any observed areas of erosion and/or potential sediment runoff issues were remediated with appropriate control strategies within 30 days.	Records from erosion and sediment runoff inspection (and remedial actions as required).	Internal surface water drainage areas.	Annually.	Nil.
Traffic	The Tenement Holder must, during construction and operation, ensure there are no traffic accidents involving members of the public and mining related traffic that could have been reasonably prevented by the tenement holder.	Site records will demonstrate that annual monitoring of the Site access point is undertaken and that any safety issues observed are addressed within 14 days.	Site records of annual inspections.	Site access point and section of the road within 50m.	Annually.	Previous annual compliance reports.
		Site records demonstrate that all traffic accidents involving the public and mining related traffic are recorded.  An investigation of each incident is undertaken by a suitably qualified independent third-party within 30 days (or other time as agreed with the lead regulating agency) and demonstrates that the Tenement Holder could not have reasonably prevented the accident from occurring.	Site records (incident register) and investigation reports.	Site access point and section of the road within 50m.	Within 30 days of a traffic incident.	Not applicable.

Compliance Summary and Monitoring Plan

Environmental element	Objective	Measurement criteria (objective achievement)	Measurement type and form	Locations	Frequency	Control or baseline data
Visual amenity	The Tenement Holder must, during construction, operation and post mine completion, ensure that the form, contrasting aspects and reflective aspects of mining operations are visually softened to blend in with the surrounding landscape.	Site records will demonstrate that inspections of the Site are undertaken annually to ensure visual amenity impacts are as low as reasonably practicable and any offensive visible aspects of the mining operations are addressed within 30 days (or other period as approved by the lead regulating agency).	Records from annual inspections of the vegetation screening.	Boundary of the operational areas.	Annually.	Previous inspection.
Waste disposal	The Tenement Holder must, during construction and operation, ensure that all commercial, domestic or industrial waste is disposed of in accordance with relevant legislation.	Site records will demonstrate that all waste has been managed in accordance with relevant waste policies, standards, and guidelines under the <i>Environment Protection Act 1993</i> .	Site records (evidence of appropriate waste disposal and annual inspections).	Disturbance area.	Ongoing and annually.	Not applicable.

Compliance Summary and Monitoring Plan

Environmental element	Objective	Measurement criteria (objective achievement)	Measurement type and form	Locations	Frequency	Control or baseline data
Weeds and pests	The Tenement Holder must, during construction and operation, ensure no introduction of new species of Weeds, plant pathogens or pests (including feral animals), nor increase in abundance of existing Weed or pest species in the Land.	Site records will demonstrate that annual inspections are undertaken for new weeds, plant pathogens or pests (including feral animals) and for evidence of increased abundance of existing weeds, plant pathogens and/or pests (including feral animals) and any positive observations were managed in a timely fashion and in accordance with available advice from PIRSA and/or the Landscape Board.	Annual inspections for weeds and plant pathogens and records of follow-up management actions as required.	Whole site particularly around disturbed areas and internal roads.	Annual inspections and follow-up actions undertaken in the appropriate season as advised by PIRSA and/or the Landscape Board.	Previous annual compliance report and neighbouring properties.
			Annual inspections for pest fauna and records of follow-up management actions as required.	Whole site particularly around waste-rock landforms.	Annual inspections and follow-up actions undertaken in the appropriate season as advised by PIRSA and/or the Landscape Board.	Previous annual compliance report.

Compliance Summary and Monitoring Plan

Environmental element	Objective	Measurement criteria (objective achievement)	Measurement type and form	Locations	Frequency	Control or baseline data
	The Tenement Holder must, during construction and operation, ensure that reasonable and practicable measures are undertaken to prevent plant pathogens from leaving the Site.	Site records will demonstrate that annual inspections are undertaken to confirm that strategies to control the transportation of plant pathogens from the Site are being generally implemented in accordance with the 'Soil Borne Pathogens Treatment and Management Plan'.	Annual inspections of plant pathogen controls in reference to the 'Soil Borne Pathogens Treatment and Management Plan'.	Undisturbed areas, soil stockpiles and rehabilitation areas.	Annual inspections.	'Soil Borne Pathogens Treatment and Management Plan'.



**Compliance summary for closure**

Environmental element	Objective	Measurement criteria (objective achievement)	Measurement type and form	Locations	Frequency	Control or baseline data
Land use and third-party property	The Tenement Holder must ensure the land is progressively and finally rehabilitated to support the future land use agreed by the Director of Mines or another authorised officer.	<p>Annual inspections will confirm that progressively rehabilitated areas are:</p> <ul style="list-style-type: none"> <li>• free from erosion and scouring</li> <li>• do not show visible signs of instability (e.g. cracking at the crest)</li> <li>• achieving batter angles no greater than 1V:4H (14°).</li> <li>• establishing a vegetation cover that is consistent with nearby properties</li> <li>• weed abundance is equal to or less than the surrounding land</li> <li>• conforming to the surrounding landscape.</li> </ul> <p>An inspection of the final landform by a suitably qualified third-party will confirm that the final landform will successfully support the proposed final land use.</p>	<p>Records from annual inspections of the rehabilitated areas for erosion, signs of instability, batter slope assessment, weed inspection and vegetation establishment.</p> <p>Record from an inspection of the final landform and assessment of achievement of the final land uses by a suitably qualified third-party.</p>	Whole Site.	Annually and prior to surrender.	<b>PEPR Drawing 4 - 9.</b>

Compliance Summary and Monitoring Plan

Environmental element	Objective	Measurement criteria (objective achievement)	Measurement type and form	Locations	Frequency	Control or baseline data
Public safety	The Tenement Holder must ensure that the risks to the health and safety of the public so far as it may be affected by mining operations or mining related activities are as low as reasonably practicable.	A review of the final landform and public safety control strategies present at closure by a suitably qualified person will confirm that the final landform is constructed consistently with the proposed final landform, geotechnically stable and safe to the public as far as reasonably practicable.	Final assessment report provided by a suitably qualified person confirming that the final landform has been constructed consistently with the proposed final landform, geotechnically stable and safe to the public as far as reasonably practicable.	Disturbed areas within the Site.	Prior to lease surrender.	PEPR Drawing 10 and PEPR Drawing 11.
Soil	The Tenement Holder must, during construction and operation, ensure that the existing (pre-mining) soil quality and quantity is maintained.	An inspection of the final landform by a suitably qualified person will confirm that: <ul style="list-style-type: none"> <li>all available soil has been utilised</li> <li>Soil has been applied evenly over the areas discussed in the rehabilitation plans, and</li> <li>the rehabilitated surfaces have been prepared in a manner that reduces erosion and is likely to sustain vegetation growth.</li> </ul>	Records from an inspection of the rehabilitated areas to confirm that: <ul style="list-style-type: none"> <li>all Soil has been used</li> <li>soil has been evenly applied across the rehabilitation areas requiring Soil, and</li> <li>that the sections of the final landform that has Soil applied is stable and likely to sustain vegetation.</li> </ul>	Sections of the final landform where Soil application is required.	Prior to surrender.	Not applicable.
Surface water	The tenement holder must, post-completion, ensure there is no adverse impact on surface	Records of an inspection of the final landform conducted by a suitably qualified person of the boundary of the Site confirms	Record from erosion and sediment runoff inspection of the final landform.	Rehabilitation areas.	Prior to surrender.	Not applicable.

Compliance Summary and Monitoring Plan

Environmental element	Objective	Measurement criteria (objective achievement)	Measurement type and form	Locations	Frequency	Control or baseline data
	water quantity or quality caused by the final landform.	that no current or potential future erosion and/or potential sediment runoff issues are present.				
Visual amenity	The Tenement Holder must, during construction, operation and post mine completion, ensure that the form, contrasting aspects and reflective aspects of mining operations are visually softened to blend in with the surrounding landscape.	Visual assessment of the Site and surrounds undertaken by a suitably qualified person at closure confirms that the final landform integrates and harmonises with the surrounding landscape and is consistent with the proposed final landform.	Report from visual assessment of the final landform.	Areas outside of the Site where line of sight exists into the Site.	Prior to surrender.	PEPR Drawing 10.
Waste disposal	The Tenement Holder must ensure that no mining related wastes are present on the land at the completion of mining activities.	An inspection by a suitably qualified person will confirm that all mining related waste has been removed from the final rehabilitated landform and the land is free of contamination.	Report from inspection of the whole final landform area.	Whole site.	Prior to surrender.	Not applicable.

**Compliance monitoring plan**

Trigger	Objective	Monitoring method	Measurement criteria	Location	Reporting
Annual monitoring.	Caves.	Visual inspection of the pit for caves ("caves" includes any underground opening or cavity with a cross-sectional area greater than 0.25m <sup>2</sup> , and a minor axis measuring greater than 0.4 metres).	Work ceases on observation of a cave and notification made to the Mining Regulator.	Pit area.	Annual compliance report. Notification upon discovery of a cave to the Mining Regulator. Failure to comply with the criteria reported as an incident in accordance with Regulation 79 of the <i>Mining Regulations 2020</i> .
Annual monitoring.	Drag out (controls).	Annual monitoring of the Site Access Point will be undertaken to ensure no excessive build-up of drag out on the road or evidence of sediment build up on road verges as a result of drag out is present.	No complaints and incidents.	Site access point.	Annual compliance report.
Annual monitoring.	Fire (controls).	Check fire extinguishers present and operational and that any hot works are not being undertaken near vegetated areas.	No fires started at the Site that could have been reasonably prevented.	Operational areas.	Annual compliance report.
Annual monitoring.	Groundwater quality.	Surface survey for pit floor level and visual inspection for hydrocarbon spills.	Mining has occurred as proposed in the mining plans and that no evidence of significant hydrocarbons spills (greater than 10L) are present on the pit floor.	Pit floor.	Annual compliance report. Where it is observed that the measurement criteria have not been achieved, reported as an incident in accordance with Regulation 79 of the <i>Mining Regulations 2020</i> .

## Compliance Summary and Monitoring Plan

Trigger	Objective	Monitoring method	Measurement criteria	Location	Reporting
Annual monitoring.	Land use and third-party property.	Annual visual inspections of the mining areas, local infrastructure, and third-party property to be undertaken.	Mining operations have not caused damage to third-party land uses or property.	The Site and surrounding areas.	Annual compliance report. Where it is observed that the measurement criteria have not been achieved, reported as an incident in accordance with Regulation 79 of the <i>Mining Regulations 2020</i> .
Annual monitoring.	Land use and third-party property.	Annual inspections of the rehabilitated areas for erosion, signs of instability and vegetation establishment.	Annual inspections will confirm that progressively rehabilitated areas are: <ul style="list-style-type: none"> <li>• free from major erosion and scouring,</li> <li>• do not show visible signs of instability,</li> <li>• establishing a vegetation cover of native species, and</li> <li>• conforming to the surrounding landscape.</li> </ul>	Whole Site.	Annual compliance report. Where it is observed that the measurement criteria have not been achieved, reported as an incident in accordance with Regulation 79 of the <i>Mining Regulations 2020</i> .
Annual monitoring.	Native fauna.	Annual site inspection of the operational areas.	There are no potential fauna traps present at the Site or that unauthorised habitat disturbance occurred as a result of mining operations.	Disturbance footprint.	Annual compliance report. Where it is observed that the measurement criteria have not been achieved, reported as an incident in accordance with Regulation 79 of the <i>Mining Regulations 2020</i> .

## Compliance Summary and Monitoring Plan

Trigger	Objective	Monitoring method	Measurement criteria	Location	Reporting
Annual monitoring.	Native vegetation.	Annual site visual survey and photographic evidence of the operational areas.	No clearance of native vegetation without prior approval.	Native vegetation areas at the Site.	Annual compliance report. Where it is observed that the measurement criteria have not been achieved, reported as an incident in accordance with Regulation 79 of the <i>Mining Regulations 2020</i> .
Annual monitoring.	Noise.	Noise observations to assess any potential operational noise impacts.	Control and management strategies will be reviewed and updated as required.	Near sensitive receptor locations.	Annual compliance report.
Annual monitoring.	Public safety.	Annual inspections are undertaken to ensure that reasonable measures are employed to prevent unauthorised access to the Site.	The tenement holder could not have reasonably prevented the incident from occurring.	Site access point, Site boundary and operating areas.	Annual compliance report.
Annual monitoring.	Soil.	Visual inspection of topsoil stockpiles.	Stockpiles: <ul style="list-style-type: none"> <li>• are lower than 2m high</li> <li>• have vegetation cover over the majority of the surface</li> <li>• are free of environmental weeds, and</li> <li>• are not losing soil due to erosion.</li> </ul>	Soil stockpile areas.	Annual compliance report. Where it is observed that the measurement criteria have not been achieved, reported as an incident in accordance with Regulation 79 of the <i>Mining Regulations 2020</i> .

## Compliance Summary and Monitoring Plan

Trigger	Objective	Monitoring method	Measurement criteria	Location	Reporting
Annual monitoring.	Surface water.	Visual inspection for erosion and/or potential sediment runoff issues.	Erosion and/or potential sediment runoff are identified and addressed.	Internal surface water drainage areas.	Annual compliance report. Where it is observed that the measurement criteria have not been achieved, reported as an incident in accordance with Regulation 79 of the <i>Mining Regulations 2020</i> .
Annual monitoring.	Traffic.	Visual inspection for potential traffic safety issues such as obstructions of the view from the Site Access Point, damage to the road etc.	Any observed safety issues addressed within 14 days.	Site access point and section of road within 50 metres.	Annual compliance report. Where it is observed that the measurement criteria have not been achieved, reported as an incident in accordance with Regulation 79 of the <i>Mining Regulations 2020</i> .
Annual monitoring.	Visual amenity.	Visual inspection of the vegetation screening.	Visual amenity impacts are as low as reasonably practicable.	Boundary of the operational areas.	Annual compliance report. Where it is observed that the measurement criteria have not been achieved, reported as an incident in accordance with Regulation 79 of the <i>Mining Regulations 2020</i> .

## Compliance Summary and Monitoring Plan

Trigger	Objective	Monitoring method	Measurement criteria	Location	Reporting
Annual monitoring.	Waste disposal.	Annual visual inspection of the Site for waste.	All waste is managed in accordance with EPA policies, standards and guidelines.	Disturbance areas.	Annual compliance report. Where it is observed that the measurement criteria have not been achieved, reported as an incident in accordance with Regulation 79 of the <i>Mining Regulations 2020</i> .
Annual monitoring.	Weeds and pests.	Annual visual inspections for weeds and plant pathogens.	Positive identifications are managed in accordance with guidance from PIRSA and/or the Hills & Fleurieu Landscape Board.	Whole site particularly around disturbed areas and internal roads.	Annual compliance report. Where it is observed that the measurement criteria have not been achieved, reported as an incident in accordance with Regulation 79 of the <i>Mining Regulations 2020</i> .
Annual monitoring.	Weeds and pests.	Annual visual inspections for pest fauna presence at the Site.	Positive identifications are managed in accordance with guidance from PIRSA and/or the Hills & Fleurieu Landscape Board.	Whole site particularly around waste-rock landforms.	Annual compliance report. Where it is observed that the measurement criteria have not been achieved, reported as an incident in accordance with Regulation 79 of the <i>Mining Regulations 2020</i> .

## Compliance Summary and Monitoring Plan

Trigger	Objective	Monitoring method	Measurement criteria	Location	Reporting
Annual monitoring.	Weeds and pests.	Annual inspections of plant pathogen controls in reference to the 'Soil Borne Pathogens Treatment and Management Plan'.	Strategies to control the transportation of plant pathogens from the Site are being generally implemented in accordance with the 'Soil Borne Pathogens Treatment and Management Plan'.	Undisturbed areas, soil stockpiles and rehabilitation areas.	Annual compliance report. Where it is observed that the measurement criteria have not been achieved, reported as an incident in accordance with Regulation 79 of the <i>Mining Regulations 2020</i> .
Event – Continuing dust complaint.	Air quality.	Dust deposition monitoring in accordance with AS 3580.10.1. Samples taken monthly (+/- 2-days) for a period as agreed with the Regulator.	Dust deposition (ash content) does not exceed 4g/m <sup>2</sup> /month (rolling annual average).	Representative of complainant location as agreed with the Mining Regulator.	Data provided in annual reports. Final report provided at the end of monitoring campaign. Exceedances of criteria reported as an incident in accordance with Regulation 79 of the <i>Mining Regulations 2020</i> .
		Continuous monitoring for PM <sub>10</sub> for a period as agreed with the lead regulating agency.	Ground level concentrations of PM <sub>10</sub> * to exceed 50µg/m <sup>3</sup> over a 24-hour. <i>*PM10 – Particulate matter with an aerodynamic diameter of 10 micrometres or less.</i>		
Event – heritage discovery	Heritage.	Review of actions and communications following the discovery of a cultural heritage Site / Object / Remains.	Tenement Holder ceased work immediately following the discovery.  Tenement Holder notified appropriate authorities within 24 hours.  Tenement holder did not recommence until agreed with the appropriate authorities.	Investigation on the Site.  Electronic records.	Annual compliance report. Where it is observed that the measurement criteria have not been achieved, reported as an incident in accordance with Regulation 79 of the <i>Mining Regulations 2020</i> .

## Compliance Summary and Monitoring Plan

Trigger	Objective	Monitoring method	Measurement criteria	Location	Reporting
Event – Continuing noise complaint.	Noise.	Noise monitoring in accordance with the EPA Noise Policy and guidelines.	Noise levels less than 57dB(A) (LAeq) for day and 50dB(A) for night in consideration of extraneous background noises when measured over a 15-minute period.	Representative of complainant location.	Data provided in annual reports. Noise monitoring report. Exceedances of criteria reported as an incident in accordance with Regulation 79 of the <i>Mining Regulations 2020</i> .
Event – Public safety incident (injury or death).	Public safety.	An investigation into a public safety incident undertaken by a suitably qualified independent third-party.	The tenement holder could not have reasonably prevented the incident from occurring.	Site and relevant public safety incident locations.	Investigation report provided to the Mining Regulator within 30 days of the incident. Annual compliance report.
Event – Incident involving the public and mining related traffic.	Traffic.	An investigation into a traffic incident undertaken by a suitably qualified independent third-party.	The tenement holder could not have reasonably prevented the incident from occurring.	Site access point and section of road within 50 metres.	Investigation report provided to the lead regulating agency within 30 days of the incident. Annual compliance report.